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Table with 5 columns: APPLICATION NO., ISSUE DATE, PATENT NO., ATTORNEY DOCKET NO., CONFIRMATION NO.
13/626,057 12/02/2014 8899631 67467-009 PUS1 7803

26096 7590 11/12/2014
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Choon's Design Inc., Wixom, MI
Cheong Choon Ng, Novi, MI;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Receipt date: 10/27/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
/SRH/	1	1647060		1927-10-25	Speidel			
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1							
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							<input type="checkbox"/>
If you wish to add additional Foreign Patent Document citation information please click the Add button.							Add	
NON-PATENT LITERATURE DOCUMENTS							Remove	
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.					T ⁵	

Receipt date: 10/27/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057
	Filing Date		2012-09-25
	First Named Inventor	Cheong Choon Ng	
	Art Unit	3765	
	Examiner Name	Hurley, Shaun R.	
	Attorney Docket Number	67467-009 PUS1	

/SRH/	1	Takacas, Sarah (SarahLynnTea), "How to Make Rubber Band Bracelets"; Published 15 April 2009 http://www.youtube.com/watch?v=e0k762PJ-D8	<input type="checkbox"/>
/SRH/	2	Introduction video – Rainbow Loom (the next generation Twistz Bandz kit). Published 24 September 2012. http://www.youtube.com/watch?v=FUwf3CheGuw	<input type="checkbox"/>
/SRH/	3	Lesson 21: "Sweet Heart" Rainbow Loom Bracelet by Choon; Published 21 January 2013 http://www.youtube.com/watch?v=718MbYceEC0	<input type="checkbox"/>
/SRH/	4	Rainbow Loom from Choon's Design, LLC; Published 24 July 2013 http://www.youtube.com/watch?v=vhiVxnbE0CE	<input type="checkbox"/>
/SRH/	5	How to make a rainbow loom starburst bracelet; Published 1 August 2013 http://www.youtube.com/watch?v=RI7AkI5dJzo	<input type="checkbox"/>
/SRH/	6	How To: Make the Rainbow Loom Single Band Bracelet; Published 12 August 2013 http://www.youtube.com/watch?v=Wd3UdqPmKbA	<input type="checkbox"/>

If you wish to add additional non-patent literature document citation information please click the Add button **Add**

EXAMINER SIGNATURE

Examiner Signature	/Shaun Hurley/	Date Considered	10/30/2014
--------------------	----------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/626,057	09/25/2012	Cheong Choon Ng	67467-009 PUS1	7803
26096	7590	11/04/2014	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			HURLEY, SHAUN R	
			ART UNIT	PAPER NUMBER
			3765	
			NOTIFICATION DATE	DELIVERY MODE
			11/04/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptodocket@cgolaw.com
cgolaw@yahoo.com

Supplemental Notice of Allowability	Application No. 13/626,057	Applicant(s) NG, CHEONG CHOON	
	Examiner Shaun R. Hurley	Art Unit 3765	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to QPIDS submission filed 27 October 2014.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-6,8-21 and 23-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>10/27/14</u> | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/Shaun R Hurley/
Primary Examiner, Art Unit 3765



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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 13/626,057, inventor Cheong Choon Ng, and attorney Carlson, Gaskey & Olds, P.C.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptodocket@cgolaw.com
cgolaw@yahoo.com

Supplemental Notice of Allowability	Application No. 13/626,057	Applicant(s) NG, CHEONG CHOON	
	Examiner Shaun R. Hurley	Art Unit 3765	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to QPIDS submission filed 17 October 2014.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-6,8-21 and 23-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

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THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
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6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

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- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>10/17/14</u> | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/Shaun R Hurley/
Primary Examiner, Art Unit 3765

Receipt date: 10/17/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	2540383		1951-02-06	Tillert et al.	
/SRH/	2	3572679		1971-03-30	Strauff	
/SRH/	3	3693976		1972-09-26	Flack	
/SRH/	4	4844473		1989-07-04	Landsberg	
/SRH/	5	6213918		2001-04-10	Rogers, Jr.	
/SRH/	6	D204442		1966-04-12	Brawley, Jr.	
/SRH/	7	D310672		1990-09-18	Harvey et al.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1		<input type="checkbox"/>

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EXAMINER SIGNATURE

Examiner Signature	/Shaun Hurley/	Date Considered	10/22/2014
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

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**REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)**

Application Number	13626057	Filing Date	2012-09-25	Docket Number (if applicable)	67467-009 PUS1	Art Unit	3765
First Named Inventor	Cheong Choon Ng			Examiner Name	Shaun R. Hurley		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

Other _____

Enclosed

Amendment/Reply

Information Disclosure Statement (IDS)

Affidavit(s)/ Declaration(s)

Other _____

MISCELLANEOUS

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 501482

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Patent Practitioner Signature

Applicant Signature

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Signature of Registered U.S. Patent Practitioner			
Signature	/John M. Siragusa/	Date (YYYY-MM-DD)	2014-10-27
Name	John M. Siragusa	Registration Number	46174

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13626057
Filing Date:	25-Sep-2012
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Filer:	John M. Siragusa/Amy Spaulding
Attorney Docket Number:	67467-009 PUS1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Petition Fee-37CFR 1.17(h) (Group II)	2464	1	70	70
RCE - 2nd and Subsequent Request	2820	1	850	850

Pages:

Claims:

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				920



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : October 27, 2014

In re Application of :

Cheong Ng

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 13626057

Filed : 25-Sep-2012

Attorney Docket No : 67467-009 PUS1

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed October 27, 2014 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 3765 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	20520735
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	27-OCT-2014
Filing Date:	25-SEP-2012
Time Stamp:	13:36:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$920
RAM confirmation Number	9926
Deposit Account	501482
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	31470	no	2
			f2dcc430be018d932e8fe386c962776f50ca618f		
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	10-27-14_RCE_67467-009PUS1.pdf	699862	no	3
			07350cdd17d9f02b6d59b75cc8a698d633be64cf		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	10-27-14_IDS_AU.pdf	612519	no	4
			542a40264c7d84fab79d1abbc41c5d26ced4fa6e		
Warnings:					
Information:					
4	Non Patent Literature	YOUTUBE_24September2012.pdf	119719	no	1
			185af637e6235cfaef0764c6e839a8a56c4e9cb7		
Warnings:					
Information:					
5	Non Patent Literature	YOUTUBE_24July2013.pdf	117261	no	1
			47ac4fad43e7e6a935a6c71c177532664ad732f6		
Warnings:					
Information:					
6	Non Patent Literature	YOUTUBE_21January2013.pdf	79525	no	1
			6bb1ed2dae6888d13eaac2dfdf8530212ce79454a3		
Warnings:					
Information:					
7	Non Patent Literature	YOUTUBE_12August2013.pdf	92861	no	1
			27ce8205304fcd9c160b3f997bd6a67f0bc3fe767		
Warnings:					
Information:					
8	Non Patent Literature	YOUTUBE_15April2009.pdf	94109	no	1
			3513dc0088e7b0f9713590d29fecaeef5b596a9		
Warnings:					
Information:					

9	Non Patent Literature	YOUTUBE_1August2013.pdf	122132 7c923aa5fc6d614d5eb2f59c49c4001db4fb4c63	no	1
Warnings:					
Information:					
10	Quick Path Information Disclosure Statement	Cert_and_Req_QPIDS_AU.pdf	73716 e8c1b08ef537ef00422d048b008966c85a3364a5	no	2
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	32113 8175546fd5259cdd492a35503fb1462f310a72eb	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				2075287	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Petition Request	PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)
Application Number	13626057
Filing Date	25-Sep-2012
First Named Inventor	Cheong Ng
Art Unit	3765
Examiner Name	SHAUN HURLEY
Attorney Docket Number	67467-009 PUS1
Title	BRUNNIAN LINK MAKING DEVICE AND KIT

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:

- (1) Petition fee; and
- (2) One of the following reasons:
 - (a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
 - (b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
 - (c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee
<input checked="" type="radio"/> Small Entity
<input type="radio"/> Micro Entity
<input type="radio"/> Regular Undiscounted
Reason for withdrawal from issue

- One or more claims are unpatentable
- Consideration of a request for continued examination (RCE) (List of Required Documents and Fees)
- Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).

RCE request, submission, and fee.

- I certify, in accordance with 37 CFR 1.4(d)(4) that :
- The RCE request ,submission, and fee have already been filed in the above-identified application on
 - Are attached.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

- An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application.
- An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity.
- A sole inventor
- A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application
- A joint inventor; all of whom are signing this e-petition

Signature	/John M. Siragusa/
Name	John M. Siragusa
Registration Number	46174

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	1647060		1927-10-25	Speidel			
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1							
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							<input type="checkbox"/>
If you wish to add additional Foreign Patent Document citation information please click the Add button							Add	
NON-PATENT LITERATURE DOCUMENTS							Remove	
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.						T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

1	Takacas, Sarah (SarahLynnTea), "How to Make Rubber Band Bracelets"; Published 15 April 2009 http://www.youtube.com/watch?v=e0k762PJ-D8	<input type="checkbox"/>
2	Introduction video – Rainbow Loom (the next generation Twistz Bandz kit). Published 24 September 2012. http://www.youtube.com/watch?v=FUwf3CheGuw	<input type="checkbox"/>
3	Lesson 21: "Sweet Heart" Rainbow Loom Bracelet by Choon; Published 21 January 2013 http://www.youtube.com/watch?v=718MbYceEC0	<input type="checkbox"/>
4	Rainbow Loom from Choon's Design, LLC; Published 24 July 2013 http://www.youtube.com/watch?v=vhiVxnbE0CE	<input type="checkbox"/>
5	How to make a rainbow loom starburst bracelet; Published 1 August 2013 http://www.youtube.com/watch?v=RI7AkI5dJzo	<input type="checkbox"/>
6	How To: Make the Rainbow Loom Single Band Bracelet; Published 12 August 2013 http://www.youtube.com/watch?v=Wd3UdqPmKbA	<input type="checkbox"/>

If you wish to add additional non-patent literature document citation information please click the Add button **Add**

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John M. Siragusa/	Date (YYYY-MM-DD)	2014-10-28
Name/Print	John M. Siragusa	Registration Number	46174

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	20442126
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	17-OCT-2014
Filing Date:	25-SEP-2012
Time Stamp:	09:45:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$670
RAM confirmation Number	7617
Deposit Account	501482
Authorized User	
<p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p style="padding-left: 40px;">Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p style="padding-left: 40px;">Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p>	

Electronic Patent Application Fee Transmittal

Application Number:	13626057			
Filing Date:	25-Sep-2012			
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT			
First Named Inventor/Applicant Name:	Cheong Choon Ng			
Filer:	John M. Siragusa/Amy Spaulding			
Attorney Docket Number:	67467-009 PUS1			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Petition Fee-37CFR 1.17(h) (Group II)	2464	1	70	70
Request for Continued Examination	2801	1	600	600
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Adjustment date: 10/24/2014 SDIRETAL 13626057
 10/17/2014 INTEFSW 00007617 501482
 02 FC:2801 600.00 CR

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

PATENT WITHDRAWAL NOTICE

DATE WITHDRAWN

10/21/2014

WITHDRAWAL NUMBER

27033

The following application has been **WITHDRAWN** from the
10/28/2014 issue.

SERIAL NO.

13626057

PATENT NUMBER

8870239

TITLE

BRUNNIAN LINK MAKING DEVICE AND KIT

NAME AND ADDRESS

CHEONG NG
Novi, MI

REASON FOR WITHDRAWAL

Auto-petition to withdraw - Granted

APPROVED

/Kimberly Terrell/, Manager

Patent Publication Branch
Office of Data Management

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)**

Application Number	13626057	Filing Date	2012-09-25	Docket Number (if applicable)	67467-009 PUS1	Art Unit	3765
First Named Inventor	Cheong Choon Ng			Examiner Name	Shaun R. Hurley		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

Other _____

Enclosed

Amendment/Reply

Information Disclosure Statement (IDS)

Affidavit(s)/ Declaration(s)

Other _____

MISCELLANEOUS

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
Deposit Account No 501482

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Patent Practitioner Signature

Applicant Signature

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/John M. Siragusa/	Date (YYYY-MM-DD)	2014-10-17
Name	John M. Siragusa	Registration Number	46174

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	2540383		1951-02-06	Tillert et al.	
	2	3572679		1971-03-30	Strauff	
	3	3693976		1972-09-26	Flack	
	4	4844473		1989-07-04	Landsberg	
	5	6213918		2001-04-10	Rogers, Jr.	
	6	D204442		1966-04-12	Brawley, Jr.	
	7	D310672		1990-09-18	Harvey et al.	
If you wish to add additional U.S. Patent citation information please click the Add button.						Add
U.S. PATENT APPLICATION PUBLICATIONS						Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
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	1		<input type="checkbox"/>

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Examiner Signature	Date Considered
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¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John M. Siragusa/	Date (YYYY-MM-DD)	2014-10-17
Name/Print	John M. Siragusa	Registration Number	46174

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13626057			
Filing Date:	25-Sep-2012			
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT			
First Named Inventor/Applicant Name:	Cheong Choon Ng			
Filer:	John M. Siragusa/Amy Spaulding			
Attorney Docket Number:	67467-009 PUS1			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Petition Fee-37CFR 1.17(h) (Group II)	2464	1	70	70
Request for Continued Examination	2801	1	600	600
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				670



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Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : October 17, 2014

In re Application of :

Cheong Ng

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 13626057

Filed : 25-Sep-2012

Attorney Docket No : 67467-009 PUS1

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed October 17, 2014 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 3765 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	20442126
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	17-OCT-2014
Filing Date:	25-SEP-2012
Time Stamp:	09:45:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$670
RAM confirmation Number	7617
Deposit Account	501482
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

- Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)
- Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	31469	no	2
			dd2f9466e4c576af799e52e582939d29757e9fae		
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	10-17-14_RCE_67467-009PUS1.pdf	699865	no	3
			3e1909600993bddc412c0fc376ea2c6c2d71c878		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	10-17-14_IDS_US.pdf	612248	no	4
			2f4de20bdcbd2ac9dc2d662a624254230211e3ea		
Warnings:					
Information:					
4	Quick Path Information Disclosure Statement	Cert_and_Req_QPIDS_US.pdf	73716	no	2
			bc48d7417d830bb28a29ec05840f33ed03dc9eef		
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32117	no	2
			2303c5076ef88bae722cab8e838293f8f9c692		
Warnings:					
Information:					
Total Files Size (in bytes):			1449415		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Petition Request	PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)
Application Number	13626057
Filing Date	25-Sep-2012
First Named Inventor	Cheong Ng
Art Unit	3765
Examiner Name	SHAUN HURLEY
Attorney Docket Number	67467-009 PUS1
Title	BRUNNIAN LINK MAKING DEVICE AND KIT

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:

- (1) Petition fee; and
- (2) One of the following reasons:
 - (a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
 - (b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
 - (c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee
<input checked="" type="radio"/> Small Entity
<input type="radio"/> Micro Entity
<input type="radio"/> Regular Undiscounted
Reason for withdrawal from issue

- One or more claims are unpatentable
- Consideration of a request for continued examination (RCE) (List of Required Documents and Fees)
- Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).

RCE request, submission, and fee.

- I certify, in accordance with 37 CFR 1.4(d)(4) that :
- The RCE request ,submission, and fee have already been filed in the above-identified application on
 - Are attached.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

- An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application.
- An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity.
- A sole inventor
- A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application
- A joint inventor; all of whom are signing this e-petition

Signature	/John M. Siragusa/
Name	John M. Siragusa
Registration Number	46174



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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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Table with 5 columns: APPLICATION NO., ISSUE DATE, PATENT NO., ATTORNEY DOCKET NO., CONFIRMATION NO.
13/626,057 10/28/2014 8870239 67467-009 PUS1 7803

26096 7590 10/08/2014
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Choon's Design Inc., Wixom, MI
Cheong Choon Ng, Novi, MI;

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Receipt date: 09/06/2013

13626057 - GAU: 3765

Doc code: IDS

PTO/SB/08a (01-10)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057
	Filing Date		2012-09-25
	First Named Inventor	Cheong Choon Ng	
	Art Unit		
	Examiner Name		
	Attorney Docket Number		67467-009 PUS1

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	0254258		1882-02-28	Barbour	
Character(s) applied to document, /K.D.D./	2	0254288		1992-02-28 2/1882	Dimmick	
9/23/2014 /SRH/	3	0782657		1905-02-14	Hubert	
/SRH/	4	0843495		1907-02-05	Sander	
/SRH/	5	1073226		1913-09-16	Freeman	
/SRH/	6	1366212		1921-01-18	Pollard	
/SRH/	7	1375119		1921-04-19	Stephen	
/SRH/	8	1424458		1922-08-01	Fleisher	

Receipt date: 09/06/2013 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	13626057 - GAU: 3765	
	Filing Date		2012-09-25		
	First Named Inventor	Cheong Choon Ng			
	Art Unit				
	Examiner Name				
	Attorney Docket Number		67467-009 PUS1		

/SRH/	42	D570923		2008-06-10	Vazquez Gastellu	
/SRH/	43	6923026		2005-08-02	Clarke	
/SRH/	44	7506524		2009-03-24	Gustin	
/SRH/	45	7578146		2009-08-25	Gustin	
/SRH/	46	7909609		2011-03-22	Molin	
/SRH/	47	D330668		1992-11-03	Nagamatsu	
<i>Change(s) applied to document.</i>	<i>48</i>	<i>3665971</i>		<i>5/1972</i> 1972-11-27	Teles Jleks	
<i>K.D.D./</i> <i>9/23/2014</i>	<i>49</i>	<i>5231742</i>		1993-08-03	Macbain	
/SRH/	50	5687775		1997-11-18	Thompson et al.	
/SRH/	51	8316894		2012-11-27	Schaub	
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Receipt date: 10/09/2013

13626057 - GAU: 3765

Doc code: IDS

PTO/SB/08a (01-10)

Doc description: Information Disclosure Statement (IDS) Filed

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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	Filing Date		2012-09-25
	First Named Inventor	Cheong Choon Ng	
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	Examiner Name		
	Attorney Docket Number		67467-009 PUS1

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	2270619		1942-01-20	A.G. Bowyer	
/SRH/	2	2545409		1951-03-13	J.D. McCall	
/SRH/	3	3377674		1968-04-16	R.F. Brassaw et al.	
/SRH/	4	2134066		1938-10-25	E. Van Ness	
Change(s) applied to document, /K.D.D./ 9/23/2014 /SRH/	5	1776561		9/1930 1927-12-05	C. LA Croix	
/SRH/	6	4629100		1986-12-16	Owens	
/SRH/	7	3678709		1972-07-25	Nowicki et al.	
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Receipt date: 09/10/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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	Attorney Docket Number	67467-009 PUS1	

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	3054214		1962-09-18	Smith et al.	
/SRH/	2	4018543		1977-04-19	Carson et al.	
/SRH/	3	4037513		1977-07-26	Hobson	
/SRH/	4	4066271		1978-01-03	Lohr	
/SRH/	5	4680021		1987-07-14	Maxim	
/SRH/	6	5377595		1995-01-03	Liu	
/SRH/	7	7617947		2009-11-17	Schafer	
/SRH/	8	8684420		2014-04-01	Ng	

Receipt date: 09/10/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
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	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

/SRH/	9	2186692		1940-01-09	Boyer et al.	
/SRH/	10	2274572		1942-02-24	Yates	
/SRH/	11	3438223		1969-04-15	Linstead	
/SRH/	12	3800372		1974-04-02	Daoust	
/SRH/	13	6550177		2003-04-22	Epple, Jr.	
/SRH/	14	8622441		2014-01-07	Ng	

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	20070199965		2007-08-30	Gouldson	
/SRH/	2	20130307267		2013-11-21	Ng	

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Receipt date: 09/10/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
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	Attorney Docket Number	67467-009 PUS1		

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
/SRH/	1	Petition for Post-Grant Review of U.S. Patent No. 8,684,420 and Exhibits, filed in the United States Patent and Trademark Office on August 5, 2014.	<input type="checkbox"/>
/SRH/	2	Petition for Inter Partes Review of U.S. Patent No. 8,485,565 and Exhibits, filed in the United States Patent and Trademark Office on August 20, 2014.	<input type="checkbox"/>
/SRH/	3	How to make a fishtail rainbow loom bracelet; http://www.youtube.com/watch?v=ukv83Cvq3jk ; July 13, 2013	<input type="checkbox"/>

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Examiner Signature	/Shaun Hurley/	Date Considered	09/24/2014
--------------------	----------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 13/626,057, inventor Cheong Choon Ng, and attorney Carlson, Gaskey & Olds, P.C.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptodocket@cgolaw.com
cgolaw@yahoo.com

Supplemental Notice of Allowability	Application No. 13/626,057	Applicant(s) NG, CHEONG CHOON	
	Examiner Shaun R. Hurley	Art Unit 3765	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to Information Disclosure Statements filed 10 September 2014.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-6,8-21 and 23-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>09/10/14, 09/10/14</u> | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/Shaun R Hurley/
Primary Examiner, Art Unit 3765

Receipt date: 09/10/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13626057
	Filing Date	2012-09-25
	First Named Inventor	Cheong Choon Ng
	Art Unit	3765
	Examiner Name	Hurley, Shaun R.
	Attorney Docket Number	67467-009 PUS1

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
/SRH/	1	20110259465		2011-10-27	Schaub	

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057
	Filing Date		2012-09-25
	First Named Inventor	Cheong Choon Ng	
	Art Unit	3765	
	Examiner Name	Hurley, Shaun R.	
	Attorney Docket Number	67467-009 PUS1	

/SRH/	1	European Search Report for EP Application No. 13840473.6 dated July 3, 2014.	<input type="checkbox"/>
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If you wish to add additional non-patent literature document citation information please click the Add button **Add**

EXAMINER SIGNATURE

Examiner Signature	/Shaun Hurley/	Date Considered	09/24/2014
--------------------	----------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/626,057, 09/25/2012, 3765, 1070, 67467-009 PUS1, 16, 3

CONFIRMATION NO. 7803

CORRECTED FILING RECEIPT



26096
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

Date Mailed: 09/22/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Inventor(s) Cheong Choon Ng, Novi, MI;
Applicant(s) Choon's Design Inc., Wixom, MI

Power of Attorney: None

Domestic Priority data as claimed by applicant
This application is a CIP of 13/227,638 09/08/2011 PAT 8485565
which claims benefit of 61/410,399 11/05/2010

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper Authorization to Permit Access to Application by Participating Offices (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 10/12/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 13/626,057

Projected Publication Date: Not Applicable
Non-Publication Request: No
Early Publication Request: No

** SMALL ENTITY **

Title

BRUNNIAN LINK MAKING DEVICE AND KIT

Preliminary Class

289

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:**PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/626,057	09/25/2012	Cheong Choon Ng	67467-009 PUS1

CONFIRMATION NO. 7803

POA ACCEPTANCE LETTER

26096
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009



Date Mailed: 09/22/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/15/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/bcrittenden/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26096 7590 08/07/2014
CARLSON, GASKEY & OLDS, P.C.
 400 WEST MAPLE ROAD
 SUITE 350
 BIRMINGHAM, MI 48009

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

<u>Amy M. Spaulding</u>	(Depositor's name)
<u>/Amy M. Spaulding/</u>	(Signature)
<u>September 18, 2014</u>	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/626,057	09/25/2012	Cheong Choon Ng	67467-009 PUS1	7803

TITLE OF INVENTION: BRUNNIAN LINK MAKING DEVICE AND KIT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/07/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
HURLEY, SHAUN R	3765	289-001500

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
 (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 Carlson, Gaskey & Olds, P.C.
 (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE Choon's Design Inc. (B) RESIDENCE: (CITY and STATE OR COUNTRY) Wixom, MI

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

4a. The following fee(s) are submitted:

Issue Fee
 Publication Fee (No small entity discount permitted)
 Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

A check is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-1482 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29
 Applicant asserting small entity status. See 37 CFR 1.27
 Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /John M. Siragusa/ Date September 18, 2014
 Typed or printed name John M. Siragusa Registration No. 46174

Electronic Patent Application Fee Transmittal

Application Number:	13626057				
Filing Date:	25-Sep-2012				
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT				
First Named Inventor/Applicant Name:	Cheong Choon Ng				
Filer:	John M. Siragusa/Amy Spaulding				
Attorney Docket Number:	67467-009 PUS1				
Filed as Small Entity					
Utility under 35 USC 111(a) Filing Fees					
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)	
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Utility Appl Issue Fee	2501	1	480	480	
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	20175081
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	18-SEP-2014
Filing Date:	25-SEP-2012
Time Stamp:	12:37:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$480
RAM confirmation Number	9309
Deposit Account	501482
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	9-18-14_IssueFeeTransmittal_67467-009PUS1.pdf	173302 e4147512cf4c287af1288ed26b4caa2d1793c90b	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30344 7c19b8bd51504ee948d2fd99682b42560412bc87	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			203646		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	13/626,057
Filing Date	September 25, 2012
First Named Inventor	Cheong Choon Ng
Title	BRUNNIAN LINK MAKING DEVICE AND KIT
Art Unit	3765
Examiner Name	Hurley, Shaun R.
Attorney Docket Number	67467-009 PUS1

SIGNATURE of Applicant or Patent Practitioner			
Signature	/John M. Siragusa/	Date (Optional)	September 15, 2014
Name	John M. Siragusa	Registration Number	46174
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

*Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

Practitioners associated with Customer Number:

26096

OR

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

The address associated with Customer Number:

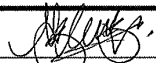
26096

OR

<input type="checkbox"/>	Firm or Individual Name			
<input type="checkbox"/>	Address			
<input type="checkbox"/>	City	State	Zip	
<input type="checkbox"/>	Country			
<input type="checkbox"/>	Telephone	Email		

Assignee Name and Address: Choon's Design Inc.
48813 West Road
Wixom, MI 48393**A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.****SIGNATURE of Assignee of Record**

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	3/26/14
Name	Cheong Choon Ng	Telephone	248-231-6158
Title	President - Choon's Design Inc.		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Cheong Choon NgApplication No./Patent No.: 13/626,057 Filed/Issue Date: September 25, 2012Titled: BRUNNIAN LINK MAKING DEVICE AND KIT

Choon's Design Inc. _____, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. The assignee of the entire right, title, and interest.
2. An assignee of less than the entire right, title, and interest (check applicable box):
- The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Cheong Choon Ng To: Choon's Design LLCThe document was recorded in the United States Patent and Trademark Office at Reel 031741, Frame 0452, or for which a copy thereof is attached.2. From: Choon's Design LLC To: Choon's Design Inc.The document was recorded in the United States Patent and Trademark Office at Reel 032505, Frame 0098, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/John M. Siragusa/ _____

Signature

John M. Siragusa _____

Printed or Typed Name

September 15, 2014 _____

Date

Attorney of Record - 46174 _____

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	67467-001-PUS2 67467-009 PUS1
		Application Number	13/626,057
Title of Invention	BRUNNIAN LINK MAKING DEVICE AND KIT		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

<input type="checkbox"/>	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2. (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	--

Inventor Information:

Inventor 1 Remove				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Cheong	Choon	Ng	
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	Novi	State/Province	MI	Country of Residence US
Mailing Address of Inventor:				
Address 1	44926 Paine Dr.			
Address 2				
City	Novi	State/Province	MI	
Postal Code	48377	Country	US	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
<input type="checkbox"/> An Address is being provided for the correspondence information of this application.	
Customer Number	26096
Email Address	Add Email Remove Email

Application Information:

Title of the Invention	BRUNNIAN LINK MAKING DEVICE AND KIT		
Attorney Docket Number	67467-001-PUS2 67467-009 PUS1	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	67467-001 PUS2
		Application Number	
Title of Invention	BRUNNIAN LINK MAKING DEVICE AND KIT		

Publication Information:

<input type="checkbox"/>	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
<input type="checkbox"/>	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer number will be used for the Representative Information during processing.			
Please Select One:			
<input checked="" type="radio"/>	Customer Number	<input type="radio"/>	US Patent Practitioner
<input type="radio"/>	Limited Recognition (37 CFR 11.9)		
Customer Number			

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.			
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation in part of	13/227638	2011-09-08
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/227638	non provisional of	61/410399	2010-11-05
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
Remove			
Application Number	Country ¹	Filing Date (YYYY-MM-DD)	Priority Claimed
			<input checked="" type="radio"/> Yes <input type="radio"/> No
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	67467-001 PUS2
		Application Number	
Title of Invention	BRUNNIAN LINK MAKING DEVICE AND KIT		

Authorization to Permit Access:

<input checked="" type="checkbox"/> Authorization to Permit Access to the Instant Application by the Participating Offices
<p>If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.	
Applicant 1	
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.	
<input type="radio"/> Assignee	<input type="radio"/> Legal Representative under 35 U.S.C. 117
<input type="radio"/> Person to whom the inventor is obligated to assign.	<input type="radio"/> Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:	
Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>	
If the Assignee is an Organization check here. <input checked="" type="checkbox"/>	
Organization Name	<u>Choon's Design Inc.</u>

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	67467-001 PUS2
		Application Number	
Title of Invention	BRUNNIAN LINK MAKING DEVICE AND KIT		

Mailing Address Information:			
Address 1	<u>48813 West Road</u>		
Address 2			
City	<u>Wixom</u>	State/Province	<u>MI</u>
Country	<u>US</u>	Postal Code	<u>48393</u>
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications					
Signature	/John M. Siragusa/			Date (YYYY-MM-DD)	2012-09-25
First Name	John M.	Last Name	Siragusa	Registration Number	46174
Additional Signature may be generated within this form by selecting the Add button.					

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	20134989
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	15-SEP-2014
Filing Date:	25-SEP-2012
Time Stamp:	12:05:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	9-15-14_POA_Transmittal.pdf	170361 1a1a4687a70f42df9e256af5e7d9487193118aad	no	1

Warnings:

Information:

2	Power of Attorney	Executed_POA_ChoonsDesignI NC.pdf	88932 bccbc1a66fee76ab138aa3357b4ed1ec184 52491	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73.	9-15-14_373c_Statement.pdf	119604 6add318d9a83bb6d48be95e9175ae5800a 24d636	no	3
Warnings:					
Information:					
4	Application Data Sheet	MarkedAppDataSheet.pdf	147377 cb0475cb905a5ffdf95bc7aa88b3db470e39 30aa9	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
Total Files Size (in bytes):			526274		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Electronic Patent Application Fee Transmittal

Application Number:	13626057				
Filing Date:	25-Sep-2012				
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT				
First Named Inventor/Applicant Name:	Cheong Choon Ng				
Filer:	John M. Siragusa/Amy Spaulding				
Attorney Docket Number:	67467-009 PUS1				
Filed as Large Entity					
Utility under 35 USC 111(a) Filing Fees					
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)	
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	20095255
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	10-SEP-2014
Filing Date:	25-SEP-2012
Time Stamp:	11:07:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$180
RAM confirmation Number	5620
Deposit Account	501482
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:
 Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)
 Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13626057	
	Filing Date		2012-09-25	
	First Named Inventor	Cheong Choon Ng		
	Art Unit	3765		
	Examiner Name	Hurley, Shaun R.		
	Attorney Docket Number	67467-009 PUS1		

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	1	European Search Report for EP Application No. 13840473.6 dated July 3, 2014.	<input type="checkbox"/>
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Signature	/John M. Siragusa/	Date (YYYY-MM-DD)	2014-09-10
Name/Print	John M. Siragusa	Registration Number	46174

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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	8	8684420		2014-04-01	Ng	

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US008485565B2

(12) **United States Patent**
Ng

(10) **Patent No.:** **US 8,485,565 B2**
(45) **Date of Patent:** **Jul. 16, 2013**

(54) **BRUNNIAN LINK MAKING DEVICE AND KIT**

(76) Inventor: **Cheong Choon Ng**, Novi, MI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 98 days.

(21) Appl. No.: **13/227,638**

(22) Filed: **Sep. 8, 2011**

(65) **Prior Publication Data**

US 2012/0112457 A1 May 10, 2012

Related U.S. Application Data

(60) Provisional application No. 61/410,399, filed on Nov. 5, 2010.

(51) **Int. Cl.**
B65H 69/04 (2006.01)

(52) **U.S. Cl.**
USPC **289/17**

(58) **Field of Classification Search**
USPC 289/2, 17, 16.5, 18.1; 273/281, 288, 273/309
See application file for complete search history.

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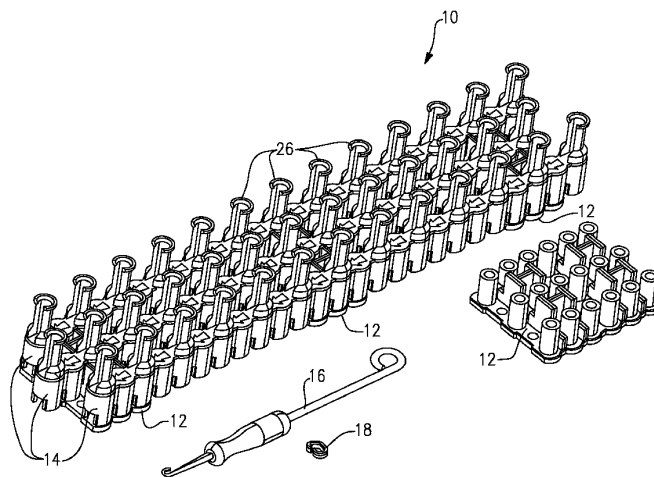
Primary Examiner — Shaun R Hurley

(74) *Attorney, Agent, or Firm* — Carlson, Gaskey & Olds, P.C.

(57) **ABSTRACT**

A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. The example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques and includes several pin bars that are supported in a desired special orientation by at least one base. The desired special orientation is dependent on the desired linked configuration of the completed article. The base and pin bars may be assembled in various combination and orientations to provide endless variation of completed link orientations. Additional bases and pin bars can be to further expand possible completed article creation.

18 Claims, 10 Drawing Sheets



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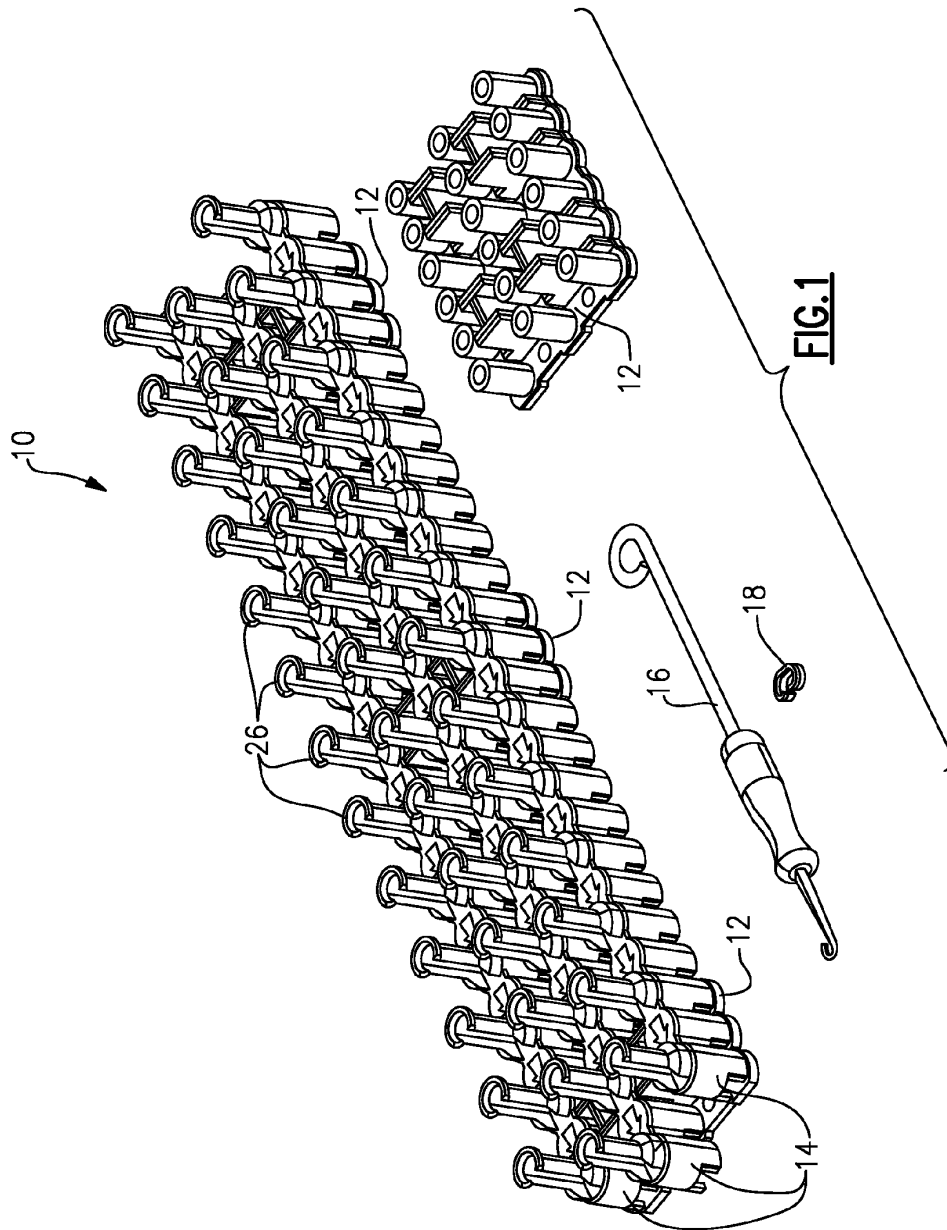




FIG. 2

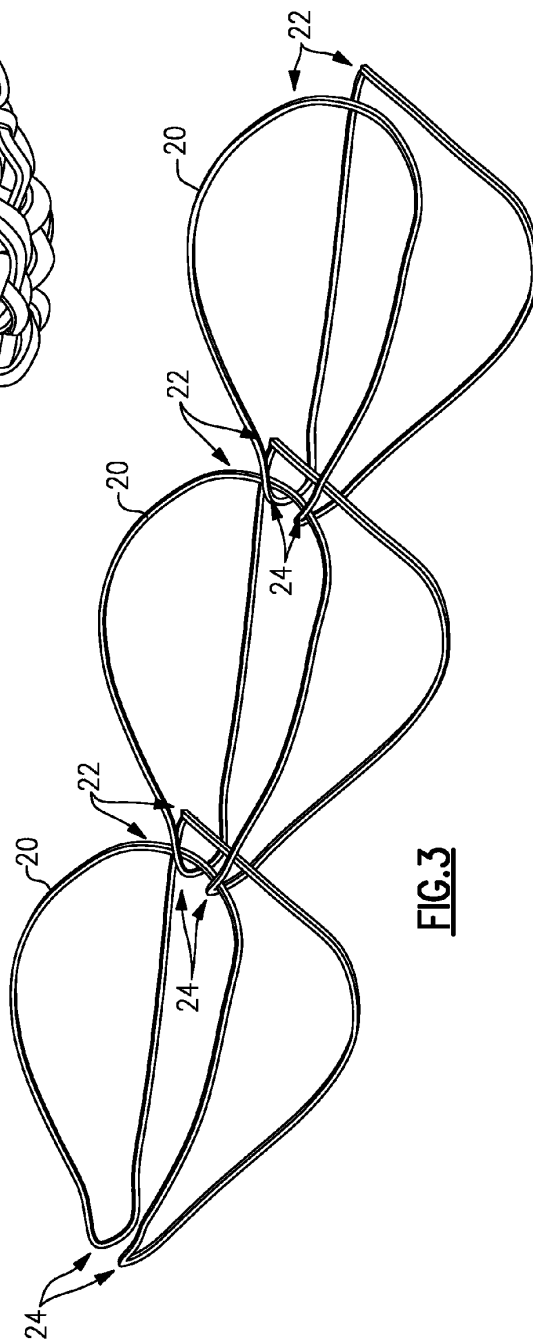
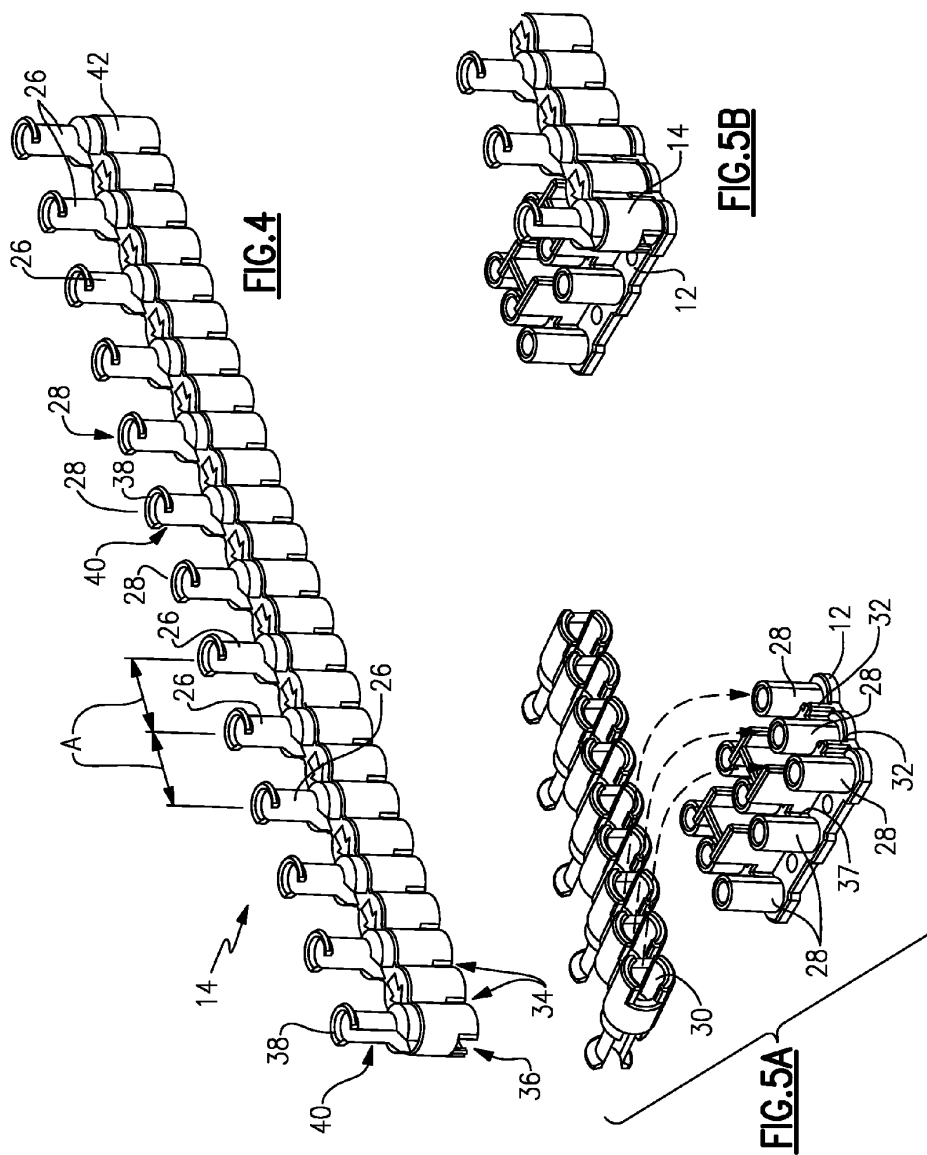
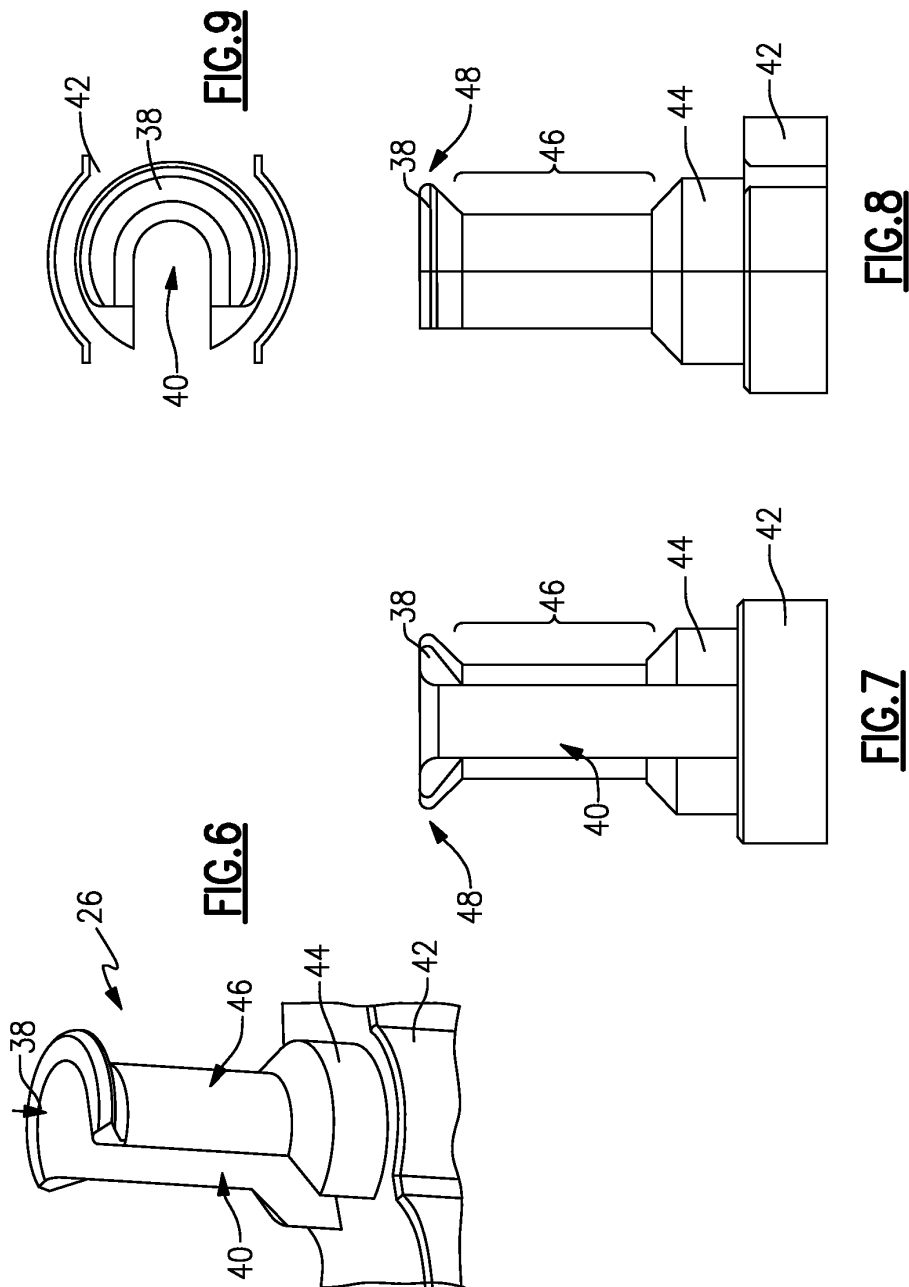


FIG. 3





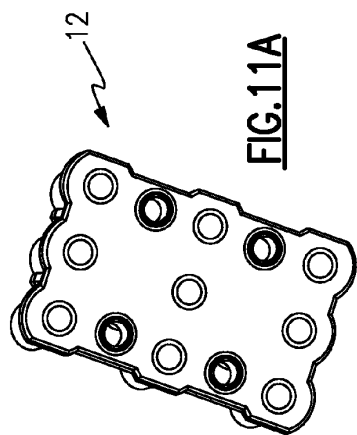


FIG. 11A

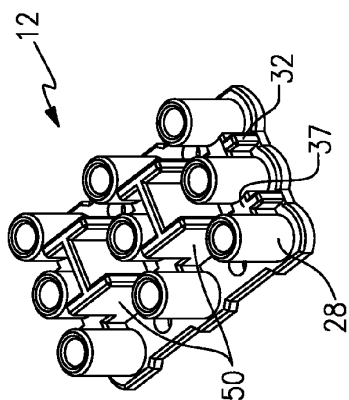


FIG. 10A

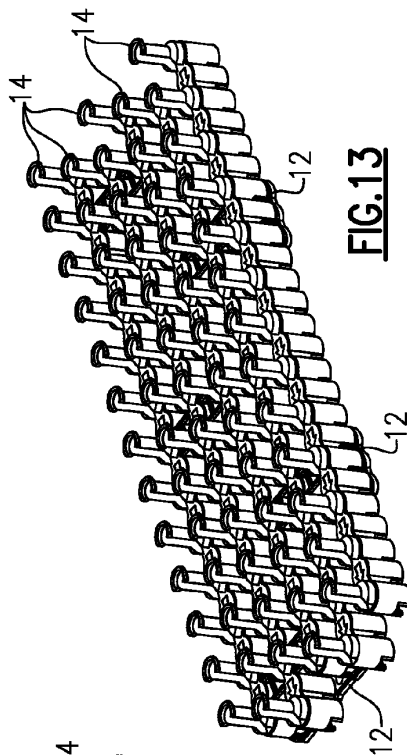


FIG. 13

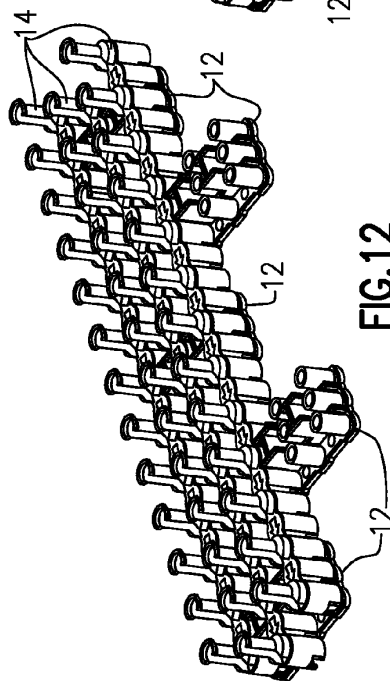


FIG. 12

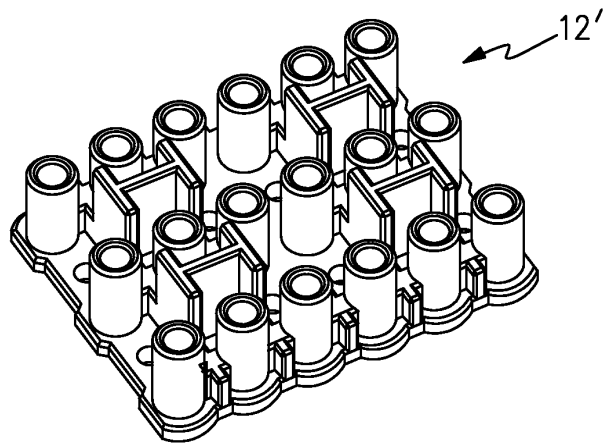


FIG. 10B

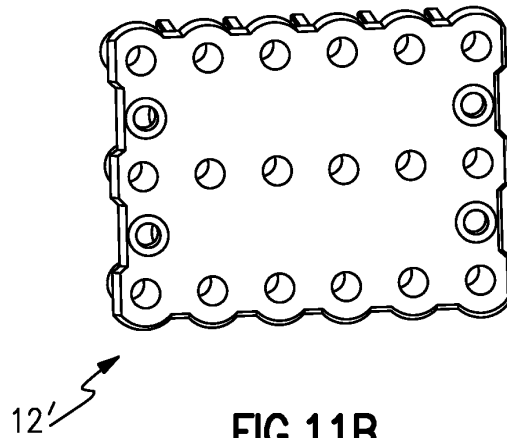


FIG. 11B

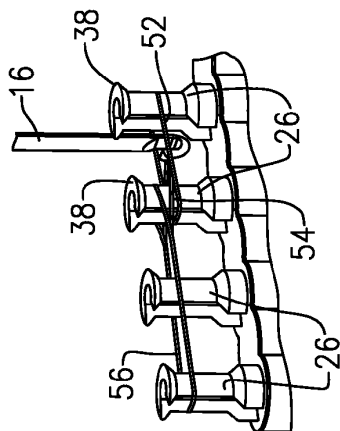


FIG. 14C

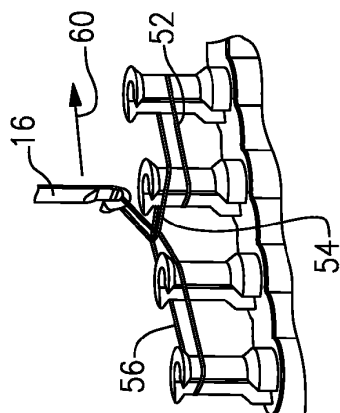


FIG. 14B

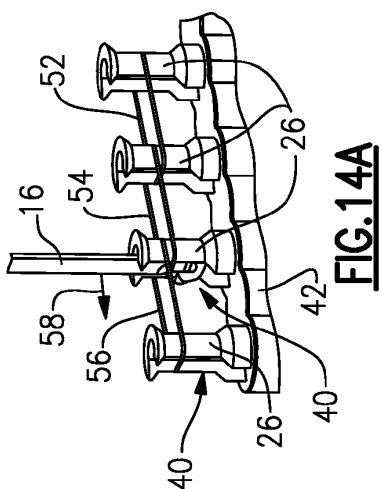


FIG. 14A

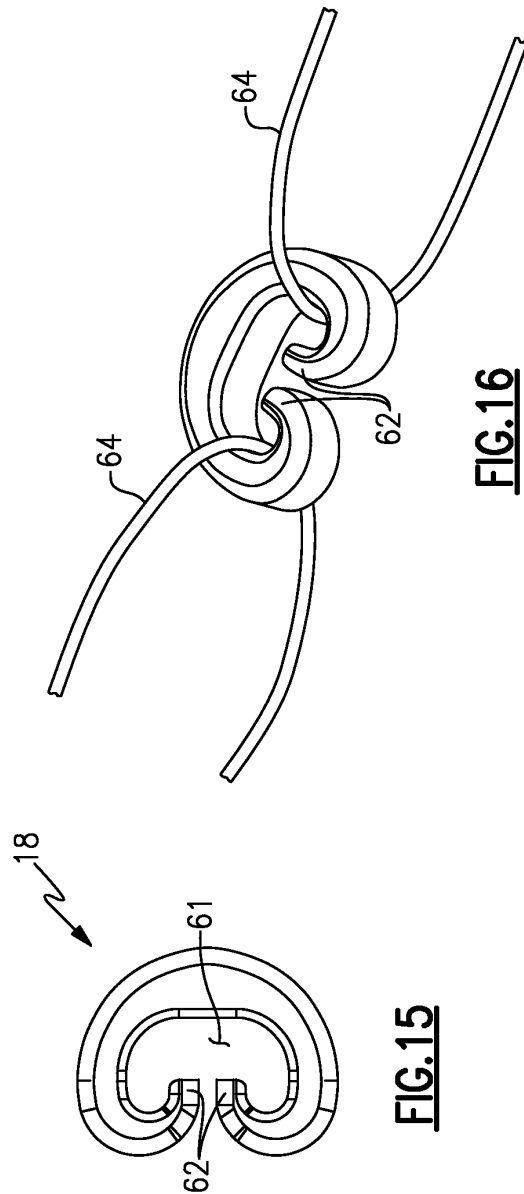


FIG.16

FIG.15

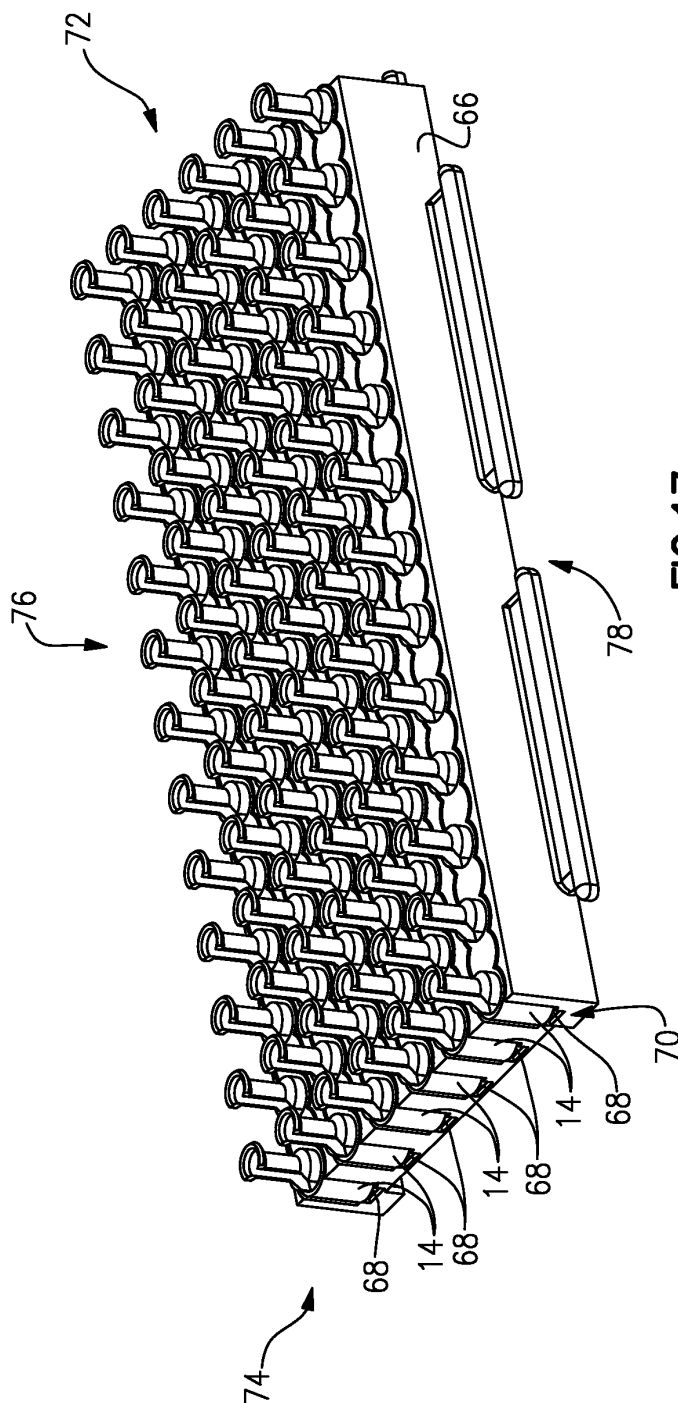
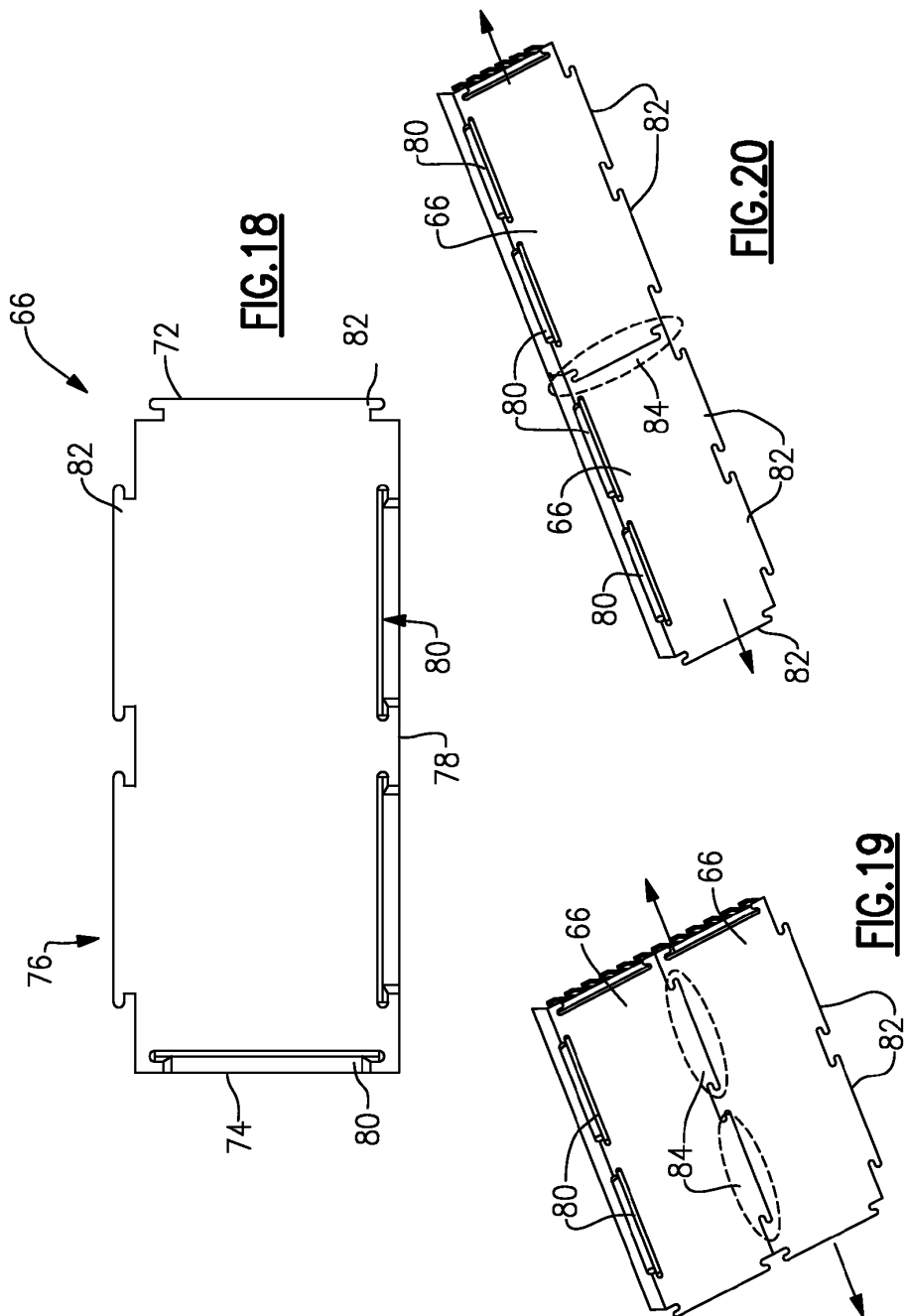


FIG. 17



BRUNNIAN LINK MAKING DEVICE AND KIT

REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Appli- 5
 cation No. 61/410,399 filed on Nov. 5, 2010.

BACKGROUND

This disclosure generally relates to method and device for 10
 creating a linked item. More particularly, this disclosure
 relates to a method and device for creating a linked wearable
 item from elastic bands.

Kits that include materials for making a uniquely colored 15
 bracelet or necklace have always enjoyed some popularity.
 However such kits usually just include the raw materials such
 as different colored threads and beads and rely on the indi-
 vidual's skill and talent to construct a usable and desirable
 item. Accordingly there is a need and desire for a kit that
 provides not only the materials for creating a unique wearable 20
 item, but also that simplifies construction to make it easy for
 people of many skill and artistic levels to successfully create
 a desirable and durable wearable item.

SUMMARY

A Brunnian link is a link formed from a closed loop 25
 doubled over itself to capture another closed loop to form a
 chain. Elastic bands can be utilized to form such links in a
 desired manner. The example kit and device provides for
 creation of Brunnian link articles of complex configurations.
 Moreover, the example kit provides for the successful crea- 30
 tion of unique wearable articles using Brunnian link assem-
 bly techniques.

The example kit includes several pin bars that are sup- 35
 ported in a desired spatial orientation by at least one base. The
 desired spatial orientation is dependent on the desired link
 configuration of the completed article. The base and pin bars
 may be assembled in various combination and orientations to
 provide endless variation of completed link orientations. 40
 Moreover, additional bases and pin bars can be added to
 further expand possible completed article creation.

Each of the pin bars includes a flanged top portion for 45
 holding elastic bands in place and a front access groove. The
 front access groove provides for a hook to be inserted below
 a top most elastic band such that a lower band can be grasped
 and pulled over an adjacent band to form the Brunnian link.
 The disclosed kit provides for many possible orientations of
 adjacent pins, and therefore different orientations of and 50
 designs for a completed linked article.

These and other features disclosed herein can be best
 understood from the following specification and drawings,
 the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an example kit for creating
 a Brunnian link article.

FIG. 2 is schematic view of Brunnian link articles.

FIG. 3 is a schematic view of a series of Brunnian links.

FIG. 4 is a perspective view of an example pin bar.

FIG. 5A is a perspective view of interfacing surfaces of an
 example base and the example pin bar.

FIG. 5B is a perspective view of a pin bar mounted to an
 example base.

FIG. 6 is a perspective view of one pin of the example pin
 bar.

FIG. 7 is front view of one example pin.

FIG. 8 is side view of an example pin.

FIG. 9 is a top view of an example pin.

FIG. 10A is a perspective view of an example base.

FIG. 10B is a perspective view of another example base.

FIG. 11A is a bottom view of the example base.

FIG. 11B is a bottom view of another example base.

FIG. 12 is an assembly view of several bases assembled to
 several pin bars.

FIG. 13 is an assembly view of several pin bars mounted
 relative to each other in one desired special orientation.

FIGS. 14A-C are perspective views of assembly steps for
 creating a Brunnian linked article.

FIG. 15 is a plan view of an example clip for securing loose
 ends of a Brunnian linked article.

FIG. 16 is perspective view illustrating elastic bands
 secured with the example clip.

FIG. 17 is a perspective view of an example base template
 for holding pin bars in a desired special orientation.

FIG. 18 is a bottom view of the example base template.

FIG. 19 is a perspective view of side by side attachment of
 two base templates.

FIG. 20 is a perspective view of an end to end attachment of
 two base templates.

DETAILED DESCRIPTION

Referring to FIG. 1, an example kit is indicated at 10 for
 creating Brunnian link items such as bracelets, necklaces and
 other wearable or decorative items shown in FIG. 2.

Referring to FIG. 3, a Brunnian link 20 is formed from a
 continuous looped structure without forming an actual knot.
 Several links are formed in a chain to form a circular struc-
 ture. The ends are then secured and a durable wearable item
 is created. In this example three closed looped elastic items 35
 such as rubber bands are shown forming a single chain. Each
 link is formed by capturing ends 22 of one loop structure with
 a mid portion 24 of another loop structure in series. Each link
 depends on the previous and subsequent links to maintain the
 desired shape and integrity. Removing one link 20 results in
 all of the links becoming loose from each other.

Referring to FIG. 1, the example kit 10 includes a base 12
 that supports pin bars 14 that each includes a plurality of pins
 26. A hook tool 16 is included for grasping and moving bands
 from one pin 26 to another. A clip 18 receives ends of the
 completed links to complete and secure the linked item. One
 or several pin bars 14 are mounted to several bases 12 as is
 shown to support the pin bars 14 and the corresponding pins
 26 in a desired alignment. In this example, a center pin bar 14
 is incremented one up from the two outermost pin bars 14. 50
 This alignment provides for creation of a desired linked item.
 In this example three bases 12 are utilized to support the pin
 bars 14 in a desired relative orientation.

Referring to FIGS. 4, 5A-B, with continued reference to
 FIG. 1, the base 12 includes a plurality of upward extending
 cylinders 28 that are received within a corresponding opening
 30 defined at the bottom of each pin 26 the pin bar 14. The
 cylinders 28 of the base 12 and the openings 30 receiving the
 cylinders 28 are mating features that define a slight interfe-
 rence fit to hold the pin bar 14 in place. Although three bases
 12 are shown in this example, more or less could be utilized to
 support additional numbers of pin bars 14.

The base 12 includes tabs 32 disposed between the cylin-
 ders 28 that fit within corresponding slots 34 defined on the
 pin bar 14. The interface between the tabs 32 and slots 34
 provide alignment and maintain the upright orientation of the
 pin bars 14. Each of the pins 26 includes a front slot 36 that 65

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receives a boss 38 defined between cylinders 28 of the base 12. The front slot 34 and boss 38 interface further aligns and supports the pin bar 14 on the base 12.

The pin bar 14 is an integral structure having the plurality of pins 28 defined in a single row. Each of the pins 28 are spaced an equal distance A apart. Each of the pins 28 includes a flanged top 38 and a front access groove 40.

Referring to FIGS. 6, 7, 8 and 9, each pin 26 extends upward from a bar portion 42 and include features for holding and spacing rubber bands. Each pin 26 includes the flanged top 38 that is flared outward to prevent errant release of a rubber band during creation of a link. The access groove 40 is a longitudinal groove that extends inward toward a center of the pin 26. The access groove 40 extends from the bar portion 42 to an open end with the flanged top 38. The groove 40 provides a clearance for insertion of the hook tool 16 (FIG. 1) utilized for moving ends of a rubber band between pins 32.

Each of the pins 26 includes a bottom portion 44 that is flared outward from a diameter of a mid portion 46. The mid portion 46 of the pin 26 is where a rubber band is secured during assembly. The bottom portion 44 is flared outward to prevent the rubber band from slipping downward against the bar portion 42. The top and bottom flared portions 38, 44 centers the rubber bands in the mid portion 46 to provide a desired alignment during assembly. The edges of the flange 38 are rounded over to eliminate sharp edges or surfaces.

Referring to FIGS. 10A and 11A, the example base 12 includes three rows of three cylinders 28 that are spaced equal distance from each other. The tabs 32 and bosses 37 are received within corresponding slots 34 and 36 formed on the pin bar 14. A stabilizer 50 is disposed between each row of cylinders 28 to provide further lateral support for the pin bars 14.

Referring to FIGS. 10B and 11B, another example base 12' includes a three row of six cylinders 28 that are spaced an equal distance from each other. The additional cylinders 28 provided by the larger example base 12' provide for mounting of additional pin bars 14 with the same number of bases 12'. As appreciated, it is within the contemplation of this disclosure to provide a base with any number of rows of and columns of cylinders 28 that provide varying mounting configurations for the pin bars 14.

Referring to FIGS. 12 and 14, the base 12 is utilized to set a desired pattern and uniform spacing between several pin bars 14. Accordingly, each of the bases 12 can engage one or several pin bars 14. The base 12 can engage and receive three pin bars 14 longitudinally, and/or may be added to a side of a group of pin bars to add additional pin bars beyond the three provided for by one base 12. FIG. 12 illustrates a configuration where three bases are supporting three pin bars 14 and two additional bases 12 are engaged to the current pin bars 14 with only one row such that two rows of cylinders 28 extend laterally to receive additional pin bars 14. FIG. 13 illustrates a configuration where five pin bars 14 are aligned side by side as provided by the additional bases 12 extending laterally as shown in FIG. 12. As is appreciated, the extent to which additional bases and pin bars 14 can be added and the configurations possible are limited only by the desire of the user of the disclosed kit. The addition of pin bars 14 provides for more unique and intricate designs limited only by the imagination of the user of the kit.

Referring to FIGS. 14A-C, a method of forming a Brunnian link as provided by the example kit includes the initial step of loading elastic bands onto adjacent pins 26. In this example, beginning at the right most ends each rubber band are stretched over adjacent pins and held at the mid portion. A first elastic band 52 is placed between a first pair of adjacent

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pins 26 A second elastic band 54 is then placed over one end of the previously assembled first elastic band 52, and then a third elastic band 56 and so on until the desired number of rubber bands have been placed on corresponding pin bars 14. Note that in these example only three elastic bands 52, 54, and 56 are shown for explanation purposes, however, in practice, many elastic bands would be utilized to provide the desired length of a completed article.

Once the elastic bands 52, 54, and 56 are placed on each of the pins 26, the hook 16 is inserted into the access groove 40 and moved downward past the top most elastic bands 56. The hook 16 is then moved outward from the groove in a direction indicated by arrow 58 a sufficient distance to allow for one end of the elastic band 54 to be caught in the hook end. Further lifting pulls the captured end of the second elastic band 54 in the direction indicated by 60 up through the end of the third elastic band 56 for assembly on to another adjacent pin 26 as is shown in FIG. 14B. The captured end is pulled up and over the flanged top 38 and pulled back onto the adjacent pin to form a single link. The captured end of the elastic band 54 is then released to engage the adjacent pin 26. This process is repeated until a chain of links a desired length is obtained.

The example illustrated in FIGS. 14A, 14B and 14C illustrate a chain formed from a single row of links. The example base template 12 can be arranged to support many pin bars 14 and therefore links can be formed longitudinally and laterally across adjacent pin bar 14 to form a wide variety of link configurations and combinations.

Referring to FIGS. 15 and 16, once the link is created, the clip 18 is used to secure the ends such that the fabricated chain of links does not come undone. The clip 18 is substantially C-shaped with an inward facing ends 62 that trap ends of the elastic bands 64 within the inner area 61.

Referring to FIGS. 17-20, an example base template 66 is shown for holding six pin bars 14 in a desired orientation. Each of the example pin bars 14 includes the opening 30 of a defined size and the base template 66 includes a plurality of circular bosses 68 that are sized to provide a desired tight interference fit with the openings 30 in the pin bar 14 such that the pin bar 14 is retained in place within grooves 70 of the base template 66. The interference fit between the pin bar 14 and the bosses of the base template 66 assure a positive mounting and securing of to the base to prevent separation during use and construction of a desired wearable item.

Referring to FIGS. 18, 19 and 20, the base template 66 includes first and second ends 72, 74 and first and second sides 76, 78 between the first and second ends 72, 74. The first end 72 includes a male joint 80 and the second end 74 includes a corresponding female joint 80. The first side 76 includes a male joint 82 and the second side 78 includes a female joint 80. The alternating sides provide for attachment of several base templates 66 to each other to provide extended capability.

FIG. 19 illustrates two base templates 66 connected to each other in a side-to-side configuration by way of joints 84. FIG. 20 illustrates two base templates 66 connected to each other in an end-to-end configuration by way of joint 84. As appreciated, any number of base templates 66 can be secured to each other to form many different desired configurations. The different configurations provide for many options for creating different shapes and configurations of wearable items.

Accordingly, the example kit and method provide for the creation of many different combinations and configurations of Brunnian links for the creation of bracelets, necklaces, and other wearable items. Moreover, the example kit is expandable to further create and expand the capabilities of potential Brunnian link creations. Further, the example kit provides for

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the creation of such links and items in an easy manner allowing persons of varying skill levels to be successful in creating unique wearable items.

Although an example embodiment has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this disclosure. For that reason, the following claims should be studied to determine the scope and content of this invention.

What is claimed is:

1. A kit for creating an item consisting of a series of links, the device comprising:
a base; and

at least one pin bar supported on the base, the pin bar including a plurality of pins each including a top flared portion for holding a link in a desired orientation and an opening on a front side of each of the plurality of pins.

2. The kit as recited in claim 1, wherein the pin bar and the base including corresponding mating features for securing the pin bar to the base.

3. The kit as recited in claim 2, wherein the base includes a plurality of mating structures receivable within a mounting opening defined within each of the plurality of pins with an interface between each of the mating structures and mounting openings defining an interference fit.

4. The kit as recited in claim 3, wherein each of the mating structures comprises upright extending cylinders and the mounting openings are round to receive a corresponding one of the cylinders.

5. The kit as recited in claim 1, wherein each of the plurality of pins includes a bottom flared portion spaced apart from the top flared portion and a mid portion for holding a link.

6. The kit as recited in claim 1, wherein the base comprises a plurality of bases for securing a plurality of pin bars in a desired relative special orientation for forming the series of links in a desired pattern.

7. The kit as recited in claim 6, wherein the base comprises a key and each of the plurality of pin bars includes a corresponding slot for aligning each of the plurality of pin bars relative to the base and to others of the plurality of pin bars.

8. The kit as recited in claim 1, including a hook adapted to extend into the access groove for capturing one end of a link.

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9. The kit as recited in claim 1, including a clip for securing ends of the series of links together.

10. The kit as recited in claim 1, wherein the series of links comprises a series of elastic bands.

11. The kit as recited in claim 1, wherein the series of links comprise a series of Brunnian links.

12. A method of creating a linked item comprising the steps of:

supporting at least one pin bar including a plurality of pins to a base to define a desired relative special relationship between at least two adjacent pins;

assembling at least two elastic bands across adjacent pins; capturing one end of an elastic band and pulling the end over and onto an adjacent pin while engaged with another elastic band; and

capturing and pulling subsequent ends over until a desired link length and configuration is obtained.

13. The method as recited in claim 12, wherein a second of the at least two elastic bands is placed atop one end of the first of the at least two elastic bands on a common pin.

14. The method as recited in claim 13, wherein capturing one end of the elastic band includes using a hook tool reaching into an access groove of the pin to extend below the top most elastic band and grasp a bottom elastic band with the hook tool.

15. The method as recited in claim 12, including assembling a plurality of pin bars to a base to provide parallel rows of pins.

16. The method as recited in claim 15, including the step of assembling the plurality of pin bars to a corresponding plurality of bases to define a desired pattern of pins.

17. The method as recited in claim 15, including assembling a plurality elastic bands in a desired pattern to the plurality of pin bars including at least one elastic band that extends between pins of another pin bar.

18. The method as recited in claim 15, including the step of inserting ends of the elastic bands into a clip to form the linked item.

* * * * *



US008418434B1

(12) **United States Patent**
Carruth et al.

(10) **Patent No.:** **US 8,418,434 B1**
(45) **Date of Patent:** **Apr. 16, 2013**

(54) **FASHION ACCESSORY OF INTEGRATED CONTINUOUS UNITS AND METHODS OF MAKING THEREOF**

(76) Inventors: **Jack Carruth**, Woodstock, GA (US);
Danielle Carruth, Woodstock, GA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 35 days.

(21) Appl. No.: **13/177,180**

(22) Filed: **Jul. 6, 2011**

Related U.S. Application Data

(60) Provisional application No. 61/361,990, filed on Jul. 7, 2010.

(51) **Int. Cl.**
F16G 13/16 (2006.01)
F16G 15/12 (2006.01)

(52) **U.S. Cl.**
USPC **59/83**; 59/80; 59/85; 59/90; D11/12;
D11/13

(58) **Field of Classification Search** 59/78, 80,
59/82, 83, 84, 85, 90, 91, 92; D11/3, 12,
D11/13

See application file for complete search history.

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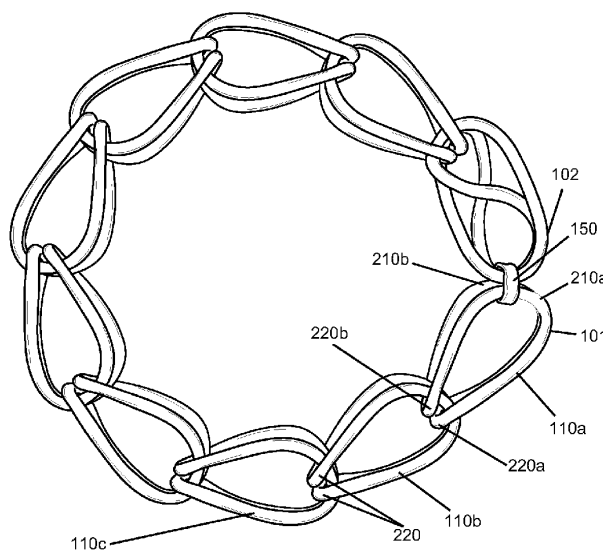
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Primary Examiner — David B Jones

(57) **ABSTRACT**

A fashion accessory featuring a plurality of units connected together to form a continuous chain having a first end and a second end. The first end and second end are connected together via a locking means. Each unit is a loop. The units each occupy a folded configuration. In the folded configuration, the unit is folded in half to form a first top arc and a second top arc that are positioned next to each other, and a first bottom hook and a second bottom hook that are positioned across from each other. Adjacent units are fed through both bottom hooks and subsequently moved to occupy the folded configuration.

8 Claims, 2 Drawing Sheets



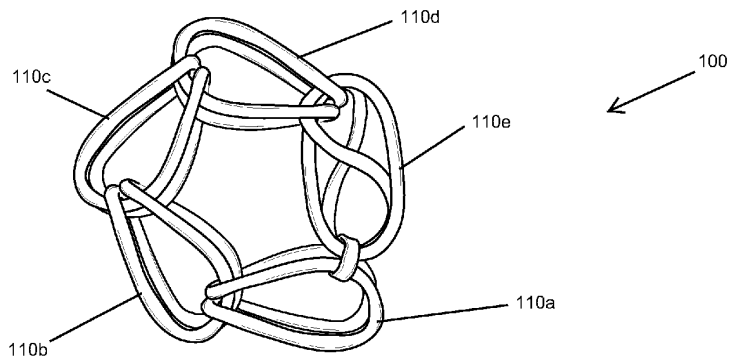


FIG. 1

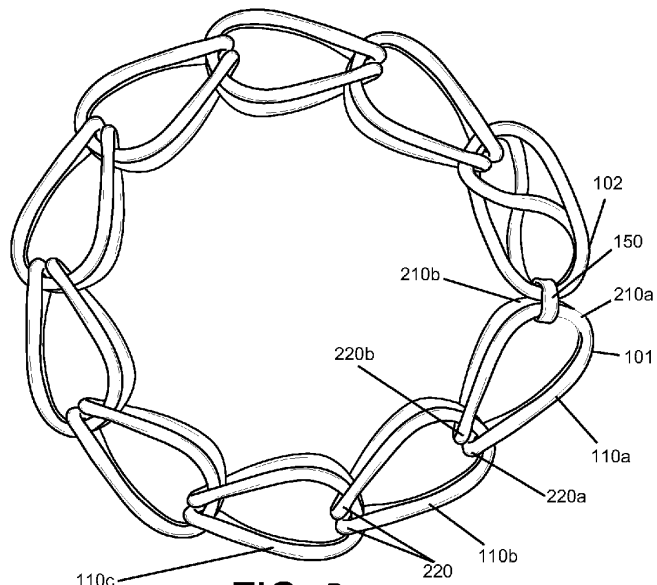


FIG. 2

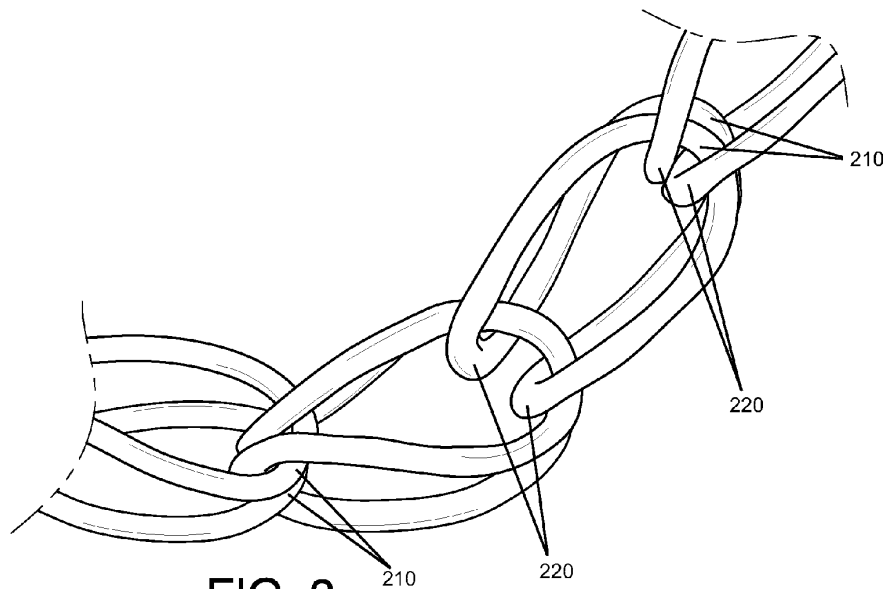


FIG. 3

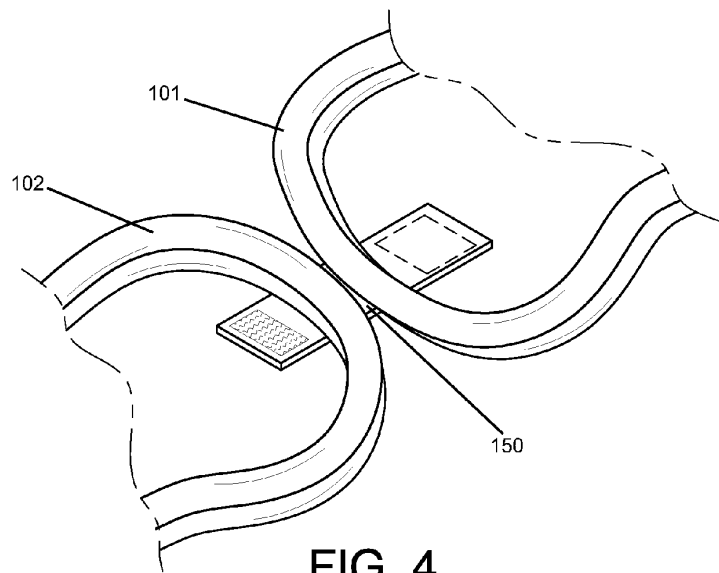


FIG. 4

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**FASHION ACCESSORY OF INTEGRATED
CONTINUOUS UNITS AND METHODS OF
MAKING THEREOF**

CROSS REFERENCE

This application claims priority to U.S. provisional application Ser. No. 61/361,990 filed Jul. 7, 2010, the specification of which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

The present invention is directed to a fashion accessory, more particularly to an accessory made from integrated continuous units.

BACKGROUND OF THE INVENTION

The present invention features a novel fashion accessory, which may be used for a variety of purposes and applications. For example, in some embodiments, the accessory of the present invention is used as a necklace, a bracelet, an anklet, a dog collar, a luggage tag holder, a headband, a hatband, an eyeglasses holder, a backpack accessory, a keychain, the like, or a combination thereof. The present invention is in no way limited to the aforementioned applications.

Any feature or combination of features described herein are included within the scope of the present invention provided that the features included in any such combination are not mutually inconsistent as will be apparent from the context, this specification, and the knowledge of one of ordinary skill in the art. Additional advantages and aspects of the present invention are apparent in the following detailed description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 2 is a top view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 3 is an exploded view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 4 is an alternate embodiment of a fashion accessory of integrated continuous units and methods of making thereof.

DESCRIPTION OF PREFERRED
EMBODIMENTS

Referring now to FIGS. 1-4, the present invention features a novel fashion accessory **100**. The accessory **100** of the present invention features a plurality of integrated continuous units **110**, in some embodiments geometrically-shaped units. In some embodiments, the units are bands (e.g., similar to hair bands, which are well known to one of ordinary skill in the art).

As used herein, the term “connecting mechanism” refers to any appropriate linking, interlinking, looping, and interlooping of the units **110**.

The accessory **100** of the present invention comprises a plurality of units **110**, for example a first unit **110a**, a second unit **110b**, a third unit **110c**, a fourth unit **110d**, a fifth unit **110e**, etc. In some embodiments, the accessory **100** comprises three or more units **110**. In some embodiments, the accessory **100** comprises four or more units **110**. In some embodiments, the accessory **100** comprises five or more units **110**. In some embodiments, the accessory **100** comprises six

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or more units **110**. In some embodiments, the accessory **100** comprises seven or more units **110**. In some embodiments, the accessory **100** comprises eight or more units **110**. In some embodiments, the accessory **100** comprises nine or more units **110**. In some embodiments, the accessory **100** comprises ten or more units **110**.

The units **110** are loops. In some embodiments, the units **110** have a generally rounded shape (prior to integration into the accessory), similar to how a hair band has a generally rounded shape. In some embodiments, the units **110** have an alternate general shape, for example a triangular shape, a star shape, a rectangle shape, a pentagon shape, a hexagon shape, an irregular shape, etc. The present invention is not limited to the aforementioned shapes.

In some embodiments, the units **110** are flexible. In some embodiments, the units **110** are rigid. In some embodiments, the units **110** are constructed from a material comprising elastic, allowing for the units **110** to stretch.

In some embodiments, a decorative component is disposed on one or more of the unit **110**. Decorative components are well known to one of ordinary skill in the art. For example, in some embodiments, the decorative component is glitter, a bead, a sticker, a flower, a bow, a key ring, a luggage tag, a dog tag, a locket, a picture, a glow-in-the dark component, the like, or a combination thereof. The present invention is not limited to the aforementioned decorative components. The decorative components may be directly or indirectly attached to the units **110**.

The units **110** are interlocked to form a continuous chain (e.g., via a connecting mechanism). For example, as shown in FIG. 3, to form the chain, a first unit **110a** is folded (e.g., in half) in a folded configuration, wherein the folded configuration has a first top arc **210a** and a second top arc **210b** that are positioned next to each other, and a first bottom hook **220a** and a second bottom hook **220b**, wherein the bottom hooks **220** are positioned across from each other. A second unit **110b** is fed through both bottom hooks **220** of the first unit **110**, then the second unit **110b** is folded to the folded configuration (as described above). A third unit **110c** is fed through both bottom hooks **220** of the second unit **110**, then the third unit **110c** is folded to the folded configuration (as described above). Additional units **110** are added as described until a desired length or number of units **110** is achieved.

When the units **110** are interlocked to form a continuous chain, the accessory has a first end **101** and a second end **102**. The first end **101** and second end **102** can be connected together via a locking means **150**. The locking means **150** may be one or more of any securing or locking devices well known to one of ordinary skill in the art, for example a mating-type engagement, e.g., a clip mechanism, a snap mechanism, a hook mechanism, a latch mechanism, a magnet mechanism, a hook-and-loop fastener mechanism, the like, or a combination thereof. Other similar mechanisms are well known to one of ordinary skill in the art. In some embodiments, the ends **101**, **102** are temporarily connected together or permanently connected together.

As used herein, the term “about” refers to plus or minus 10% of the referenced number. For example, an embodiment wherein the accessory **100** is about 10 inches in length as measured from the first end **101** to the second end **102** includes an accessory **100** that is between 9 and 11 inches in length.

The disclosures of the following U.S. Patents are incorporated in their entirety by reference herein: U.S. Design Pat. No. D450614; U.S. Pat. No. 6,880,364; U.S. Pat. No. 7,040,120; U.S. Pat. No. 7,293,429; U.S. Design Pat. No. D592537;

U.S. Patent Application No. 2002/0043077; U.S. Patent Application No. 2008/0190137; U.S. Patent Application No. 2009/0255295.

EXAMPLE 1

Construction

Example 1 describes an example of constructing the accessory 100 of the present invention. In some embodiments, the accessory 100 of the present invention is constructed by linking the units 110 through a predetermined looping or linking guide; however, the present invention is not limited to this manufacturing or construction process or method. The guide may, for example, comprise a linear device continuous from a first end and a second end, wherein the first end and the second end are each open ends of the guide. The guide may be replaced with any other type device that services the same function as would be evident and obvious to those of ordinary skill in the art.

In some embodiments, a first unit 110a is placed against the guide such that the first unit 110a is folded substantially or in part back over on itself over a dominant axis of the guide, thereby creating a smaller area of overlapping enclosed space within the band when viewing from an axis perpendicular to the fold and where such enclosed space is also partially defined by the guide (e.g., or if not guide is used, defined partially by the axis of the fold). A second unit 110b is then placed through such newly created smaller interior space of the first unit 110a and the second band 110b is similarly folded upon itself to create a smaller interior space while partially remaining within the smaller created interior space of the first unit 110a, thereby linking the first unit 110a and the second unit 110b without compromising the continuity of the units 110. A third unit 110c is then placed within the newly created smaller interior space of the second unit 110b along the same method as previously described. Similarly, the third unit 110c is then folded upon itself while still remaining partially enclosed within the smaller created enclosed interior space of the second unit 110b. More units 110 can be added depending on the desired length for the article.

When the desired length and/or desired number of units 110 has been achieved, the accessory 100 has a first end 101 and a second end 102. The first end 101 and the second end 102 can be connected via a locking means 150. The locking means 150 may be one or more of any securing or locking devices well known to one of ordinary skill in the art, for example a mating-type engagement, e.g., a clip mechanism, a snap mechanism, a hook mechanism, a latch mechanism, a magnet mechanism, a hook-and-loop fastener mechanism, the like, or a combination thereof. Other similar mechanisms are well known to one of ordinary skill in the art.

Various modifications of the invention, in addition to those described herein, will be apparent to those skilled in the art from the foregoing description. Such modifications are also intended to fall within the scope of the appended claims. Each reference cited in the present application is incorporated herein by reference in its entirety.

Although there has been shown and described the preferred embodiment of the present invention, it will be readily apparent to those skilled in the art that modifications may be made thereto which do not exceed the scope of the appended claims. Therefore, the scope of the invention is only to be limited by the following claims.

The reference numbers recited in the below claims are solely for ease of examination of this patent application, and are exemplary, and are not intended in any way to limit the

scope of the claims to the particular features having the corresponding reference numbers in the drawings.

What is claimed is:

1. A fashion accessory (100) comprising a plurality of units (110) connected together to form a continuous chain having a first end (101) and a second end (102), the first end (101) and second end (102) are connected together via a locking means (150), wherein a unit (110) is a generally round loop that is elastic and flexible, wherein the units (110) each occupy a folded configuration, in the folded configuration the unit (110) is folded in half to form a first top arc (210a) and a second top arc (210b) that are positioned next to each other, and a first bottom hook (220a) and a second bottom hook (220b) that are positioned across from each other, wherein adjacent units (110) are fed through both bottom hooks (220) and subsequently moved to occupy the folded configuration; wherein the unit (110) is a flexible, elastic hair band.

2. The accessory (100) of claim 1 comprising six or more units (110).

3. The accessory (100) of claim 1 comprising eight or more units (110).

4. The accessory (100) of claim 1 comprising ten or more units (110).

5. The accessory (100) of claim 1 comprising twelve or more units (110).

6. The accessory (100) of claim 1, wherein a decorative component is disposed on one or more of the units (110).

7. A fashion accessory (100) consisting of a plurality of units (110) connected together to form a continuous chain having a first end (101) and a second end (102), the first end (101) and second end (102) are connected together via a locking means (150), wherein a unit (110) is a generally round loop that is elastic, and flexible, wherein the units (110) each occupy a folded configuration, in the folded configuration the unit (110) is folded in half to form a first top arc (210a) and a second top arc (210b) that are positioned next to each other, and a first bottom hook (220a) and a second bottom hook (220b) that are positioned across from each other, wherein adjacent units (110) are fed through both bottom hooks (220) and subsequently moved to occupy the folded configuration;

wherein the unit (110) is a flexible, elastic hair band.

8. A method of forming a novel fashion accessory (100) from a plurality of flexible, elastic hair band units (110) comprises:

(a) obtaining a plurality of units (110);

(b) folding a first unit (110a) in half to a folded configuration, wherein the folded configuration has a first top arc (210a) and a second top arc (210b) that are positioned next to each other, and a first bottom hook (220a) and a second bottom hook (220b) that are positioned across from each other;

(c) feeding a second unit (110b) through the first bottom hook (220a) and the second bottom hook (220b) of the first unit 110;

(d) folding the second unit (110b) to the folded configuration;

(e) feeding a third unit (110c) through the first bottom hook (220a) and the second bottom hook (220b) of the second unit (110);

(f) folding the third unit (110c) to the folded configuration;

(g) repeating the steps (c) through (f) of feeding, then folding, for additional unit (110) until a desired length or number of units (110) is achieved, wherein the units 110 are interlocked to form a continuous chain, wherein the accessory has a first end 101 and a second end 102;

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(h) connecting the first end (101) and the second end (102) together via a locking means (150).

* * * * *

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US005426788A

United States Patent [19]
Meltzer

[11] **Patent Number:** **5,426,788**
[45] **Date of Patent:** **Jun. 27, 1995**

- [54] **RING-LIKE HEADWEAR ORNAMENT**
- [75] **Inventor:** Faith M. L. Meltzer, Ambler, Pa.
- [73] **Assignee:** U.S.A. Knitting Co., Inc., Philadelphia, Pa.
- [21] **Appl. No.:** 219,595
- [22] **Filed:** Mar. 29, 1994
- [51] **Int. Cl.⁶** A42C 5/00
- [52] **U.S. Cl.** 2/171; 2/207; 2/DIG. 11
- [58] **Field of Search** 2/1, 171, 174, 207, 2/311, DIG. 11; 59/78, 79.1, 80, 82, 83; 63/3, 4, 5.1, 11; 87/13; 132/273, 275; D2/894, 895; D11/3, 4, 5, 6, 93

- [56] **References Cited**
- U.S. PATENT DOCUMENTS**
- 568,531 9/1896 Harthan 59/83
- 2,840,983 7/1958 Keilbach 63/11
- 5,073,989 12/1991 Teague 2/DIG. 11

Primary Examiner—Clifford D. Crowder
Assistant Examiner—Diana L. Biefeld
Attorney, Agent, or Firm—Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd.

[57] **ABSTRACT**

An ornament, e.g., a hair band, headband, hat band, etc., and method of making it. The ornament comprises a plurality of looped links and a looped connecting member. Each of the looped links is formed of an flexible, somewhat elastic, e.g., knitted, material in the nominal shape of a toroidal loop, but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection. The looped connecting member is in the form of a loop of the same material and has a central opening. The looped links are interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends. One of the ends of the chain-linked strip comprising the looped connecting member and the other end comprises the looped link forming that end. The looped connecting member is extended through the open ends of the looped link forming the other end of the chain-linked strip and is folded back over itself and secured, e.g., glued, to a portion of it to convert the chain-link strip into a ring. The looped connecting member simulates the shape of the other looped links of the ring.

17 Claims, 3 Drawing Sheets

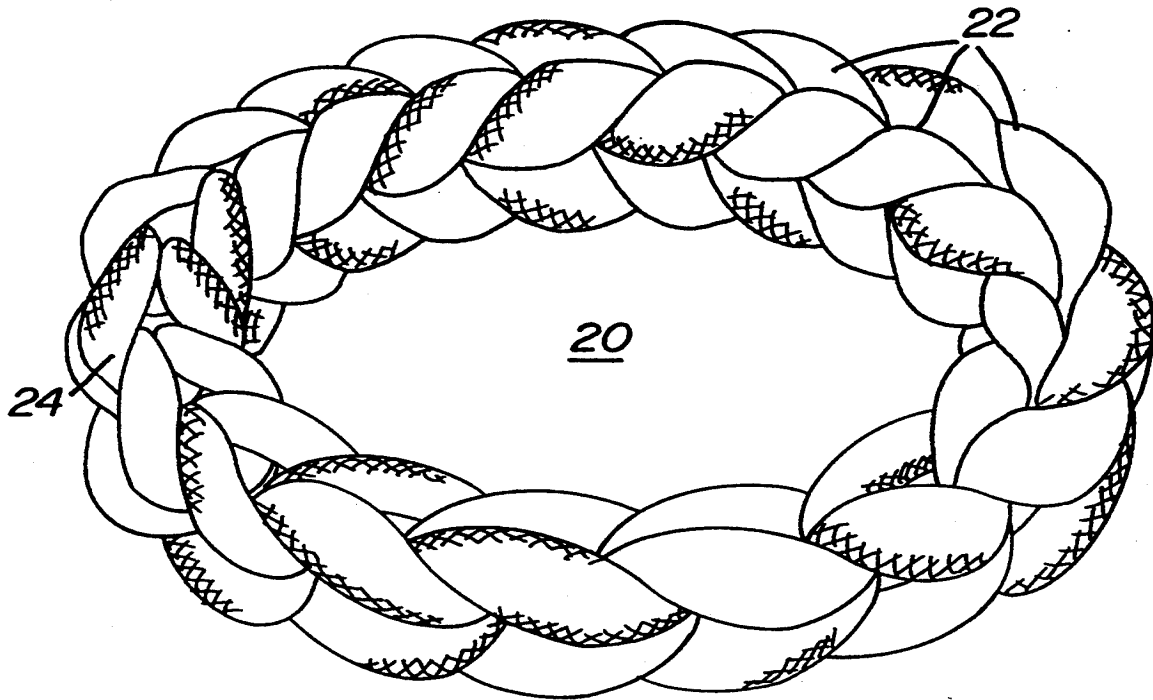
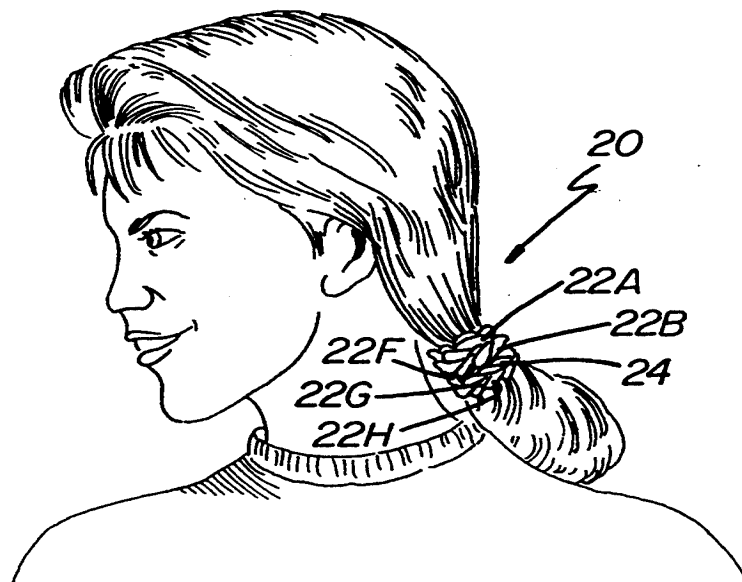




FIG. 2

FIG. 1



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Tristar Ex. 1004, pg. 109

FIG. 3

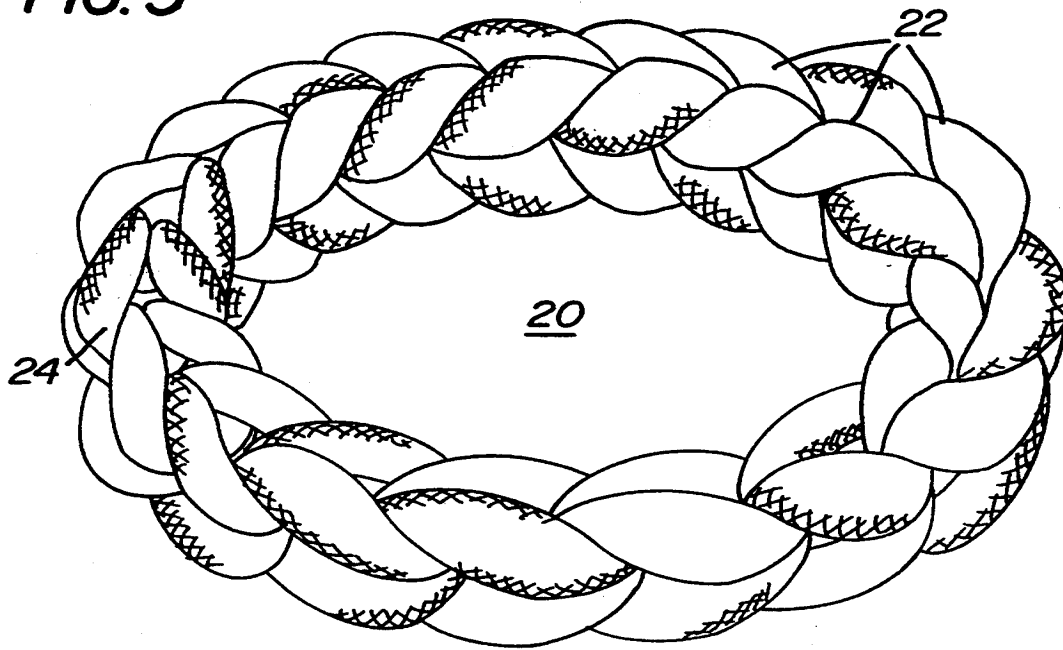
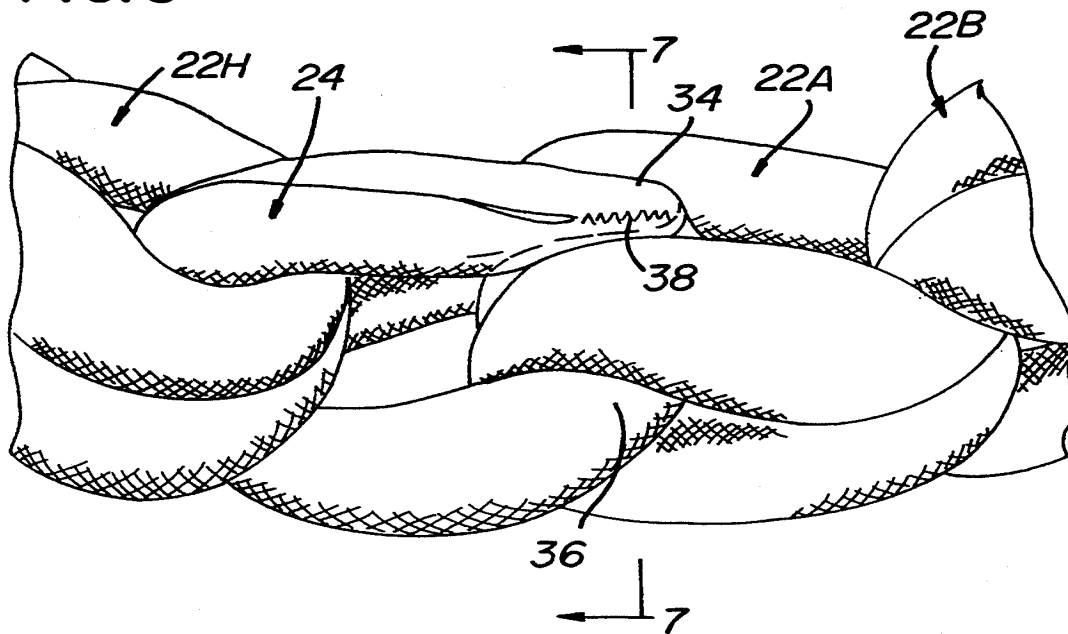
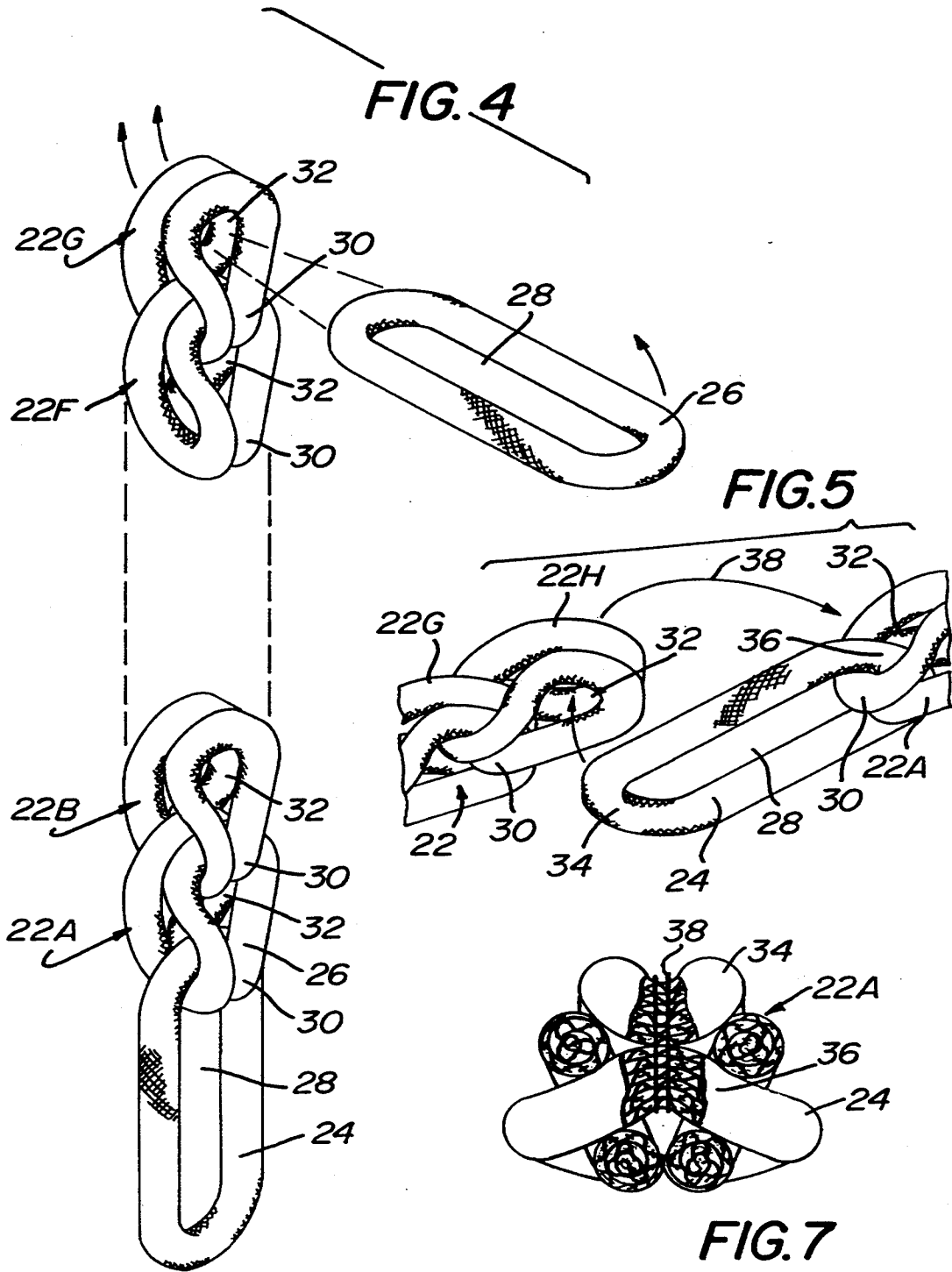


FIG. 6





RING-LIKE HEADWEAR ORNAMENT

BACKGROUND OF THE INVENTION

This invention relates generally to hair ornaments, and more particularly to devices for holding hair, e.g., a ponytail holder, or to be worn on the head as a headband or on a hat as a hat band.

Various elastic rings are commercially available for use as ponytail holders and some are the subject of United States Letters Patent. For example in U.S. Pat. No. 292,030 (Revson) there is shown a gathered fabric ring for holding a pony tail. Commercially available devices bearing that patent number are constructed utilizing a generously sized ring of a decorative fabric and having an elastic ring disposed therein to cause the fabric ring to gather into many folds. Resulting ring can then be used directly or twisted up into a "figure 8" configuration to hold strands of gathered hair, e.g., a ponytail.

In U.S. Pat. No. 5,156,171 (Goodman) there is disclosed a ponytail holder which is formed of a relatively wide fabric ring having a tubular annulus around a central hole, and an elastic ring having a portion that is readily grasped, as by having a knob, such as a bead, for pulling a loop of the elastic ring outside of the fabric ring. The fabric ring with its contained portion of the elastic ring, can encircle a pony tail once and grip the pony tail and the loop of the elastic ring outside the fabric ring can encircle the pony tail separately.

In U.S. Pat. No. 5,044,385 (Rhodes) there is disclosed a ponytail holder comprising an endless planar elastic band and at least one flattened hollow tube of a flexible material and having mutually interconnecting end edges. The flattened tube is interconnected to the elastic band along the axial length of the tube and the band while the band is in an expanded or stretched condition. The hollow tube includes radially inwardly directed cut edges extending through less than the width of the tube to form two ply radially outwardly extending members which simulate petals of a flower.

While the aforementioned patents appear generally suitable for their intended purposes, e.g., to hold the strands of hair forming a pony tail, the never the less leave something to be desired from one or more of the following standpoints, aesthetic appeal, effectiveness, ruggedness or resistance to damage from repeated usage, ease of manufacture, cost.

Hence, a need presently exists for a hair/head ornament which address those deficiencies of the prior art.

OBJECTS OF THE INVENTION

Accordingly, it is a general object of this invention to provide a hair/head ornament which overcomes the disadvantages of the prior art.

It is a further object of this invention to provide a hair/head ornament which is aesthetically pleasing.

It is still a further object of this invention to provide a hair/head ornament which is easy to make.

It is still a further object of this invention to provide a hair/head ornament which can be manufactured at a relatively low cost.

It is yet a further object of this invention to provide a hair/head ornament which is of rugged construction to be resistant to damage from repeated usage.

SUMMARY OF THE INVENTION

These and other objects of this invention are achieved by providing a ring-like ornament, e.g., a hair band, headband, hat band, etc., for wearing on a portion of a person and a method of making the ornament.

The ornament comprises a plurality of looped links and a looped connecting member. Each of the looped links is formed of an flexible, somewhat elastic material in the nominal shape of a loop but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection. The looped connecting member is in the form of a loop having a central opening.

The looped links are interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends. One of the ends of the chain-linked strip comprises the looped connecting member. The other of the ends of the strip comprises a pair of openings of the looped link forming that other end.

The looped connecting member is bent into a shape having a free end which is extended through the openings of the looped link forming the other of the ends of the chain-linked strip and is bent over itself and secured by securement means to another portion of it to connect the ends of the chain-link strip and thereby form a ring-like ornament and so that the looped connecting member is shaped to simulate the shape of the looped links.

The method of the making the ornament entails providing a looped connecting member and a plurality of looped links formed of an flexible, somewhat elastic material in the nominal shape of a loop. The looped connecting member has a central opening and is formed of the same material as the looped links. The looped links are connected together by supporting the looped connecting member, squeezing a first looped link together to flatten it somewhat and passing the flattened first looped link within the central opening of the looped connecting member. Then the first looped link is opened within the looped connecting member in a manner so that the first looped link includes a bridging midsection extending through the central opening in the looped connecting member and a pair of end openings extending outside of the looped connecting member. Then a second looped link is squeezed together to flatten it somewhat and the flattened second looped link is passed within the extending end openings of the first looped link. This procedure is continued until a predetermined number of looped links are connected together to form a chain-link strip.

The chain-linked strip has a first end defined by the looped connecting member and a second end defined by a looped link having a bridging midsection and a pair of end openings.

The looped connecting member is then grasped to flatten a portion of it and to extend the flattened portion of it through the end openings of the looped link forming the second end of the chain-linked strip. The flattened portion of the looped connecting member is bent over itself and secured to the portion thereof which extends through the end openings of the first looped link. This action thereby interconnects the linked loops and forms a closed ring while causing the looped connecting member to simulate the appearance of the looped links of the ring, so that the entire ring looks like it is formed of serially connected looped links.

DESCRIPTION OF THE DRAWINGS

Other objects and many attendant features of this invention will become readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is an isometric view of a person wearing a ponytail holder embodiment of an ornament constructed in accordance with this invention;

FIG. 2 is an isometric view of a person wearing a head band embodiment of an ornament constructed in accordance with this invention;

FIG. 3 is an enlarged isometric view of the embodiment of the ornament shown in FIG. 2;

FIG. 4 is an enlarged exploded isometric view showing a portion of the procedure entailed in the making of the ornaments of FIGS. 1 and 2;

FIG. 5 is an enlarged isometric view showing another portion of the procedure for making the ornaments of FIGS. 1 and 2;

FIG. 6 is an enlarged isometric view of a portion of the ornaments shown in FIGS. 1 and 2; and

FIG. 7 is a sectional view taken along line 7—7 of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to various figures of the drawing where like reference numerals refer to like parts there is shown at 20 in FIG. 1, a ring-like ornament for use on the head of a person constructed in accordance with the subject invention. Depending upon the size the ornament 20 can be used as a hair, e.g., pony tail holder (FIG. 1), a head band (FIG. 2), a hat band (not shown), or any other decorative object worn on the head or on a hat.

The ornament 20 basically comprises a plurality of identical looped links 22 (FIGS. 1 and 2) and a connecting loop 24 (FIGS. 1 and 7). In the pony tail holder embodiment of FIG. 1 the ornament comprises eight links 22A—22H and a connecting loop 24. The looped links 22A—22H are interconnected, as will be described later, to form a chain-linked strip, having a pair of ends which are connected together by the connecting loop 24 to close the ring. In the head band or hat band embodiment significantly more looped links 22. Thus, as can be seen in FIGS. 2 and 3 the head band embodiment includes 17 looped links and one connecting loop (although more or less looped links can be used, depending upon the size desired—as will be described later).

Each of the looped links 22 and the connecting loop 24 of each ornament is formed of a flexible, somewhat stretchable material. Moreover, all of the looped links and the connecting loop may be formed of the same material, having the same color and texture, or may be formed of different materials/colors/textures, depending upon the aesthetics desired. In some preferred embodiments the looped links and connecting loop are formed of identically sized loops of a knitted fabric, which may be of the same color or different colors etc. The loops are preferably formed by taking an elongated tube of knitted material of a predetermined inside diameter, e.g. 2 inches (5.08 cm), severing transverse sections of a predetermined width, e.g., 1 inch (2.54 cm), therefrom, and rolling each of the sections up to form plural toroidal shaped loops 26 (See FIG. 4) of approximately 2 inch (5.08 inside diameter).

A first of the toroidal shaped loops 26 makes up the heretofore identified connecting loop 24, while other toroidal shaped loops make up the looped links of the ornament. Thus, for the pony tail holder of FIG. 1 eight toroidal shaped loops are used to make up the looped links 22A—22H. It should be pointed out at this juncture that the ornament shown herein, with eight looped links 22A—22H, and one connecting loop 24 (which is bent into a shaped simulating a looped link—as will be described later) is only exemplary. Thus, the size and number of looped links which are used in an ornament 20 of this invention is a function of the desired diameter of the ornament. When an ornament is formed using eight looped links 22A—22H, and one connecting loop, each formed of toroidal loops of the exemplary size set forth above, the resulting "nine loop ornament" has an unstretched inside diameter of approximately 1.25 inches (3.18 cm).

Reference should now be made to FIGS. 4—7 to understand the manner in which the ornament is made. Thus, to make the ornament 20 the connecting loop 24 is supported by hand (or by some mechanical means) and a second toroidal loop 26 is connected to it to form the first looped link 22A. In particular, the second toroidal loop 26 is squeezed together to flatten it somewhat. This flattened loop is then passed through the central opening 28 of the looped connecting member 24. Then the ends of the flattened second toroidal loop 26 are opened while its mid-portion is within the opening 28 of the looped connecting member 24 so that the second toroidal loop 26 is in a configuration having a bridging midsection 30 and a pair of end openings 32, with the bridging midsection 30 extending through the opening 28 in the looped connecting member 24 and the end openings 32 being axially aligned with each other and located outside of the looped connecting member 24.

As should be appreciated by those skilled in the art this action forms the second toroidal loop into the first looped link 22A.

After the first looped link 22A is formed (and connected to the connecting loop 24) a third toroidal loop 26 is squeezed flat and inserted through the axially aligned extending end openings 32 of the first looped link 22A. The third toroidal shaped loop 26 is then opened so that it is in the same configuration as the first looped link 22A, to thereby form the third toroidal loop into the second looped link 22B. This procedure is then repeated to form and connect the remaining looped links 22C—22H of the ornament 20.

Once the last looped link, e.g., 22H, has been formed the resulting construction will be in the form of an elongated chain-linked strip having a first end defined by the connecting loop 24 and a second end defined by the last of the looped links, i.e., 22H, as shown in FIG. 5.

In order to complete the ornament the elongated strip is rolled into a ring, bringing its two ends in close proximity to each other as shown in FIG. 5. Then the looped connecting member 24 is grasped, either by hand or by machine, to flatten it so that it has a free end 34 disposed opposite to the end 36 to which the first looped link 22A is secured. The flattened free end portion 34 of the connecting member 24 is then extended through the axially aligned end openings 32 of the looped link 22H which forms the opposite end of the chain-linked strip. Then the flattened portion free end portion 34 of the looped connecting member 24 is bent back over itself in the direction of arrow 38 and into engagement with its

end portion 36 and is secured thereto by any suitable means. In the embodiment shown herein the securement is by one or more stitches 38 and/or an adhesive (not shown). As shown clearly in FIG. 7 this action forms the connecting loop 24 into a configuration which simulates the appearance of a looped link and closes ring, thereby completing the ornament. The resulting ring-like ornament will have the appearance of an unbroken chain-link since each of the members making it up will exhibit the same general appearance.

The ornament 20 can be used in any suitable manner. For example, a "nine looped ornament" like the exemplary one described above, can be doubled up, i.e., bent into the shape of a "figure 8" and flattened so that it forms a double ring of smaller diameter. This arrangement is shown in FIG. 1 and is particularly suitable for holding a small bunch of hair, e.g., a pony tail, together. For larger bunches of hair, the ornament 20 can be used directly without doubling it up. When the ornament is to be used as a headband or hat band it is can be used either singly, doubled, tripled, etc., depending upon the number and size of the looped members making it up.

In the interests of aesthetic appeal the ornament may be provided with decorative ornamentation on component members. Such ornamentation can take various forms, e.g., beads, jewels, pins, etc.

It should be pointed out at this juncture that other material than the disclosed knitted fabrics can be used for forming the looped links and connecting loop. In fact, the material forming those members need not be a fabric at all, so long as it is somewhat elastic so that when formed into a loop or band it is can be stretched and twisted or bent. Moreover, the members forming the looped links and the connecting loop need not be toroidal, nor need they be fabricated as described above.

It should also be pointed out the connector loop can be secured to itself in various other manners than adhesives or stitching 38 so that it closes the ring-like ornament and simulates a looped link.

Without further elaboration the foregoing will so fully illustrate my invention that others may, by applying current or future knowledge, adapt the same for use under various conditions of service.

I claim:

1. A ring-like ornament for wearing on a portion of a person comprising a plurality of looped links and a looped connecting member, said looped connecting member comprising a loop of a somewhat elastic material and having a central opening therein, each of said looped links being formed of an flexible, somewhat elastic material in the nominal shape of a loop but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection, said looped links being interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends, one of said ends of said chain-linked strip comprising said looped connecting member, the other of said ends of said strip comprising a pair of openings of the looped link forming that other end, said looped connecting member being bent into a shape having a free end which is extended through the openings of the looped link forming the other of the ends of the chain-linked strip and is bent over itself and secured by securement means to another portion of the looped connecting member to connect the ends of the chain-link strip and

thereby form a ring-like ornament, and with the looped connecting member being shaped to simulate the shape of the looped links.

2. The head ornament of claim 1 wherein said looped links and said looped connecting member are each formed of an elastic fabric.

3. The head ornament of claim 2 wherein said elastic fabric is knitted.

4. The head ornament of claim 1 wherein said securement means comprises an adhesive.

5. The head ornament of claim 1 wherein said securement means comprises at least one stitch.

6. The head ornament of claim 1 wherein said looped links are all of the same color.

7. The head ornament of claim 1 wherein said looped links comprises plural colors.

8. The head ornament of claim 1 wherein said ring can be configured for holding strands of hair therein.

9. The method of claim 1 wherein said looped links are each formed of a loop of fabric and wherein said looped connecting member is formed of a loop of the same fabric.

10. The method of claim 9 wherein said loop of fabric is initially in the form of a tube which is severed to form plural loops of fabric.

11. The method of claim 10 wherein each of said plural loops of fabric is rolled up to form an toroidal shaped member.

12. The method of claim 9 wherein said fabric is knitted.

13. The method of claim 9 wherein said fabric is of the same color.

14. The method of claim 9 wherein said fabric is of different colors.

15. A method of forming a ring-like ornament for wearing on a portion of a person comprising a plurality of looped links and a looped connecting member shaped like said looped links, said method comprising providing a plurality of looped links formed of a flexible, somewhat elastic material in the nominal shape of a loop, providing a looped connecting member having a central opening and being formed of the same material as the looped links, interconnecting said looped links together by supporting said looped connecting member, squeezing a first looped link together to flatten it somewhat and passing the flattened first looped link within the central opening of the looped connecting member, opening the first looped link within said looped connecting member in a manner so that the first looped link includes a bridging midsection extending through the central opening in the looped connecting member and a pair of end openings extending outside of the looped connecting member, squeezing a second looped link together to flatten it somewhat and passing the flattened second looped link within the extending end openings of the first looped link, continuing said procedure until a predetermined number of looped links are connected together to form a chain-link strip, said chain-linked strip having a first end defined by said looped connecting member and a second end defined by a looped link having a bridging midsection and a pair of end openings, grasping said looped connecting member to flatten a portion of it and extending said flattened portion of the looped connecting member through the end openings of the looped link forming the second end of the chain-linked strip, and then bending said flattened portion of the looped connecting member over itself and securing said flattened portion of the looped connecting

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member to the portion thereof which is extending through the end opening of the first looped link to thereby interconnect the linked loops and form a closed ring and cause the looped connecting member to simulate the appearance of the looped links of the ring.

16. The method of claim 15 wherein the securing of

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the portions of the looped connecting member together is effected by use of an adhesive.

17. The method of claim 15 wherein the securing of the portions of the looped connecting member together is effected by use of at least one stitch.

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None
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(54) Knitting apparatus

(57) Apparatus for hand knitting comprises hooked pins 5 arranged in two spaced parallel rows on a frame 1 with a slot 3 between the rows for the passage of knitted material. The pins 5 are formed with grooves 7 to receive a knitting hook and to facilitate the entry of the latter into the grooves sloping surfaces 11 of the frame are formed with lead-in grooves 3. In an alternative embodiment the pins which comprise base members forming the lead-in grooves are independently and detachably clipped onto longitudinal bars of the frame. The frame may have selectable detent positions round pivots 15.

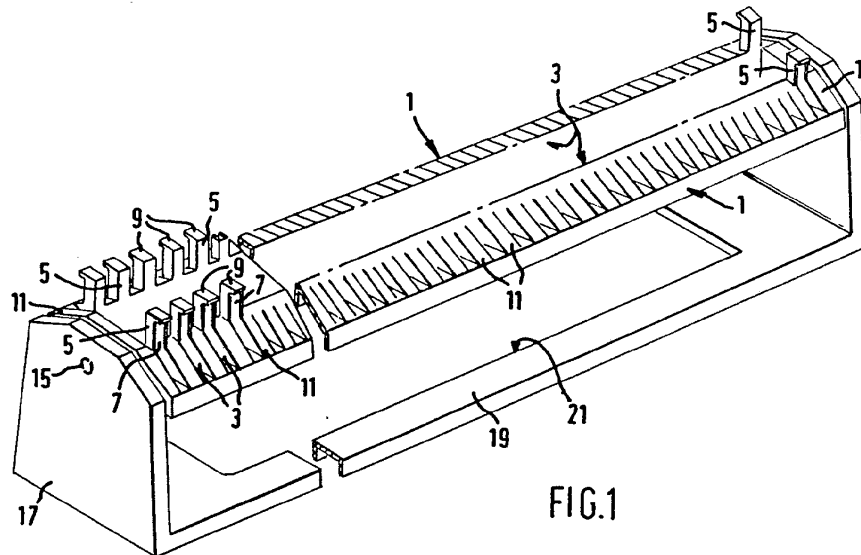


FIG.1

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The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

LaRose Ex. 1012, p. 1

Tristar Ex. 1004, pg. 116

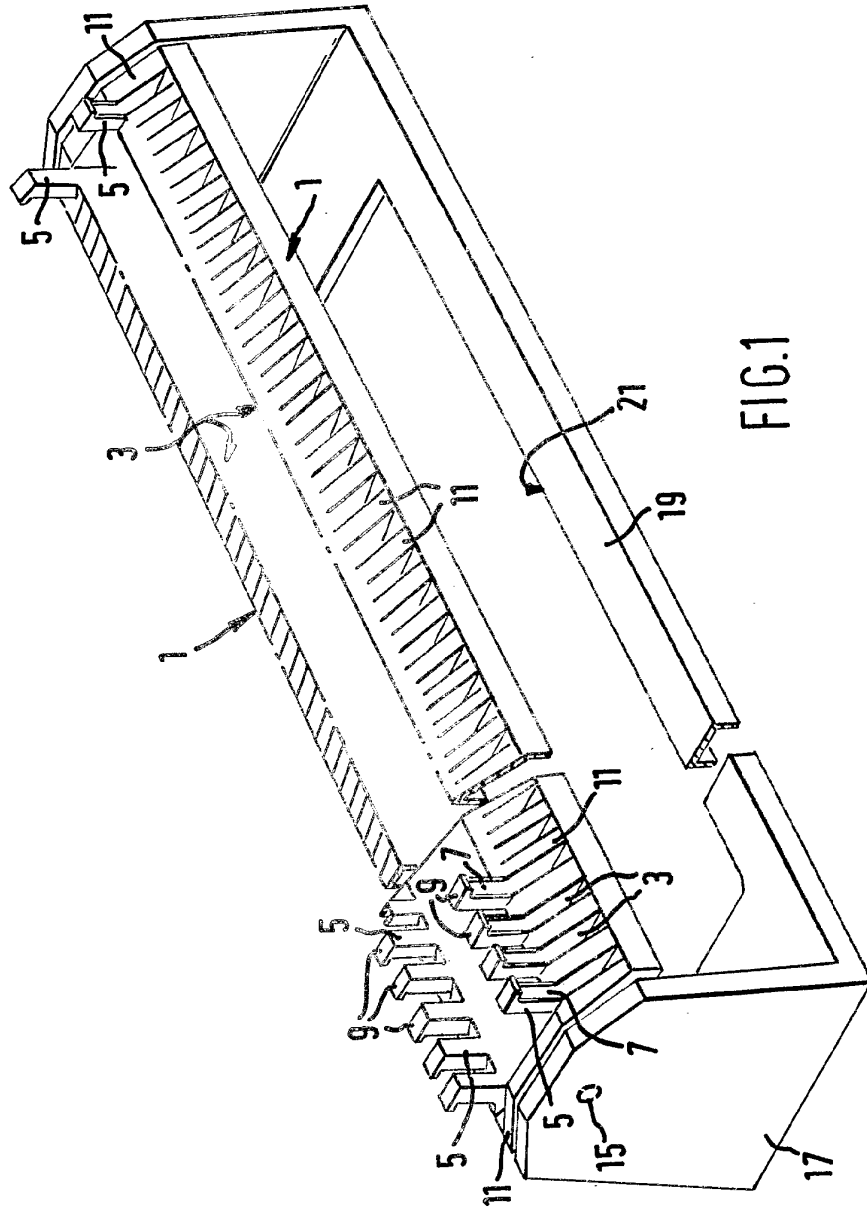


FIG. 1

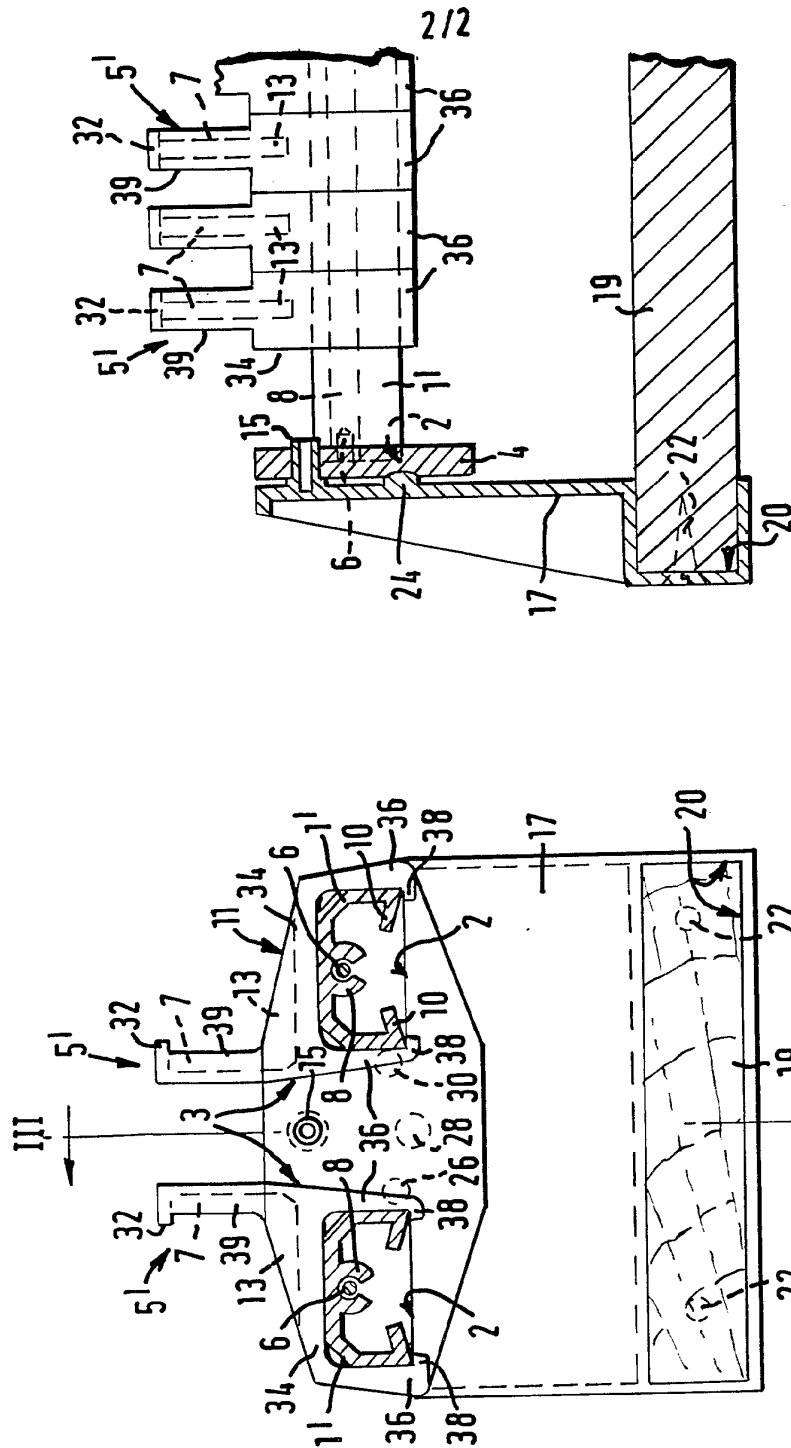


FIG. 3

FIG. 2

SPECIFICATION

Knitting apparatus

5 This invention is concerned with knitting apparatus particularly apparatus for knitting by hand.

10 It is known to provide a knitting apparatus (particularly for use by children) comprising an elongate frame member, conveniently made of plastics material, having a slot extending lengthwise of the frame member (the slot extending completely through the frame member) and the latter being provided with two

15 rows of pins arranged to extend upwardly from the frame member at evenly spaced localities along the opposite sides of the slot. The pins each have a groove extending along the pin at a locality opposite to the slot and the pins have a hooked formation, each hook being formed by a small plate-like member which caps the grooved portion of each pin. In using the known apparatus the wool (or other cord-like material) to be used in the

20 knitting operation is first passed around the required number of upstanding pins in the two rows thereof twice (the free end of the wool being anchored eg. to one of the pins) and, by means of a suitable hand-held hook,

25 the second strand is raised over the hooked portion of each pin in turn to form a stitch loop around each pin. The wool is then laid around the pins again and the loops are lifted over the newly laid strand and the process is repeated to form a knitted fabric which passes downwardly through the slot as the operation proceeds. Conveniently the upstanding pins are spaced from each other by spaces approximately equal to the width of the pins.

30 Attempts have been made to utilise apparatus as just described as an aid to enable handicapped people to knit. However, the known apparatus is flimsy and the frame is likely to bend when gripped. Furthermore,

35 particularly with certain types of disability, the knitter finds it difficult to locate the hook correctly in the groove of each pin in order to engage the stitch loop surrounding that pin. For example a person having poor co-ordination of hand movement is likely to insert the hook through the gap between the adjacent pins instead of into the groove in the pin, so that, when the hook is raised, the stitch loops are pulled off the pins and the stitches are

40 'dropped'.

45 With a view to overcoming or minimising the above-mentioned difficulties, it is proposed to provide a substantially rigid frame member, preferably of die-cast aluminium,

50 with sloping upper faces so formed that the thickness (depth) of the frame member increases from the outside edge to the slot which is surrounded by the upstanding pins. The sloping faces are provided with grooves

55 which lead into the grooves in the correspond-

ing pins thus providing lead-in guides to help the user locate the hook in the grooves in the pins and thus facilitate the formation of the stitches.

70 With a view to providing further improvements in the aforesaid knitting apparatus it is proposed to provide an apparatus in which what are described previously as upstanding (hooked) pins (which pins are integrally

75 formed with a slotted frame-member) are replaced by a plurality of separately formed hooked teeth, which are conveniently manufactured, by an injection moulding technique, from a plastics material, preferably Nylon 6.

80 The teeth are assembled in the apparatus by being clipped over a pair of tooth supporting bars which are arranged to lie parallel to each other and provide, between them, a slot through which the knitting passes. The tooth

85 supporting bars are conveniently made from an extruded aluminium hollow profile of generally rectangular cross-section cut to appropriate length, opposite end portions of the bars being secured in rectangular housings in the form of depressions formed in a pair of

90 end plates, thus providing a rigid tooth-supporting structure of good torsional rigidity and which is unlikely to distort under hand pressure during the knitting operation. The end plates just referred to may conveniently be formed by zinc die-castings.

95 The tooth-supporting structure is conveniently pivotally supported in a support frame in a manner generally similar to that described above. However, with a view to providing for ease of assembly, cheapness of manufacture, and robustness, the support frame preferably comprises a pair of support end plates, again made by a zinc die-casting process and

100 shaped to receive opposite end portions of a wooden base-plate to which the end plates are secured. The end plates are also provided, during the die-casting process, with pivot pins for the tooth-supporting structure and with a locating member for locating the same in one of three different positions of tilt relatively to the support frame.

105 Thus an apparatus in accordance with the present invention may be assembled from a very few cheaply produced, but strong and light, components. Sets of teeth of different pitch may be provided to provide for different sized stitches in knitted articles made on the apparatus. The teeth may be clipped on to the two supporting bars either in staggered or opposed relationship. Gaps may be left between adjacent teeth if required to provide readily for different stitch patterns.

110 There will now be given, with reference to the accompanying drawings, a more detailed description of an apparatus, illustrative of the invention. It is to be clearly understood that this apparatus is selected for description by way of exemplification, and not by way of

115 limitation, of the invention.

120

125

130

In the accompanying drawings:

Figure 1 is a perspective view of a first embodiment of apparatus according to the invention having a die-cast aluminium frame:

5 Figure 2 is a cross-sectional view of a second embodiment of the apparatus having replaceable knitting teeth; and

10 Figure 3 is a view, chiefly in longitudinal cross section on the line III-III in Figure 2, of one end portion of the illustrative apparatus.

15 As will be seen in Figure 1, the apparatus comprises an elongate frame member 1, preferably of die-cast aluminium, having a slot 3 extending lengthwise of the frame member, the groove extending completely through the frame member. Upstanding from the frame member, at opposite sides of the slot 3, are two rows of spaced pins 5 having grooves 7 extending lengthwise of the pins (ie. 20 heightwise) at outwardly facing sides thereof. The pins are hooked as shown in the drawing, the hooked formation being provided by small plate-like portions 9 which cap the upper ends of the grooves 7. The frame member 1 is 25 provided with sloping upper surfaces 11 (ie. the depth, or thickness, of the frame member increases from its outside edges to the slot 3) in which are formed grooves 13 leading into the corresponding grooves 7 in the pins 5.

30 The frame member 1 is pivotally supported on pins 15 extending inwardly from upstanding end portions 17 of a support frame having a slot 21 in its base through which the knitted material can pass, and may be locked in one 35 of three positions (either a central position as shown, or inclined somewhat towards one side or the other) for convenience in handling. The locking means comprises a fixed pin (not shown) which extends from one of the up- 40 standing end portions 17 with one of the three locating holes formed in the frame member 1. To release the frame member from the locating pin, the frame member can be displaced lengthwise of its pivot pins 15 against 45 the action of a spring (not shown).

50 It will be appreciated that the grooves 13 leading into the grooves 7 in the pins are likely to facilitate the correct engagement of the knitting hook with the grooves in the pins and the sloping surfaces 11 tend to act as barriers barring unwanted entry of the hook into the spaces between the pins.

55 The apparatus shown in Figures 2 and 3 comprises a plurality of upstanding pins (in the form teeth 5' hereinafter described) which correspond to the pins 5 referred to previously and are arranged in two spaced parallel rows to provide a slot 3 between the rows through which slot the knitted material passes during a 60 knitting operation.

65 In the illustrative apparatus the teeth 5' are detachably supported on a pair of spaced bars 1'. The bars 1' are cut from an extruded aluminium hollow profile having a generally rectangular cross-section as shown in Figure 2

70 to provide a rigid but light construction. Opposite end portions of the bars 1' are received in rectangular recesses or housings 2 (commensurate with the cross-sectional dimensions of the bar so as to provide a tight fit therefor) formed in end plates 4, to which the bars are firmly secured by self-tapping screws 6 extending through bores in the end plates into a split-cylindrical bead 8 provided within each 75 bar 1'. Inwardly directed flanges 10 provide strength to the bar profile. The arrangement described provides a light but strong structure for supporting the teeth 5' which is unlikely to twist or distort during use of the apparatus.

80 The end-plates 4 are pivotally supported on pivots 15 extending from a pair of support end plates 17, these plates being secured to opposite end portions of a wooden base-plate 19 which end portions are received within 85 housings 20 formed in the support end plates 17 and secured by screws 22.

90 The tooth-supporting frame, comprising the bars 1' and the end-plates 4, may be located in a selected one of three possible positions of tilt about the pivots 15, by means of a poppet 24 (Figure 3) extending from one support end plate 17 into one of three detents 26, 28, 30 95 formed in the adjacent end plate 4 (Figure 2). The spacing between the support end plates 17 and the end plates 4 of the tooth-supporting frame is arranged to be such as to allow slight endwise movement of the frame relatively to the pivots 15 to allow disengagement 100 of the poppet 24 for the detents 26, 28, 30, a compression spring (not shown) being provided around the pivot 15 between the end plates 4 and 17 at the opposite end of the apparatus to that shown in Figure 3 to hold 105 the poppet 24 and selected detent in engagement.

110 The support end plates 17 are also conveniently formed by a zinc die-casting process whereby the pivot 15 and detent 24 may be formed integrally with the plates 17 (only 50% of which will be provided with the poppets 24, since they are not required on the plate 17 at the opposite end of the apparatus).

115 As will be clear from Figures 2 and 3 each hook 5' comprises an upwardly extending portion 39 terminating in an upper plate-like overhanging portion 32 providing the hook proper for retaining the wool on the hooks until lifted thereof during the knitting operation by manipulation of a hand-held knitting hook (not shown). For guiding the latter each hook 5' is provided with a groove 7 extending 120 along the upstanding portion 39, while a base portion 34 of each hook has a lead-in guide groove 13 which leads into the groove 7 for the purpose described above in relation to 125 Figure 1. Each base portion 34 is provided with two depending legs 36 having inturned portions 38 arranged to clip around the support bars 1' as shown in Figure 2, and to hold 130

the teeth firmly in place thereon. By springing apart the legs 36 slightly a tooth may be easily detached from its bar, either for repositioning to provide gaps as above-mentioned, or when it is desired to replace the teeth with teeth of a different pitch. Each groove 13 is formed between wall portions of the base portion 34 of each tooth 5' provided with sloping upper surfaces 11 providing barriers between the grooves 13 in adjacent teeth tending to bar unwanted entry of the knitting hook into spaces between the hooks 5' for the purpose described previously.

15 CLAIMS

1. Knitting apparatus comprising an elongate frame member having a slot extending lengthwise of the frame member and completely through the frame member and knitting pins disposed on the frame member at evenly spaced locations in two rows along opposite sides of the slot, the pins extending upwardly from the frame member and being of hooked formation and grooves extending along the pins at locations opposite to the slot for guiding a knitting hook, wherein the frame member is substantially rigid and is formed with sloping upper faces so formed that the depth of the frame member increases from the outside edge to the slot which is surrounded by the upstanding pins, the sloping faces being provided with grooves that lead into grooves in the corresponding pins thus providing lead-in guides that help the user locate the knitting hook in the grooves in the pins and thus facilitate the formation of stitches.
2. Apparatus according to claim 1 wherein the frame comprises longitudinal members and end plates and the end plates are pivoted in a stand, releaseable locking means holding the frame in one of a number of predetermined attitudes relative to the stand.
3. Apparatus according to claim 2, wherein the longitudinal members are defined by bars of non-circular section on which clip removable knitting pins.
4. Apparatus according to claim 3 wherein each knitting pin is moulded in a plastics material and comprises a body, legs depending from ends of the body to clip onto a longitudinal bar and an upstanding hook portion.
5. Apparatus according to claim 4 wherein there are also mounted on the bars dummy pins devoid of hooks.
6. Apparatus according to claim 3, 4 or 5, wherein the releaseable locking means comprises a poppet and detents.
7. Knitting apparatus substantially as hereinbefore described with reference to and as illustrated in Figure 1 or Figures 2 and 3 of the accompanying drawings.

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Feb. 24, 1942.

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2,274,572

HAND KNITTING STITCH HOLDER

Filed April 22, 1941

Fig. 1.

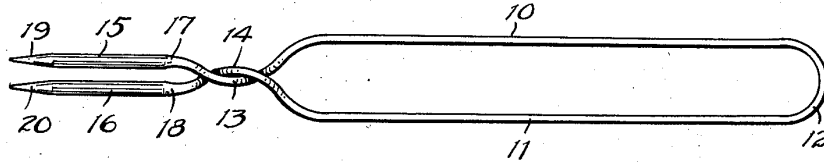


Fig. 2.

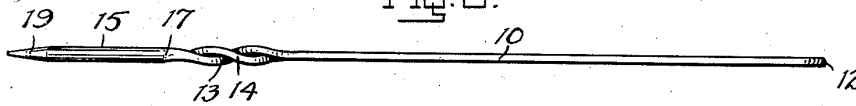


Fig. 3.

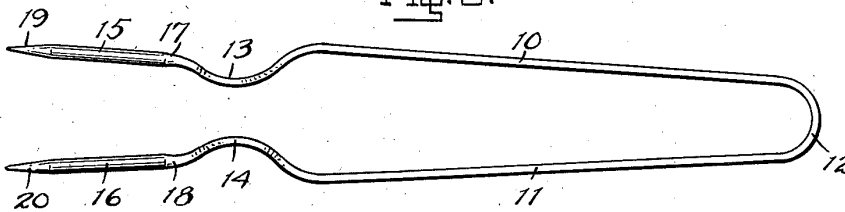


Fig. 4.

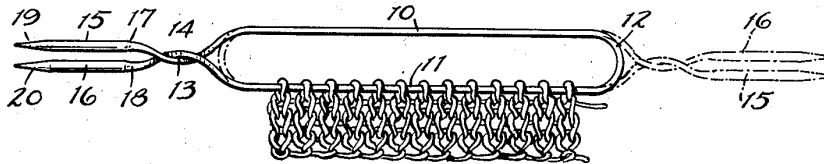


Fig. 5.

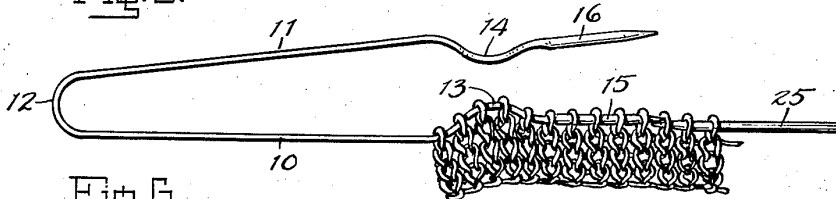
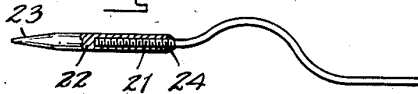


Fig. 6.



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2,274,572

HAND KNITTING STITCH HOLDER

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Application April 22, 1941, Serial No. 389,703

5 Claims. (Cl. 66—117)

The present invention relates to a hand knitting stitch holder.

In the art of hand knitting it is customary, when knitting various garments which require that one or more openings be maintained in the body of the garment, at some given point or points, to temporarily transfer from the knitting needles a number of stitches to a stitch holder for later consideration, so that the main knitting can be continued irrespective of the stitches on the stitch holder. The stitches on the stitch holder are later picked up and knitted in, when finishing that section of the garment.

One well-known type of stitch holder is similar to a large safety pin, except that a U-shaped bend is provided instead of the usual spring loop part of the safety pin, one leg having at its end the usual type of safety pin catch permanently secured thereto, and which is adapted to be engaged by the pointed end of the other leg to thus secure the pin with respect to the stitches slipped thereon. The wire or bone of this type of safety pin stitch holder is of uniform thickness throughout. The safety pin type of stitch holder cannot be operated reversely due to the clasp fixed to one of the legs, which in turn necessitates that the holder be put on or taken off through the medium of one leg only. Due to this fact, when it is desired to resume the knitting of the stitches on this holder, it oftentimes requires an adjustment through complicated manipulation, by first removing the stitches from the holder to a knitting pin and then knitting them in from either end that may be required.

It is an object of the present invention to provide a stitch holder which is reversible, so that it can be removed from the work in either direction, and to this end it is proposed to provide a stitch holder having the two legs of similar form at their ends so that the knitting stitches may be engaged with, or disengaged from either leg, and further to provide interlocking means cooperating between the legs whereby they will be normally held in closed position and can be conveniently opened, such locking means being in the form of a substantially continuous portion of the wire having a gradual curve, which will permit the stitches to be readily slipped over such locking means.

It is further proposed to provide duplicate point means upon the two legs of the stitch holder, having a cross-sectional size substantially corresponding to the knitting needles being employed. In practice this size will approximate a number of sizes of knitting needles within a given

range. Thus for instance one size of stitch holder may be suitable for size #0 to #3 needles, another size may be suitable for sizes #4 to #7 needles, etc.

It is proposed to provide in combination with the point ends, having their thickness corresponding substantially to the thickness of the knitting needle, a loop portion of smaller gauge to receive the removed stitches. By this arrangement the removed stitches will not become tightly bound upon the stitch holder, they may be readily slipped on to the stitch holder from the knitting needle, without undergoing any change in size, and when they are removed from the stitch holder to the knitting needle the enlarged end over which they pass will cause them to assume the proper size to be conveniently engaged upon the knitting needle. It is further proposed to provide a stitch holder in which means are provided to enable continuous knitting operations directly to or from the holder from either point. Also the removed stitches may remain upon the stitch holder according to the invention for an indefinite length of time, without assuming the objectionable unevenness and wavy form such as characteristically takes place with other types of stitch holders heretofore in use.

With the above and other objects in view an embodiment of the invention is shown in the accompanying drawing, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

Fig. 1 is a front elevation of a hand knitting stitch holder, according to the exemplary illustrated embodiment of the invention, the two sides of the holder being shown in their normal closed or locked relation.

Fig. 2 is an edge view, as seen from the top of Fig. 1.

Fig. 3 is a side elevation, with the two sides of the holder in their open or unlocked position.

Fig. 4 is a side elevation, on a reduced scale from the scale employed in Figs. 1 to 3, and showing a piece of knitting engaged by the stitch holder, the dot-and-dash lines showing the position of the stitch holder when reversed with respect to the position shown in full lines.

Fig. 5 is a side elevation showing the stitch holder in open position and engaged with a portion of the knitting stitch loops at the edge of a piece of knitting, a knitting needle being shown engaged with the remaining loops.

Fig. 6 is a fragmentary view, partially in elevation and partially in section, showing a modified

method of forming the point end portions of the stitch holder.

Similar reference characters indicate corresponding parts throughout the several figures of the drawing.

Referring to the drawing, the hand knitting stitch holder, according to the exemplary illustrated embodiment of the invention, is formed from suitable springy material, such for instance as drawn brass wire, steel, and aluminum alloy, and comprises an elongated loop portion having parallel side legs 10 and 11 connected by a U-bend 12 at one end, the other ends being curved toward each other and thereupon reversely curved to provide interlocking twist catch portions 13 and 14, which are curved laterally along ogee curves as seen in plan in Fig. 2, so that the interlocking parts are in the form of a pair of spiral twists, which will automatically fall into interlocking engagement with each other as the two sides of the holder are sprung past each other and will be disengaged by imparting a compressing and twisting motion to the extremities of the holder. The curves of these interlocking portions are formed on relatively large radii, so that there are no sharp bends between the legs 10 and 11 and the extremities of the holder, and thus the stitch loops of the knitting will be permitted to move smoothly and freely over the locking portions as the knitting is engaged or disengaged with respect to the holder, and as will presently more fully appear.

The interlocking portions 13 and 14 are respectively extended into needle point end portions 15 and 16 which are of greater thickness than the interlocking portions 13 and 14, the legs 10 and 11, and the U-bend 12. These end portions are normally arranged in spaced parallel relation to each other and are connected to the respective locking portions 13 and 14 by inclined shoulder portions 17 and 18, the surfaces of which blend into the surfaces of the point end portions and the locking portions, so that there will be a smooth transition of the knitting stitch loops in either direction over the shoulder portions. The extremities of the end portions are respectively provided with points 19 and 20 which are similar to the points of the usual knitting needle. The U-bend 12 connecting the side legs 10 and 11 is of sufficient width that the knitting may be readily passed from one side leg to the other over this U-bend without straining the knitting stitch loops. The thickness of the needle point end portions 15 and 16 is approximately the thickness of the needle being used with the particular knitting being worked on, while the thickness of the interlocking portions 13 and 14, the legs portions 10 and 11, and the U-bend portion 12 is substantially smaller, and preferably uniform throughout these portions. This differential thickness may be produced in any suitable manner, as by swedging, or drawing, or other suitable methods.

In Fig. 6 I have illustrated a modified needle point end structure in which each of the ends 21 of the stitch holder is of the same thickness of wire as the interlocking portions and the side legs and is threaded and enclosed in an internally threaded shell 22 screwed thereon and which thus provides the increased thickness of the needle point end. Needle point ends of different diameters may thus be conveniently provided. The shell 22 is pointed at one end, as at 23, and is beveled at the other end, as at 24.

In the operation of the hand knitting stitch

holder, according to the invention, the number of stitch loops which it is desired to temporarily transfer to the stitch holder, and which are engaged upon the knitting needle, are slipped to one leg of the stitch holder by individually removing the stitch loops from the end of the knitting needle to one of the needle point ends of the stitch holder, gradually sliding the stitch holder into place as the knitting needle is withdrawn. As the stitch loops are slipped from the knitting needle to the enlarged point end of the stitch holder they remain substantially in the same position as they were upon the knitting needle until they pass over the shoulder at the inner end of the needle point end to the locking portion and thence to the leg of the holder, the loops being relatively loosely engaged upon these portions, so that they will slide freely thereon without any tendency to pull or contract.

The length of the needle point end is sufficiently long so that a number of the stitch loops will be simultaneously engaged thereon, and consequently there will be no tendency for the individual loops being slipped from the end of the knitting needle to the stitch holder to become unevenly stretched or contracted. When the loops are all upon the leg of the stitch holder they will be relatively loosely engaged therewith, and due to the fact that they have passed over the enlarged end of the stitch holder they will be of uniform size, so that there will be no tendency to unevenness or waviness. Also the loose engagement is such that any contraction that may occur in the loops while the knitting is allowed to stand for a considerable time will not be sufficient to bind them upon the holder.

As seen in Fig. 4 the piece of knitting illustrated has been removed from a knitting needle having its point end at the right, the needle having been withdrawn toward the left, and the stitch holder engaged with the knitting by movement to the left to the position as shown in full lines, where the loops are shown engaged with the lower leg 11 of the stitch holder. If it is desired to re-engage the knitting needle in the same direction, that is by inserting it from left to right, then the stitch holder is unlocked and is withdrawn toward the right, the knitting loops being individually slipped upon the knitting needle as they leave the pointed needle end 16 of the stitch holder. It will be observed that during this operation the stitch loops which have been engaged upon the relatively thin leg 11 of the stitch holder are passed over the relatively thick needle point end 16, so that if there has been any contraction in their size they are opened up to the proper size for engaging the needle, the needle point end being of sufficient length so that each loop will engage it for a sufficient distance to insure proper opening of the loop. If, on the other hand, it is desired to re-engage the knitting needle in the opposite direction, that is by inserting it from right to left, then it is only necessary to reverse the position of the stitch holder to the dot-and-dash line position, shown in Fig. 4, in which position the stitch loops are engaged upon the leg 10 and are removed over the needle point end 15 by movement of the stitch holder to the left, as shown in Fig. 5, this illustration showing the position where the stitch loops are partially engaged upon the knitting needle 25, and partially upon the curved locking portion 13 and the leg 10. It will be noted that the relatively large radius of the curved locking portion is such that the loops will slide smoothly

and freely over this portion between the leg portion and the needle point end portion.

I have illustrated and described preferred and satisfactory embodiments of the invention, but it will be understood that changes may be made therein within the spirit and scope thereof, as defined in the appended claims.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. A hand knitting stitch holder, comprising a pair of spaced side leg portions, a connecting portion connecting said leg portions at one end and constituting means for transferring stitches from one leg portion to the other, a pair of needle point end portions respectively connected to the other ends of said leg portions for engaging stitches on and disengaging stitches from either of said respective leg portions, and interlocking formations on said side leg portions adjacent said needle point end portions adapted to be engaged and disengaged with respect to each other and each adapted in their disengaged relation to permit stitches to pass thereover in either direction to or from said side leg portions and said needle point end portions.

2. A hand knitting stitch holder, comprising a pair of spaced side leg portions, a connecting portion connecting said leg portions at one end and constituting means for transferring stitches from one leg portion to the other, and a pair of interlocking formations respectively provided at the other ends of said leg portions adapted to be engaged and disengaged with respect to each other and adapted in their disengaged relation for engaging stitches on and disengaging stitches from either of said respective leg portion.

3. A hand knitting stitch holder, comprising a pair of spaced side leg portions, a connecting portion connecting said leg portions at one end and constituting means for transferring stitches from one leg portion to the other, and a pair of elongated spaced needle point end portions connected to the other ends of said leg portions for engaging stitches on and disengaging stitches from either of said respective leg portions, the connections between said side leg portions and

said end portions comprising converging interlocking connecting portions curved inwardly from said respective leg and end portions adapted to be engaged and disengaged with respect to each other and adapted in their disengaged relation to permit stitches to pass thereover in either direction to or from said side leg portions and said needle point end portions, said end portions being of relatively greater thickness than said leg portions and said converging connecting portions.

4. A hand knitting stitch holder, comprising a pair of spaced side leg portions, a connecting portion connecting said leg portions at one end and constituting means for transferring stitches from one leg portion to the other, and a pair of elongated spaced needle point end portions connected to the other ends of said leg portions for engaging stitches on and disengaging stitches from either of said respective leg portions, the connections between said side leg portions and said end portions comprising converging connecting portions curved inwardly from said respective leg and end portions, and each having a spiral twist formation adapted to be releasably locked one with the other.

5. A hand knitting stitch holder, comprising a pair of spaced side leg portions, a connecting portion connecting said leg portions at one end and constituting means for transferring stitches from one leg portion to the other, and a pair of elongated spaced needle point end portions connected to the other ends of said leg portions for engaging stitches on and disengaging stitches from either of said respective leg portions, the connections between said side leg portions and said end portions comprising converging connecting portions curved inwardly from said respective leg and end portions, and each having a spiral twist formation adapted to be releasably locked one with the other, the curves of said connecting portions and their curved connections with said leg and end portions being formed on relatively large radii, whereby the transition of knitting stitch loop over them is substantially unimpeded.

HARRY A. YATES.

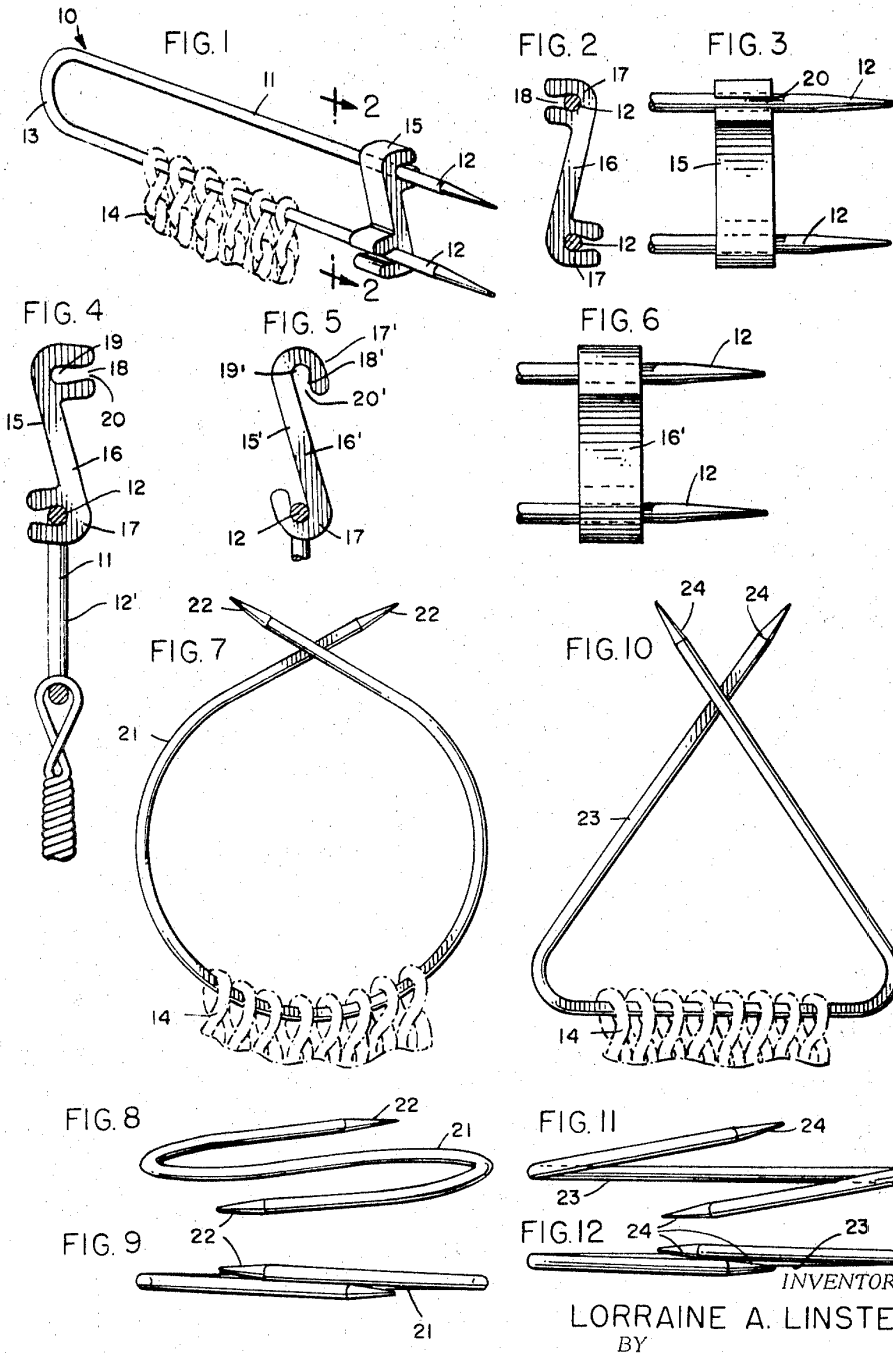
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3,438,223

STITCH HOLDER

Filed Aug. 22, 1967



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1

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STITCH HOLDER

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Filed Aug. 22, 1967, Ser. No. 662,375
Int. Cl. D04b 35/02

U.S. Cl. 66—1

7 Claims

ABSTRACT OF THE DISCLOSURE

A two-way stitch holder which permits stitches to be knitted off both ends of the holder. The stitch holder includes a generally loop-shaped needle providing a pair of needle ends and means providing a releasable engagement between each of the needle ends. When the needle ends are released, the stitches may then be knitted off of either end as desired.

Background of the invention

This invention relates to stitch holders for use in knitting. Stitch holders are commonly used in knitting an article to hold stitches in one part of the piece while another part is being knitted. Stitch holders are also useful in saving stitches when the knitting is interrupted before the article can be finished. When it is desired to continue knitting the stitches which are on the stitch holder, these stitches may be knitted off the holder, and for this purpose the stitch holder is usually provided with a needle-like end.

The difficulty with prior stitch holders is that the stitches can usually be knitted off only one end of the stitch holder. It is frequently desirable to remove the stitches from a different end of the holder than the end on which the stitches were inserted. For this reason, it is desirable to provide a two-way stitch holder so that the stitches may be removed from either end of the holder.

Other two-way stitch holders have been provided, but these holders generally include rather cumbersome end protecting means which interfere with the facility with which the stitches may be removed from the holder. It is also desirable that the end protecting means may be removed from the desired holder end with one hand so that the other hand may be utilized to hold a similar holder or knitting needle.

Summary of the invention

The inventive stitch holder permits the stitches to be removed from either end of the holder. The needle ends can be disengaged from the end protecting means with one hand, and the protecting means will not interfere with the removal of the stitches.

Description of the drawing

FIG. 1 is a perspective view of the inventive stitch holder;

FIG. 2 is an end view of the stitch holder of FIG. 1;

FIG. 3 is a fragmentary elevational view of the stitch holder of FIG. 1;

FIG. 4 is a view similar to FIG. 2 showing one end of the needle of the stitch holder disengaged from the end protecting means;

FIG. 5 is a side elevational view of another embodiment of the end protecting means;

FIG. 6 is a fragmentary elevational view of the stitch holder with the end protecting means of FIG. 5;

FIG. 7 is an elevational view of an alternative embodiment of a two-way stitch holder;

FIG. 8 is a top plan view of the stitch holder of FIG. 7;

FIG. 9 is a view similar to FIG. 8 showing the stitch holder engaged;

2

FIG. 10 is an elevational view of still another embodiment of the stitch holder;

FIG. 11 is a top plan view of the stitch holder of FIG. 10; and

FIG. 12 is a view similar to FIG. 11 showing the stitch holder engaged.

Description of preferred embodiments

Referring now to FIGS. 1 and 2, the numeral 10 designates generally a two-way stitch holder. The stitch holder 10 includes a generally loop-shaped or U-shaped needle 11 having a pair of needle ends 12 and a curved intermediate portion 13. Needle 11 is advantageously made of relatively resilient metal which may be permanently bent into the shape illustrated in FIG. 1. Needle ends 12 are preferably tapered to facilitate insertion of a row of stitches 14 on the needle holder and its removal therefrom.

The stitches 14 are retained on the stitch holder by end protecting means or end connector 15. End connector 15 is seen to be generally S-shaped and includes a relatively straight body portion 16 and a pair of hooked portions 17 extending from each end of the body portion 16, but in opposite directions. Each hooked portion is so shaped to provide a slot 18 with a generally round throat portion 19 and a restricted mouth portion 20 (FIG. 4). The slots 18 are relatively straight and extend generally parallel to each other but in opposite directions from the body portion 16.

The hooked portion is relatively resilient and the mouth portion 20 is somewhat narrower than the diameter of the needle 11 so that as the needle is forced through the mouth portion into the throat portion of the slot, the hooked portion is resiliently deformed outwardly and then returns to clampingly retain the needle within the slot 18. The diameter of the generally round throat portion 19 is slightly less than that of the needle 11 so that the throat portion frictionally engages the needle. This frictional engagement permits the end connector 15 to be selectively positioned radially outwardly of one of the needle ends 12 as illustrated in FIG. 4. With the end connector so positioned, the other needle end may readily be used for knitting without interference from the connector.

One of the needle ends 12 may be disengaged from the connector 15 by grasping both needle ends by the fingers of one hand with the slot engaging the desired needle end extending toward the thumb of the hand. By pressing the thumb downwardly against the body portion 16 of the connector, the desired end may be removed from the slot. Similarly, the end connector may be repositioned on the free needle end by one hand by pressing the needle end into the slot 18.

Once the desired needle end has been disengaged from the end connector, the stitches 14 may be knitted from that end. The stitches may be removed from either end regardless of the end on which they were inserted merely by pushing the stitches around the curved intermediate portion 13 toward the desired needle end.

The end connector 15' illustrated in FIG. 5 is also seen to be generally S-shaped and includes a body portion 16' and hooked portions 17'. Each of the hooked portions 17' is essentially a reverse bend and provides a slot 18' having a generally round throat portion 19' and a restricted mouth portion 20'. The slots 18' extend generally parallel with each other but in opposite directions. Again, both the mouth portion 20' and the throat portion 19' are preferably narrower than the diameter of the needle 11.

One of the needle ends may be disengaged from the connector merely by grasping the other needle end in the fingers of one hand and pushing the first end downwardly

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by the thumb past the mouth portion 20' of the slot 18'. As the needle end emerges from the slot 18', the end connector is automatically forced away from that needle end by virtue of the downward force exerted against the body portion 16 of the connection, which bisects a line between the two needle ends.

The stitch holder 15' may also be closed by one hand after stitches have been inserted thereon by squeezing the needle ends together to bring the free end adjacent to the mouth portion of the slot and then allowing the resilience of the needle to force the needle end into the slot. For this purpose, the end of the hooked portion may advantageously be flared outwardly as at 21' to facilitate insertion.

Both of the end connectors 15 and 15' may advantageously be molded from plastic. Any plastic with suitable resilience to permit the needle to pass the mouth portion of the slot may be used. Alternatively, the end connectors may be formed from spring metal. When both ends of the needle are engaged by the connector, a closed stitch-holding loop is formed by the needle and the connector.

Other embodiments of the needle holder are illustrated in FIGS. 7-12. FIG. 7 illustrates a generally loop-shaped or circular stitch holder 21 having a pair of needle ends 22. The stitch holder 21 is preferably made of a relatively resilient metal and is bent so that in the unflexed state the needle ends are separated as illustrated in FIG. 8, which is a top view of FIG. 7. In this position, stitches 14 may readily be inserted on either of the needle ends 22, after which the needle ends 22 may be brought together and crossed over each other as in FIG. 9. The resilience of the stitch holder 21 causes the needle ends 22 to press against each other in an effort to return to the unflexed state, thereby maintaining the stitches on the holder and providing a releasable engagement between the ends.

Similarly, FIG. 10 illustrates stitch holder 23 having a generally looped shape in the form of a triangle and including a pair of needle ends 24. In the unflexed position illustrated in FIG. 11, the needle ends 24 are separated, and after stitches 14 are inserted on the stitch holder, the needle ends may be crossed and brought into releasable engagement as in FIG. 12.

While in the foregoing specification, detailed descriptions of specific embodiments of my invention were set forth for the purpose of illustration, it is to be understood that many of the details herein given may be varied considerably by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A two-way stitch holder comprising a generally U-shaped needle having a curved intermediate portion and a pair of end portions terminating in tapered ends, and an end connector, said connector being releasably engaged with each of said end portions and including an elongated body portion extending generally transversely between said end portions and a pair of hook portions, each of said hook portions being provided with a slot extending

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generally transversely of said body portion, each slot opening in a direction generally opposite to that of the other slot and receiving one of said end portions between the associated tapered end and said needle curved portion.

2. The stitch holder of claim 1 in which said connector is generally S-shaped, said slots lying on opposite sides of said body portion.

3. The stitch holder of claim 2 in which said slots are provided by a reverse bend in said connector at each end of said body portion.

4. A two-way stitch holder comprising a generally U-shaped needle providing a pair of needle ends, and an end connector, said connector being releasably engaged with each of said needle ends, said connector including an elongated body portion and a pair of hooked portions extending from opposite ends of said body portion, each of said hooked portions being provided with a slot, each of said slots being provided with a mouth portion and a throat portion, said mouth portions being narrower than the diameter of said needle ends and being resiliently deformable to permit said needle ends to pass into and out of said throat portions, each of said throat portions being adapted to frictionally engage a needle end to position said connector radially outwardly of said needle end.

5. The stitch holder of claim 4 in which said slots extend generally parallel to each other but in opposite directions.

6. The stitch holder of claim 4 in which said connector is generally S-shaped, said slots lying on opposite sides of said body portion.

7. The stitch holder of claim 6 in which said slots extend generally parallel to each other but in opposite directions.

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RONALD FELDBAUM, Primary Examiner.

U.S. Cl. X.R.

66-116, 117



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(12) **United States Patent**
Gustin

(10) **Patent No.:** **US 7,506,524 B2**
(45) **Date of Patent:** **Mar. 24, 2009**

(54) **HAND KNITTING LOOM AND METHOD OF USE**

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(73) Assignee: **Provo Craft and Novelty, Inc.**, Spanish Fork, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **11/963,229**

(22) Filed: **Dec. 21, 2007**

(65) **Prior Publication Data**

US 2008/0156043 A1 Jul. 3, 2008

Related U.S. Application Data

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(51) **Int. Cl.**
D04B 3/00 (2006.01)

(52) **U.S. Cl.** **66/1 A**

(58) **Field of Classification Search** 66/3, 66/4, 1 R; 139/29, 34; 28/16.5, 17
See application file for complete search history.

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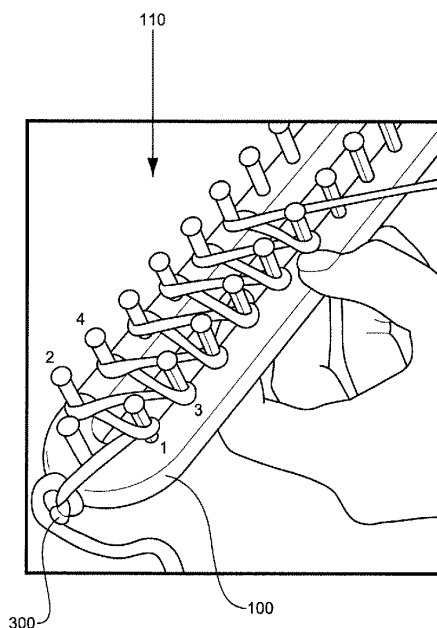
Primary Examiner—Danny Worrell

(74) *Attorney, Agent, or Firm*—Honigman Miller Schwartz and Cohn LLP

(57) **ABSTRACT**

A loom includes a plurality of knitting pegs. The loom further includes a substantially non-circular base structure configured to hold the plurality of knitting pegs substantially perpendicular to the plane of the substantially non-circular base structure. The substantially non-circular base structure also includes an elongated orifice having a long axis and a short axis. The plurality of knitting pegs form two substantially parallel rows of knitting pegs separated by the short axis of the elongated orifice. The loom also includes at least one knitting peg near the apex of the long axis of the elongated orifice and between the two substantially parallel rows of knitting pegs.

22 Claims, 5 Drawing Sheets



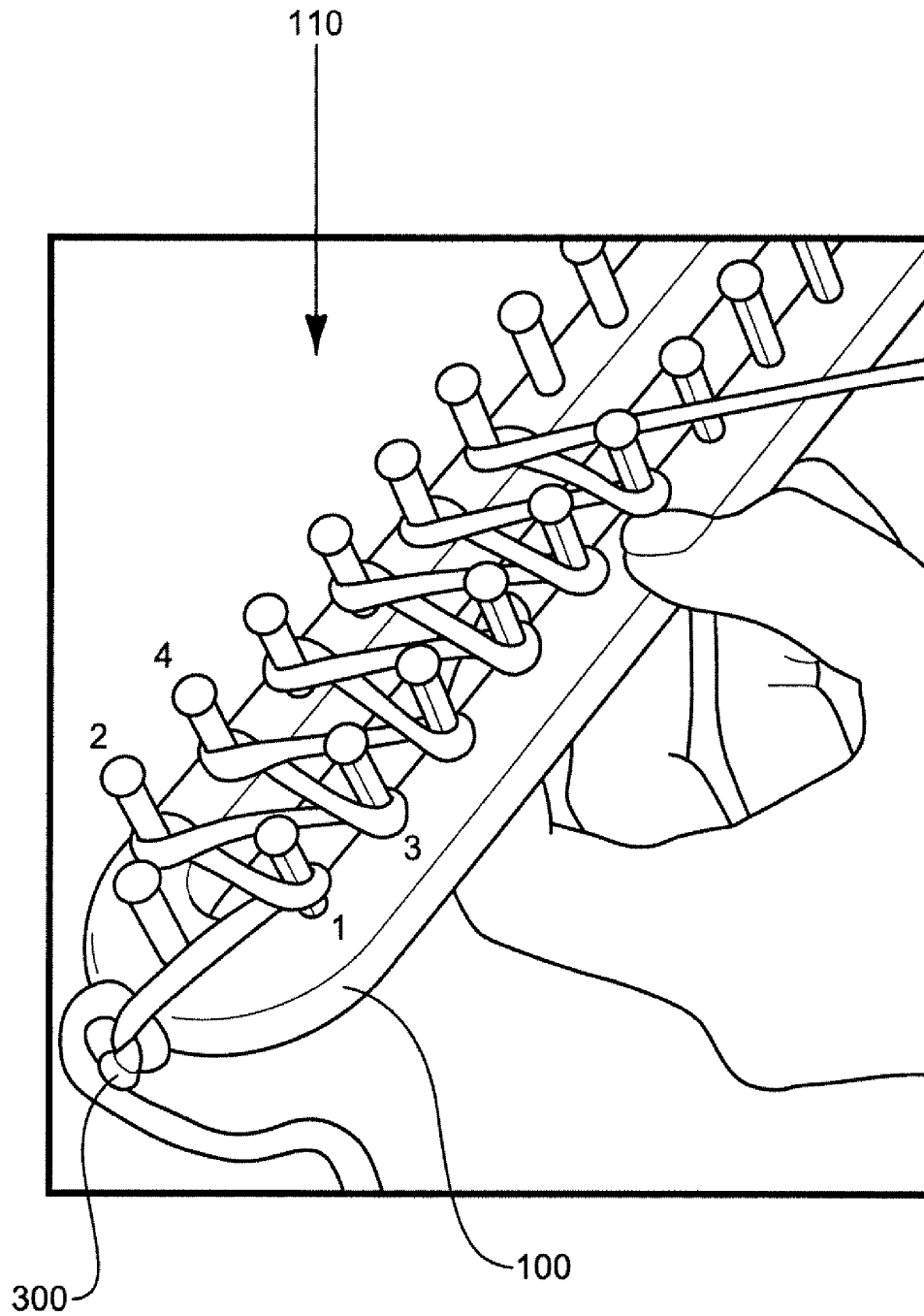


FIG. 1

FIG. 2A

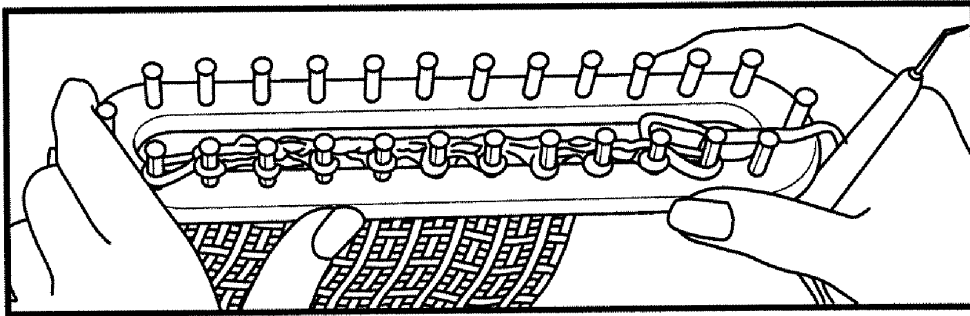


FIG. 2B

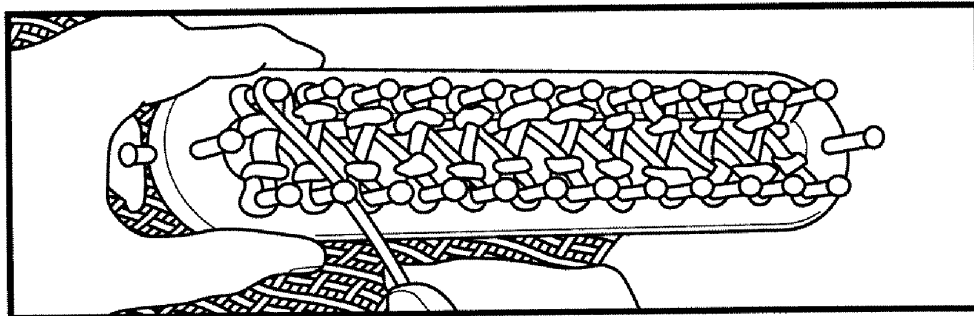


FIG. 2C

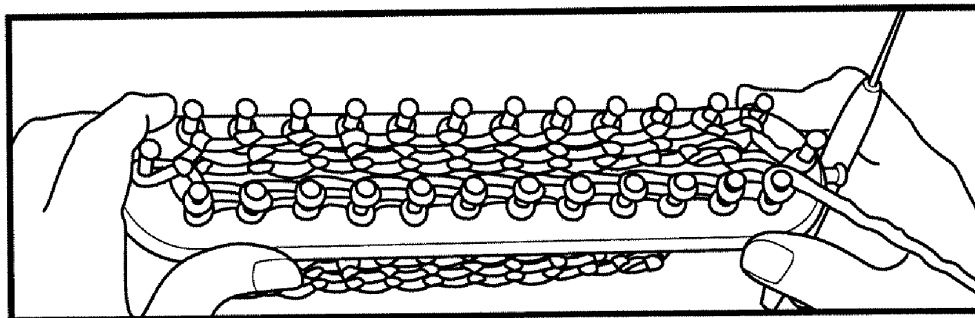


FIG. 3

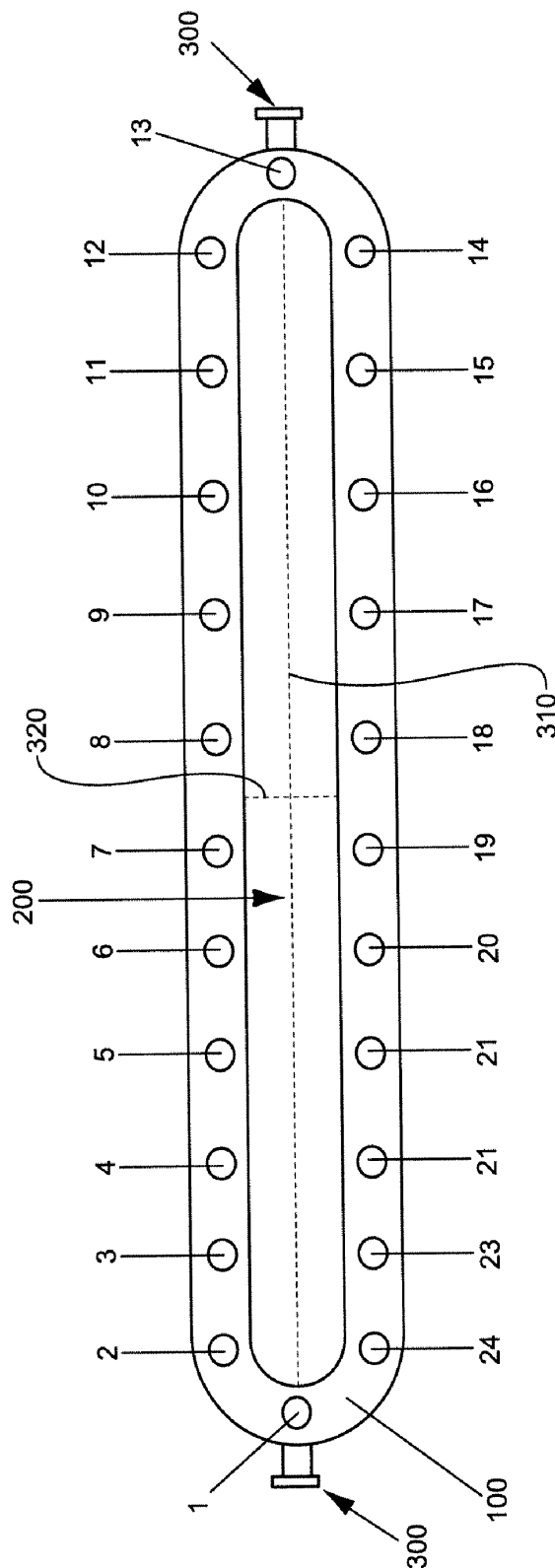
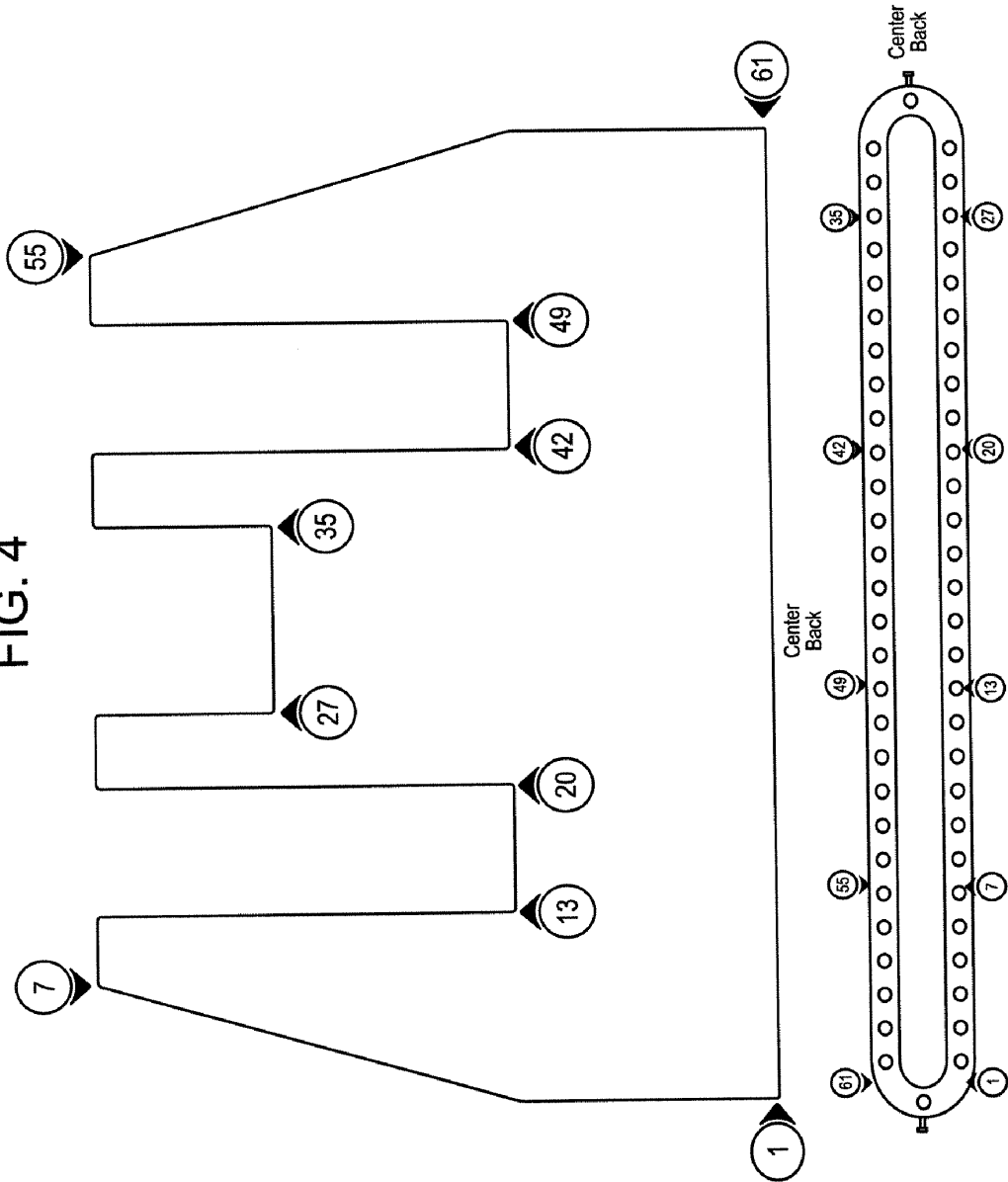


FIG. 4



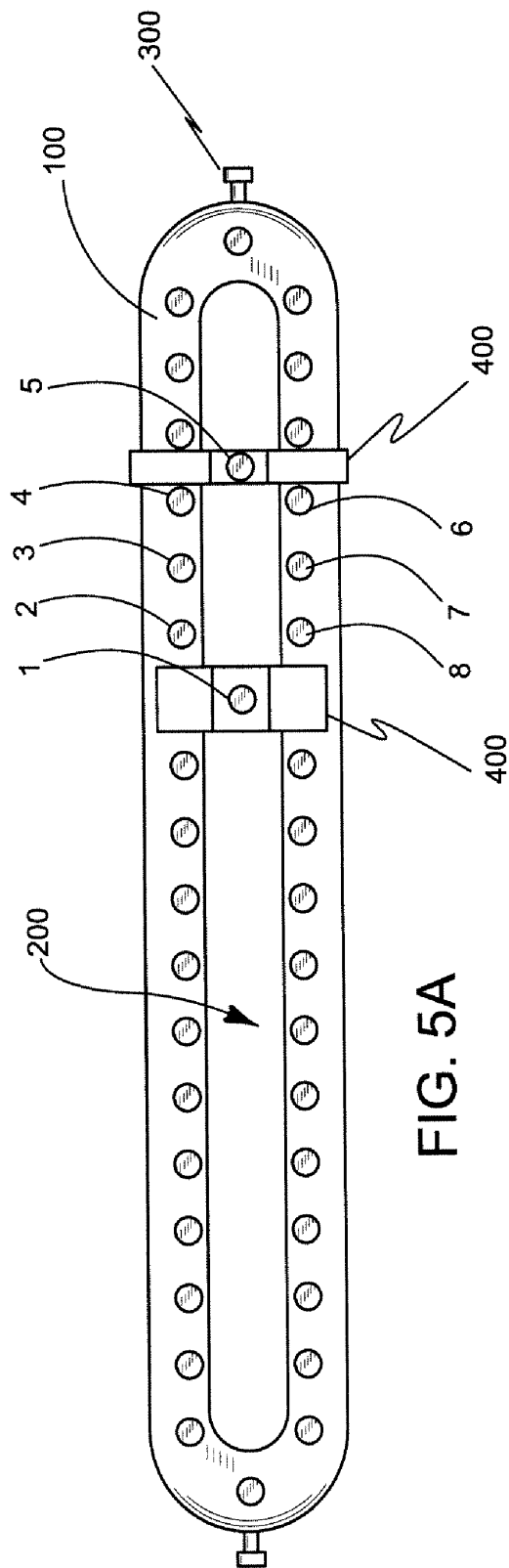


FIG. 5A

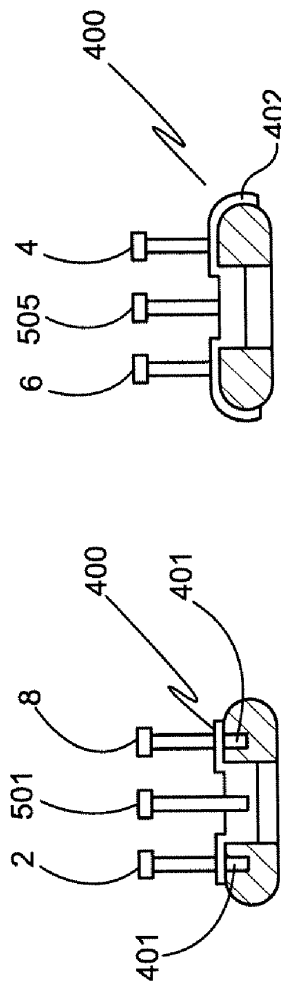


FIG. 5B

FIG. 5C

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HAND KNITTING LOOM AND METHOD OF USE

CROSS-REFERENCE TO RELATED APPLICATION

The present application claims priority to and hereby incorporates by reference U.S. Provisional Patent Application Ser. No. 60/877,587 filed on Dec. 28, 2006.

TECHNICAL FIELD

This invention relates to a knitting loom and a method of using a knitting loom.

BACKGROUND

Weaving may utilize any number of different kinds of looms, ranging from simple hand held structures to complex machines. Looms commonly used today for non-commercial knitting include handlooms that may be rectangular, circular or oblong and have projecting pegs configured to hold the warp loops and the woven weft loops. An example of a rectangular loom includes the Knifty Knitter™ rectangle loom available from PROVO CRAFT®.

At least one advantage of handlooms is the ease of use and the ability of the user to utilize techniques that are more sophisticated as their skill with the loom increases. However, each type of handloom (e.g., circular, rectangular, oblong) does not provide for multiple uses. For example, a circular handloom is useful for circular knitting. However, the circular handloom does not provide for double knitting of straight pieces and may be difficult to use for single knit.

Therefore, users desiring to knit different styles of knits (e.g., single, double, circular knits) are required to purchase and carry both a circular handloom and a rectangular or elliptical loom. Moreover, the looms take up significant space and may be difficult to use in cramped quarters such as a car or an airplane.

Thus, there is a need for a handloom that is capable of producing single, double, and circular knits. Moreover, it is desirable to provide a loom having a reduced size that may make transporting and using the loom in a restricted space, e.g., a car or airplane, easier.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and inventive aspects will become more apparent upon reading the following detailed description, claims, and drawings, of which the following is a brief description:

FIG. 1 is a perspective view of an example where the loom is a rounded rectangle.

FIG. 2A shows a single knit for use with the loom of FIG. 1.

FIG. 2B shows a double knit for use with the loom of FIG. 1.

FIG. 2C shows a circular knit for use with the loom of FIG. 1.

FIG. 3 is a top plane view of an example of the loom.

FIG. 4 shows an example of peg numbering for knitting a vest.

FIG. 5A is a top plane view of a knitting loom that includes two examples of a moveable bridge.

FIG. 5B is a partial cross-sectional side view of the knitting loom and a first embodiment of the moveable bridge.

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FIG. 5C is a partial cross-sectional side view of the knitting loom and a second embodiment of the moveable bridge.

DETAILED DESCRIPTION

Referring now to the drawings, illustrative embodiments are shown in detail. Although the drawings represent the embodiments, the drawings are not necessarily to scale and certain features may be exaggerated to better illustrate and explain novel aspects of an embodiment. Further, the embodiments described herein are not intended to be exhaustive or otherwise limit or restrict the claims to the precise form and configuration shown in the drawings and disclosed in the following detailed description.

The examples discussed herein provide that a single handloom may perform single knit, double knit and circular knit. These looms are typically narrow and compact. They may be shaped, but not exclusively, as oblong, elliptical, and/or rectangular. The looms discussed herein may also be associated with a method of knitting that may include producing a closed circular knitting using a non-circular knitting loom.

The examples discussed herein relate to a non-circular knitting loom. The loom includes a plurality of knitting pegs spaced generally equidistant relative to one another around the perimeter of the loom. The loom may provide for at least one knitting peg at one or more ends of the loom. Alternatively, the knitting peg may be located at the apex of the rectangle, ellipse, oval, rounded rectangle and/or oblong between two substantially parallel rows of knitting pegs.

In general, examples of the looms discussed herein may include a non-circular knitting loom having an orifice between two substantially parallel rows of knitting pegs and at least one knitting peg at an end of the loom between the two substantially parallel rows of knitting pegs. In another example, the plurality of knitting pegs may be spaced equidistant relative to one another around the loom. The loom may be configured as, but not limited to, having a rectangular, elliptical, oblong, oval, or rounded rectangle shape. The loom may also have a knitting peg at one or more ends between the two substantially parallel rows of knitting pegs.

As used herein, "yarn" means any conventional flexible material suitable for weaving, such as commercially available twines and yarn. Also, as used herein, "substantially equidistant" means that any two adjacent knitting pegs are spaced apart by a substantially equal distance. "Substantially equidistant" also refers to the position of a knitting peg at one or more ends of the base structure relative to either of the two substantially parallel rows of knitting pegs, wherein the deviation from equal distance is less than twice the spacing of any two adjacent knitting pegs.

The substantially non-circular base structure of the loom may include, but is not limited to, the following shapes: an ellipse, an oblong, a rectangle, a rounded rectangle or an oval. In addition, the substantially non-circular base structure of the invention includes an orifice having a long axis and a short axis.

In an example, the knitting pegs are detachably connected to the loom. For example, the knitting pegs may be generally cylindrical in shape, having a top end and a bottom end, wherein the bottom end is configured to connect to a hole in the base structure. Optionally, the knitting pegs may have a groove or channel starting at or near the top end of the knitting peg and running to the bottom end or near the bottom end of the knitting peg.

In another example, with reference to FIG. 1, a knitting loom **110** is shown having a substantially non-circular base structure **100** having a top, a bottom, an inside and an outside

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surface defining an orifice within the base structure **100** and having a plurality of knitting pegs (**1** to **17**) connected to a top surface of the base structure **100**, wherein the plurality of knitting pegs form two substantially parallel rows (pegs **2**, **4**, **6**, **8**, **10**, **12**, **14**, and **16**, illustrating a first row, and pegs **1**, **3**, **5**, **7**, **9**, **11**, **13**, **15**, and **17** illustrating the second parallel row) substantially perpendicular to the plane of the base structure **100**. Preferably, the knitting pegs are spaced substantially equidistant from one another. Preferably, the base structure **100** includes at least one yarn attachment point, e.g., an end peg **300** (e.g., a yarn attachment point), located on at least one end of the base structure **100**, where the yarn attachment point **300** is useful for holding the yarn in place when initiating knitting.

A typical rectangular or elliptical handloom is useful for knitting straight pieces using a single knit (FIG. 2A) or a double knit (FIG. 2B), but lacks the ability to knit tubes (FIG. 2C). In contrast, circular handlooms are useful for circular knitting, but do not allow double knitting of straight pieces and may be difficult to use for single knit. Therefore, a user wishing to knit single, double and circular knits was required to purchase and carry both a circular handloom and a rectangular or elliptical loom. In contrast, the present invention provides a handloom that is capable of producing all three knits (single, double, and circular knit). In addition to providing a single knitting loom capable of use with single, double and circular knit, the present invention provides a significant size reduction relative to circular looms that makes transporting and using the loom in a restricted space, e.g., a car or airplane, easier.

Referring to the example illustrated in FIG. 3, the non-circular base structure **100** is a rounded rectangle, having an orifice **200** with a long axis **310** and a short axis **320**. It is configured with a plurality of knitting pegs **1** to **24** spaced substantially equidistant from one another and substantially perpendicular to the base structure **100**. Knitting pegs **1** and **13** may be positioned at the apex of long axis **310** of orifice **200** between parallel rows of knitting pegs **2-12** and **14-24**. In addition, the base structure **100** includes at least one attachment point **300** located substantially parallel to the plane of the base at each end of the non-circular base structure. End peg **300** is typically used for holding the yarn in place when initiating knitting.

Pegs **1-18** may be made as part of base structure **100** or they may be made separately or any variation thereof. If any of pegs **1-18** are made separately from base structure **100**, they may be received by base structure **100** by holes. The holes are then configured to receive the peg and hold it tightly in place. In any event, any of pegs **1-18** may be held by base structure **100** permanently or removably.

Referring to FIG. 4, a user may weave a vest by initially tying pieces of yarn around knitting pegs **13**, **20**, **27**, **35**, **42**, and **49**, as an example of a method of knitting an item (e.g., a circular item) using a rectangular or elliptical handloom as described herein. In this example, pegs **13** and **20** correspond to the left armhole. Knitting pegs **41** and **49** correspond to the right armhole. Knitting pegs **27** and **36** represent the initiation of the neck hole. Starting on peg **1**, the user wraps the loom with yarn without utilizing peg **62**. The user then knits for approximately seven inches (approximately 27 rows) using knitting pegs **1** to **61**. On the 28th row of weaving, the user should be knitting from the right to the left. Knit to peg **49**, which has the marker yarn attached to it. Wrap the next eight knitting pegs very loosely. Take the loops from knitting pegs **49** and **48**, and pull the loop from peg **48** through the loop from peg **49**. Then take the loop from peg **47** through the loop from peg **48**. Continue in this manner until the user has

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decreased the stitches between the markers, including the loops on the marked knitting pegs (knitting pegs **49** and **42**). Knit across the back part of the vest to the marker on peg **20** and decrease the stitches between the markers on peg **20** and peg **13**. Knit to the end of the row. Any remaining yarn may remain attached and be used for the left front of the vest. Next, the user may attach another piece of yarn as a marker on peg **20**, and knit the back section until the user has knit approximately nine and a half inches, or approximately 38 rows. Knit six stitches to the marker on knitting peg **36** and decrease the stitches between knitting pegs **35** and **27** (they have markers on them). Knit the left side until the user has knitted approximately four inches. Take the weaving off the loom. Attach a piece of yarn as a marker on peg **35** and knit approximately four inches, or approximately sixteen rows. Take the knitting off the loom. Using the attached yarn, knit approximately eight inches. Start decreasing on the front side of the vest, one stitch every inch, or every four rows; repeat six times. Take the knitting from the loom and attach yarn as a marker on peg **49** and knit approximately eight inches. Starting on the front side of the vest, decrease one stitch every inch, or every four rows; repeat six times. Sew the shoulder seams together. The user may add some fringe pieces where desirable.

Referring to FIG. 5, one or more knitting pegs may be located between the substantially parallel rows of knitting pegs by means of a cross-bridge **400** configured to connect to base structure **100**. For example, at least one knitting peg at the apex of long axis **310** (see FIG. 3) of the orifice **200** may be positioned within the orifice **200** (see FIGS. 3 and 5A) by any suitable means. Such means may include cross-bridge **400** configured to attach to the base structure **100** by way of replacing at least one detachable knitting peg with cross-bridge **400** having appendages **401** (e.g., pins) adapted to connect to the base structure **100**, as illustrated in FIG. 5B corresponding to cross-bridge **400** on the left of FIG. 5A. Alternatively, the example shown in FIG. 5C illustrates a cross-bridge **400** adapted to clasp, or be clasped by, the base structure as shown by the cross bridge on the right of FIG. 5A. These examples allow the user to carry a single knitting loom and one or more cross-bridges **400**. Cross-bridges **400** may be configured to produce a circular knit having a diameter smaller than the effective diameter of the knitting loom.

Cross-bridges **400** may connect to base structure **100** in a number of ways including clip attachments (such as wings **402**) or appendages **401** (e.g., pins) that interfere with receiving holes in base structure **100**. Moreover, the clip attachments may also be precisely aligned (e.g., located) with base structure **100** using pins protruding from the under side of each clip attachment. Such alignment provides proper substantially equidistant spacing for movable pin **501** between pins **2** and **8** and matches the pin spacing between, e.g., pins **8** and **7**. Similarly, movable pin **505** is spaced equidistant between pins **4** and **6** and matches the pin spacing between, e.g., pins **6** and **7**.

Alternatively, mounting may use the width of cross-bridges **400** to be configured to fit snugly between pins (on the same side) so that the alignment is provided. Alternative examples may include pins that are attached to only one side of base structure **100**. For example, pin **501** may be attached in an L-shape manner to only one side, received by a hole in base structure **100**. However, cross-bridges **400** provide additional stability for pins **501**, **505** by virtue of providing support on both sides of base structure **100**.

As will be recognized by a person of ordinary skill in the art, the base structure may be of any desirable size and may contain any number of knitting pegs spaced equidistant

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around the base structure. In addition, the looms of the invention may be made of any suitable material, such as wood, plastic, rubber, or metal.

The present invention has been particularly shown and described with reference to the foregoing embodiments, which are merely illustrative of the best modes for carrying out the invention. It should be understood by those skilled in the art that various alternatives to the embodiments of the invention described herein may be employed in practicing the invention without departing from the spirit and scope of the invention as defined in the following claims. The embodiments should be understood to include all novel and non-obvious combinations of elements described herein, and claims may be presented in this or a later application to any novel and non-obvious combination of these elements. Moreover, the foregoing embodiments are illustrative, and no single feature or element is essential to all possible combinations that may be claimed in this or a later application.

With regard to the processes, methods, heuristics, etc. described herein, it should be understood that although the steps of such processes, etc. have been described as occurring according to a certain ordered sequence, such processes could be practiced with the described steps performed in an order other than the order described herein. It further should be understood that certain steps could be performed simultaneously, that other steps could be added, or that certain steps described herein could be omitted. In other words, the descriptions of processes described herein are provided for illustrating certain embodiments and should in no way be construed to limit the claimed invention.

Accordingly, it is to be understood that the above description is intended to be illustrative and not restrictive. Many embodiments and applications other than the examples provided would be apparent to those of skill in the art upon reading the above description. The scope of the invention should be determined, not with reference to the above description, but should instead be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. It is anticipated and intended that future developments will occur in the arts discussed herein, and that the disclosed systems and methods will be incorporated into such future embodiments. In sum, it should be understood that the invention is capable of modification and variation and is limited only by the following claims.

All terms used in the claims are intended to be given their broadest reasonable constructions and their ordinary meanings as understood by those skilled in the art unless an explicit indication to the contrary is made herein. In particular, use of the singular articles such as "a," "the," "said," etc. should be read to recite one or more of the indicated elements unless a claim recites an explicit limitation to the contrary.

What is claimed is:

1. A loom comprising:

a plurality of knitting pegs; and

a substantially non-circular base structure connected to said plurality of knitting pegs, wherein the plurality of knitting pegs are arranged substantially perpendicular to said substantially non-circular base structure, wherein said substantially non-circular base structure comprises an elongated orifice having a long axis and a short axis, wherein said plurality of knitting pegs are arranged to form two substantially parallel rows of knitting pegs that are substantially perpendicular to said short axis of said elongated orifice;

at least one knitting peg of the plurality of knitting pegs defining one or more intermediate pegs and being

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aligned along the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs; and

at least one end peg arranged on the substantially non-circular base structure, wherein the at least one end peg arranged substantially perpendicularly to the plurality of knitting pegs and the at the one or more intermediate pegs.

2. The loom of claim 1, wherein said at least one end peg is arranged near the one or more intermediate pegs.

3. The loom of claim 1, wherein said substantially non-circular base structure is an oval.

4. The loom of claim 1, wherein said substantially non-circular base structure is a rounded rectangle.

5. The loom of claim 1, wherein the at least one end peg defines means for attaching yarn to said non-circular base structure.

6. The loom of claim 1, wherein said plurality of knitting pegs are detachably connected to said substantially non-circular base structure.

7. The loom of claim 1, wherein said plurality of knitting pegs and intermediate pegs are spaced substantially equidistant relative to one another.

8. A loom comprising:

an elongate base having two beams, said two beams connected at their first ends by a first connecting member, said two beams connected at their second ends by a second connecting member, whereby the connection of the two beams by the first and second connecting members form an elongate orifice;

a plurality of pegs extending from said each of said two beams;

at least one peg extending from one or more of the first and second connecting members, said at least one peg being spaced substantially equidistant to the nearest of said plurality of pegs extending from each of said two beams; and

at least one end peg extending front one of said first connecting member and said second connecting members, wherein the at least one end peg is arranged substantially perpendicularly to the plurality of pegs and the at least one peg.

9. The loom of claim 8, wherein said plurality of pegs and at least one peg are spaced substantially equidistant relative to one another.

10. The loom of claim 8, wherein said elongate base is configured as substantially oval.

11. The loom of claim 8, wherein said elongate base is configured as a rounded rectangle.

12. The loom of claim 8, wherein said plurality of pegs are detachable.

13. The loom of claim 8, wherein said plurality of pegs are unitary with said elongate base.

14. The loom of claim 8, wherein said two beams are detachable.

15. The loom of claim 8, wherein the at least one end peg defines means for attaching yarn to said elongate base.

16. A method of knitting a tube shaped knit material, the method comprising:

providing a substantially non-circular loom having two beams that are connected at their first ends by a first connecting member, said two beams connected at their second ends by a second connecting member, whereby the connection of the two beams by the first and second connecting members form an elongate orifice;

providing a plurality of pegs upon the substantially non-circular loom by arranging a plurality of knitting pegs

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around the elongated orifice, and arranging at least one end peg substantially perpendicularly the plurality of pegs;

utilizing the substantially non-circular loom for attaching a first end of a length of material to the at least one end peg, and wrapping the material about said plurality of knitting pegs for forming a tube shaped body from the length of material.

17. The method of claim 16, further comprising defining the elongate orifice to include a long axis and a short axis, wherein said plurality of knitting pegs define two substantially parallel rows of knitting pegs that are substantially perpendicular to said short axis of said elongated orifice, wherein said plurality of knitting pegs further define one or more intermediate pegs that is/are aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

18. The method of claim 17, comprising providing a substantially non-circular loom having a rounded rectangle shape.

19. The method of claim 17, wherein said rounded rectangle shape has one knitting peg at each apex of said long axis of the elongated orifice.

20. The loom of claim 1 further comprising a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first elongated base member of the substantially non-circular base structure;

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wherein the second lateral portion is removably-connected to a second elongated base member of the substantially non-circular base structure; and

wherein the central portion includes at least one second intermediate peg that is aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

21. The loom of claim 1 further comprising a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first beam of the two beams; wherein the second lateral portion is removably-connected to a second beam of the two beams; and wherein the central portion includes at least one second peg.

22. The method of claim 17 further comprising providing a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first beam of the two beams; wherein the second lateral portion is removably-connected to a second beam of the two beams; wherein the central portion includes at least one second intermediate peg; and wherein the at least one second intermediate peg is aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

* * * * *

- [54] **THREAD OR THE LIKE DESIGNS, DRAWINGS, PICTURES, PATTERNS AND CREATIONS**
- [76] Inventor: **Phillip Charman**, 4 Thirlmere Cres., Normanby, Middlesbrough, Teesside, TS6 OEU, England
- [22] Filed: **Apr. 5, 1974**
- [21] Appl. No.: **458,120**
- [30] **Foreign Application Priority Data**
Apr. 10, 1973 United Kingdom..... 17199/73
- [52] U.S. Cl..... **35/27; 46/17**
- [51] Int. Cl.²..... **A63H 33/08**
- [58] **Field of Search**..... 35/26, 27, 28; 46/16, 17; 161/7

3,766,960 10/1973 McLaughlin..... 161/7 X

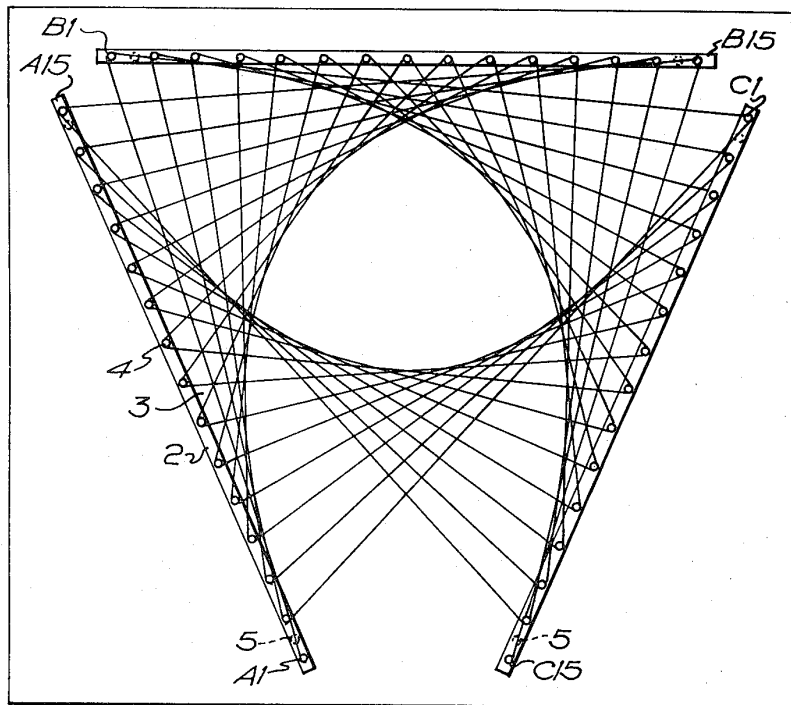
Primary Examiner—Harland S. Skogquist
Attorney, Agent, or Firm—Wolf, Greenfield & Sacks

[57] **ABSTRACT**

A kit for making a thread design or the like comprises a baseboard on which can be removably attached thread receiving strip members each having a spine from one face of which project a plurality of spaced apart pins each having one or more enlarged portions spaced from the spine to retain one or more loops of thread around the pins. The strips are preferably of moulded semi-rigid plastic material having formed integral therewith the pins and also attachment means, for example plugs for fitting into selected ones of a plurality of holes in the board to give a choice of positions defining a work area between the strips and thereby change the thread design. The strips may be flexed in the plane of the board or perpendicular thereto to take different configurations temporarily. The kit includes one or more batches of thread or the like of the same or different colours.

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3 Claims, 2 Drawing Figures



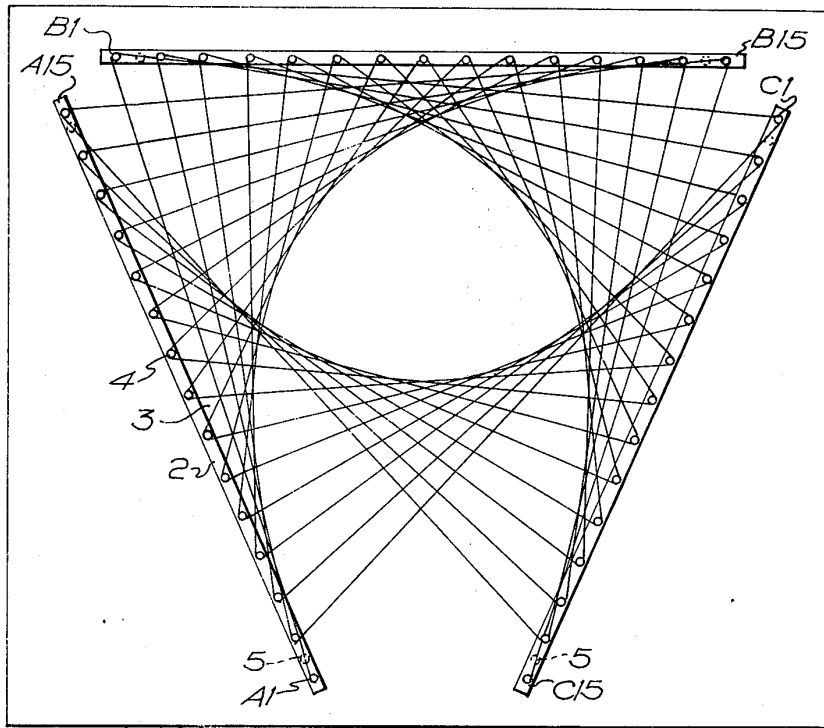


FIG 1

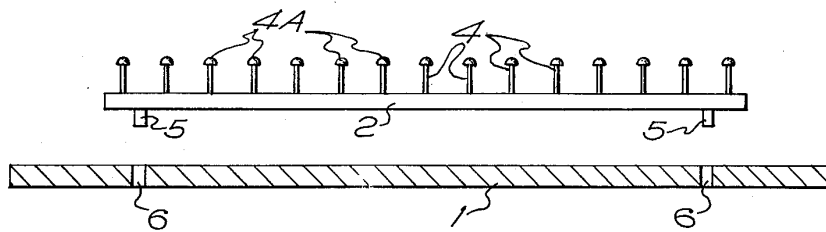


FIG 2

THREAD OR THE LIKE DESIGNS, DRAWINGS, PICTURES, PATTERNS AND CREATIONS

This invention relates to what can be considered generally to be "thread designs" which are created by looping thread to and fro between rows of pins usually carried by a base board. These thread designs can be reset for educational and/or recreational purposes and are becoming quite popular. While the expression thread designs has been used, it should be pointed out that it is not necessary that fibrous thread be used, instead filamentary material such as plastics material filaments can be used. The designs need not be two dimensional, but usually are.

Furthermore, the designs may be or be considered to be drawings, pictures, patterns and/or creations, but only the expression designs will be used to cover all these descriptions in the interests of clarity.

The expression "thread designs" as used in this specification and the appended claims is intended to mean designs as described in the preceding paragraphs.

Conventionally, two-dimensional thread designs are created by pushing plain headed steel pins into a base board so as to form two or more rows of such pins. The thread is looped between the pins, the heads of the pins retaining the loops in position in order to create the design. The components necessary to create the thread design are usually sold in kit form.

A disadvantage of this known arrangement is that the pins have to be pushed into the board individually which is very time consuming. Moreover, individual pins tend to become lost.

According to the invention there are provided thread receiving strip members adapted for use in the creation of thread designs, each said member being moulded in plastics material and having a spine from one side of which projects a plurality of spaced apart and substantially rigid rods or pins each having an enlarged portion spaced from said spine and adapted to retain a thread looped therearound when the member is attached to a base board.

The member may have integral means at the other side thereof to enable the member to be attached to a base board. Such means may be one or more plugs to be push fitted into holes in the base board.

The said rods or pins preferably are parallel and in one plane and the enlarged portion of each comprises a head at the outer extremity of the pin.

The said member is preferably capable of being flexed at least to a limited extent to desired configurations. It will normally be straight.

Also according to the invention, there is provided a kit for making a thread design which comprises a base board, and at least two thread receiving strip members or one strip member which can be divided into at least two strip members, each strip member having a spine from one side of which projects a plurality of spaced apart and substantially rigid rods or pins each having an enlarged portion spaced from said spine, and adapted to retain a thread looped therearound, said member being for connection to the base board so that thread may be looped around and between the pins thereof to create a thread design.

The invention also provides a thread design comprising a base board and at least two thread receiving strip members attached to the base board, each of said strip members having a spine from one side of which

projects a plurality of spaced apart and substantially rigid rods or pins each having an enlarged portion spaced from said spine, and including thread looped round and between said rods or pins to create the design.

The strip member or members preferably is or are moulded in synthetic plastics material.

The strip member or members is or are preferably provided with integral plugs to the other side thereof and the base board has holes in which such plugs are a friction fit to provide for the easy connection and removal of the strip or strips to and from the base board. The base board preferably has a plurality of said holes enabling the position or positions of the strip or strips to be selectively changed for changing of the thread design.

The thread may be included in the kit and may comprise a plurality of batches of different colours.

An embodiment of the present invention will now be described by way of example, with reference to the accompanying drawing wherein:

FIG. 1 is a plan view of a thread design created using strips and a kit according to the invention; and

FIG. 2 is a sectional elevation illustrating how a strip is connected to the base board in the design of FIG. 1.

In FIG. 1 there is shown in plan view a thread design constructed using strips and a kit according to the present invention. The design basically is constructed using three similar strips 2 arranged in a generally triangular configuration, to define the work area. The three strips may be considered as referenced A, B and C in order round the triangular configuration and as will be seen the adjacent ends of strips A and C are spaced slightly wider than the adjacent ends of A and B and B and C.

The strips 2 are firmly mounted on a base board 1 which in this example is of square configuration. Each of the strips 2 is mounted on the base board in the manner shown in FIG. 2 insofar as two circular plugs 5 to one side of the spine of the strip 2 are engaged in suitably dimensioned holes 6 in the base board 1. In fact plugs 5 are a friction fit in holes 6 so that the strip will be held firmly but can be removed manually. The board 1 is shown as having two holes 6 for the respective plugs 5 of the strips shown and indeed there is a similar arrangement for each of the strips A, B and C, but the board 1 could have a multiplicity of said holes to permit easier repositioning of the strips depending upon the thread design to be constructed.

To the other side of the spine of each strip 2 from plugs 5 there are spaced parallel pins or rods 4 which are moulded integrally with the spine and the plugs 5 of the strip 2 and each rod 4 has an enlarged portion in the form of an enlarged head 4A at the outer extremity thereof. These enlargements are to catch thread loops looped over the pins 4 in the construction of the design illustrated in FIG. 1.

The kit may be provided with suitable instructions for the formation of predetermined designs. For example, if the pins 4 are considered to be A1, A2, A3. . . A15, B1, B2, B3. . . B15, and C1, C2, C3. . . C15 for the threading pattern then the pattern shown in FIG. 1 can be made by threading A1, B1, C1, A2, B2, C2 and so on. Of course other patterns will have other sequences.

The strips 2 are one-piece mouldings and may when supplied in kit form be separate or be joined end to end ready for splitting into smaller lengths. The lengths of the strips used in constructing any particular design

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need not be equal and furthermore the strips or some of them may be of curved configuration. If the plastics material is sufficiently flexible then the individual strips can be curved to desired configurations and held thus when applied to the board, but the pins or rods will be substantially rigid.

The heads 4A to the pins 4 preferably are mushroom shape in order to provide positive resistance to the slipping of thread loops over such heads 4A but other head configurations may be used.

Preferably the strip members are made in moulded plastics material for utility of production and economy of production, but they may be formed in other materials such as metal castings.

The thread design shown as having been formed in FIG. 1 is a two-dimensional design. By suitably shaping the strip members or suitably bending the strip members or providing a three-dimensional base three-dimensional designs can be produced. Furthermore strips can be arranged vertically in some cases.

In an alternative arrangement separable clips may be used for attaching the strips to the base board, such clips being adapted to wrap round the strip spine and plug into the holes in the base board in a manner similar to the plugs 5. Other methods of attachment of the strips to the base board may be used. For example, such strips may be adhered to the base board, or pinned to the base board by pins passing through holes in the spine.

The strip connected to the base board may be provided with more than two connecting devices such as the clips or plugs 5 which are engaged in appropriate holes in the base. The number of such connections with the base for each strip will depend upon the strip length.

The size of the base board will depend upon the thread design to be created thereon.

Each of the pins of the strips may be provided with more than one enlargement, and such enlargements would be opened lengthwise of the pin. This enables the design to be built up in layers one above the other, for improved effects. Furthermore the strip may be provided with two or more rows of pins lying at a construction which may be suitable for the creation of three-dimensional designs.

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The distances between pins of any strip member need not be equal as shown in the drawings, but usually will be.

What we claim is:

1. A kit for making a variety of thread designs, the kit comprising

1 a base board having a multiplicity of plug receiving holes therein,

2 a plurality of thread receiving strip members, each strip member comprising

i a resilient spine

ii a plurality of spaced apart and substantially rigid thread receiving pin members attached to and protruding from one face of the spine, each pin member having a shank upon which is at least one enlarged portion spaced from the face of the spine for retaining in position a thread looped around the pin, and

iii the opposite face of said spine having a set of strip locating plugs projecting therefrom in the direction opposite to said pin members, the strip locating plugs being adapted to be inserted into selected holes in the base board whereby a choice of different positions and relative dispositions for the plurality of strip members is provided which define a work area across which the threads extend when looped around and between the pin members to form a thread design, and the spine being adapted to flex at least in the plane of the board when plugged into the board.

2. A kit according to claim 1 for making a variety of thread designs, wherein

said thread receiving strip members and their protruding pin members are integrally molded from a material which permits the strip members to flex under thread tension whereby the strip members can be caused to assume different configurations by thread tension on the protruding pin members.

3. A kit according to claim 1 for making a variety of thread designs, wherein the kit further includes

3. a batch of thread for looping around and between the pin members and across the work area to form a thread design.

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United States Patent [19]
Macbain

[11] **Patent Number:** **5,231,742**
[45] **Date of Patent:** **Aug. 3, 1993**

- [54] **HAND TWINING LOOMS**
- [76] **Inventor:** **Kathleen E. Macbain**, 9125 Copper NE, Apt. 320, Albuquerque, N. Mex.
- [21] **Appl. No.:** **895,521**
- [22] **Filed:** **Jun. 8, 1992**
- [51] **Int. Cl.⁵** **D03D 29/00**
- [52] **U.S. Cl.** **28/151; 139/34**
- [58] **Field of Search** **289/16.5, 17; 139/383 AA, 29, 34; 66/1 A, 1 S, 2, 3, 193, 169 R, 1 R, 117, 118; 28/144, 145, 147, 149, 152, 151, 150; 223/6, 120; 87/10-13, 53, 62**

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Primary Examiner—Andrew M. Falik
Attorney, Agent, or Firm—DeWitt M. Morgan

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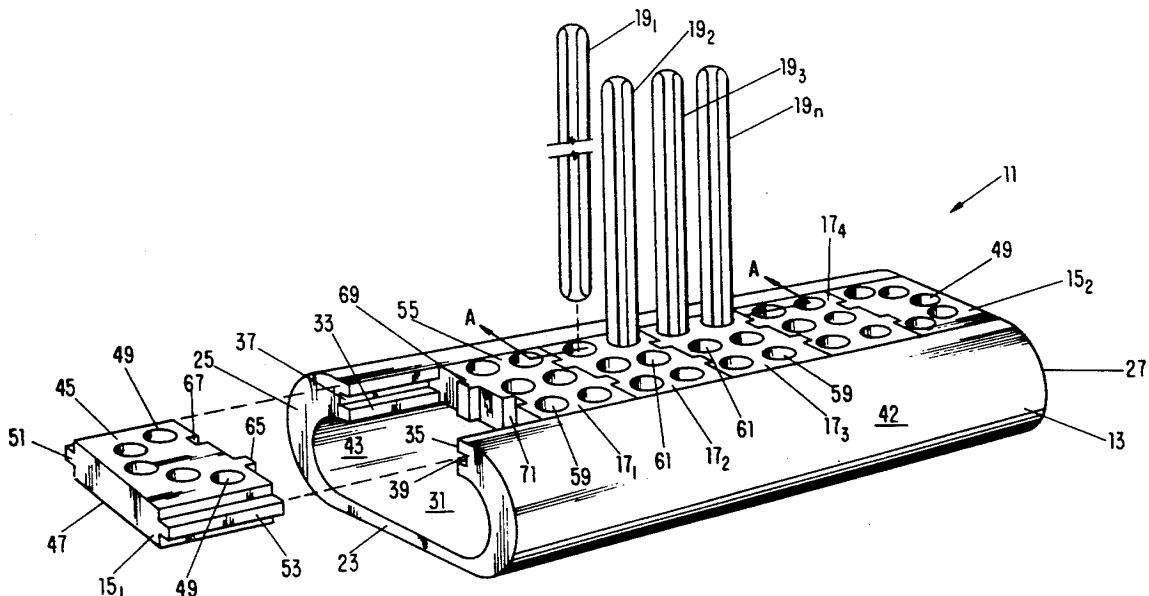
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[57] **ABSTRACT**

An apparatus and method for twining or weaving. The apparatus includes a plurality of elongated loom fingers and a loom. Each of the loom fingers is elongated, has first and second symmetrical tapered ends, and has an elongated groove running the entire length thereof. The loom includes: a first support that includes at least one plate-like member having a plurality of through holes therein which loosely support the loom fingers in a substantially parallel manner; a second support that has a finger engagement surface which, in the assembled form, is adopted to engage one of the ends of each loom finger being used; and structure for detachably supporting the plate-like member altitudinally with respect to the second support. In operation, to disengage the loom fingers, the plate-like member is moved relative to the second support and, then, the plate-like member is moved toward the end of the loom fingers which had previously been in contact with the finger engagement surface.

25 Claims, 10 Drawing Sheets



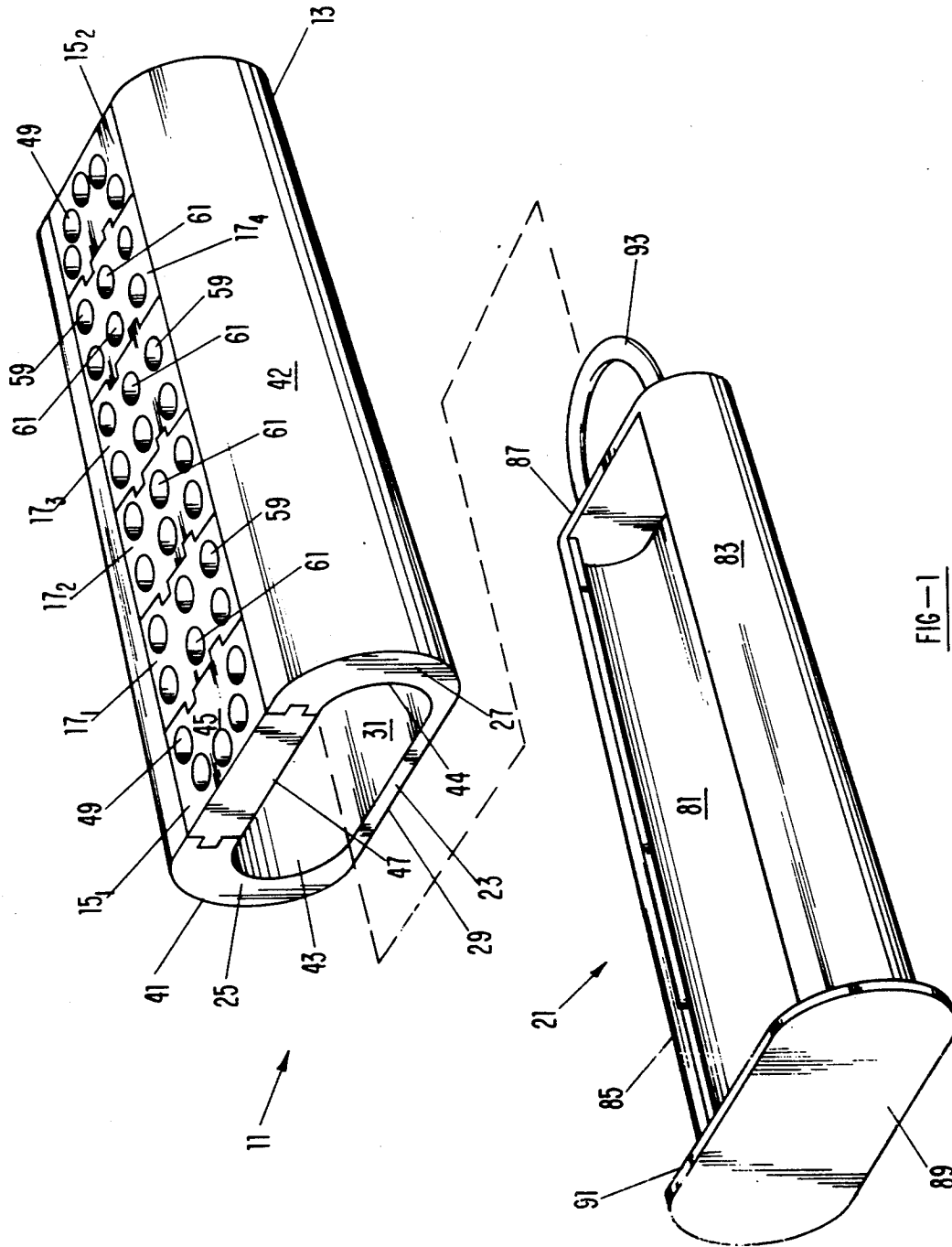


FIG-1

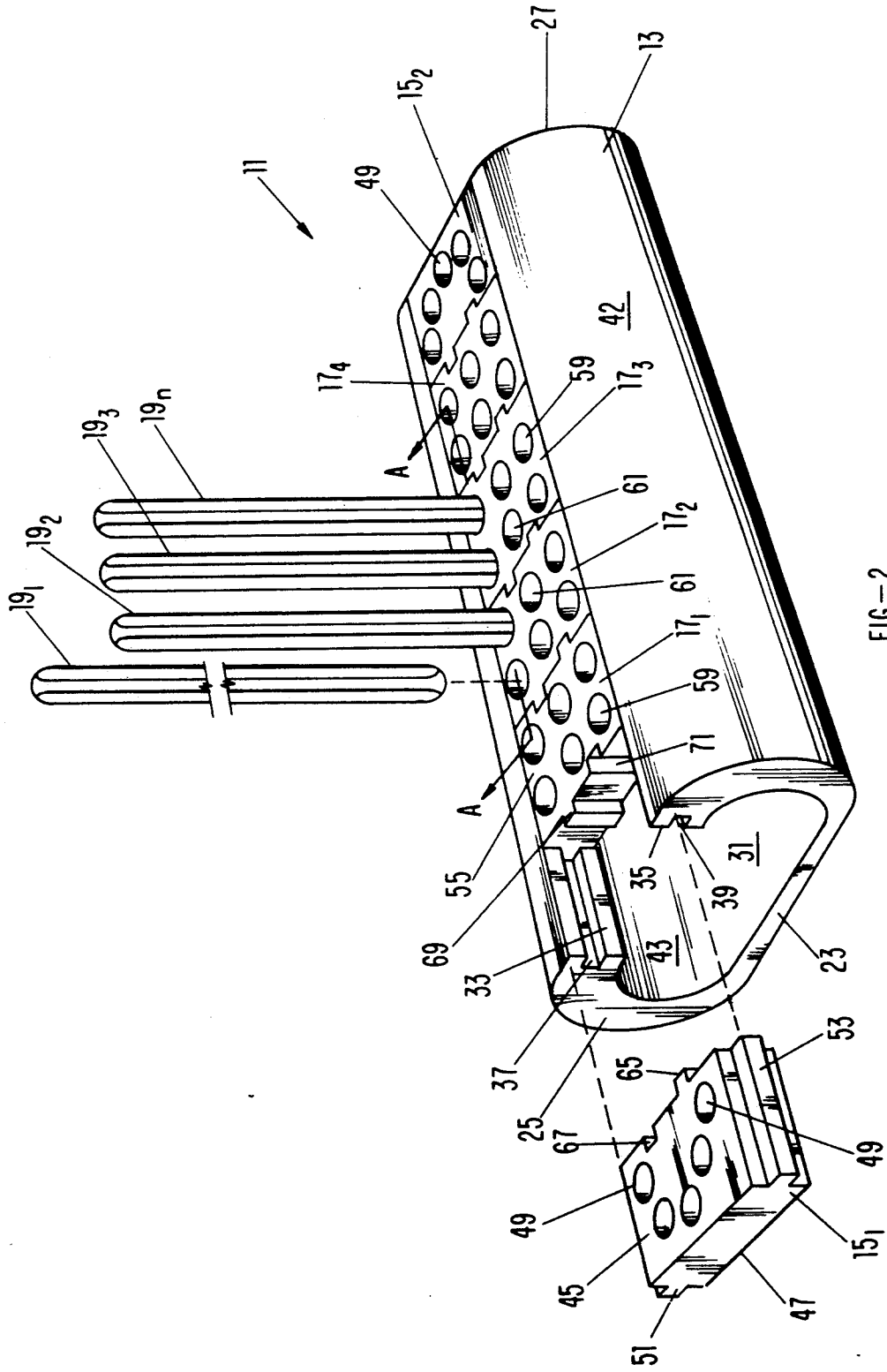


FIG-2

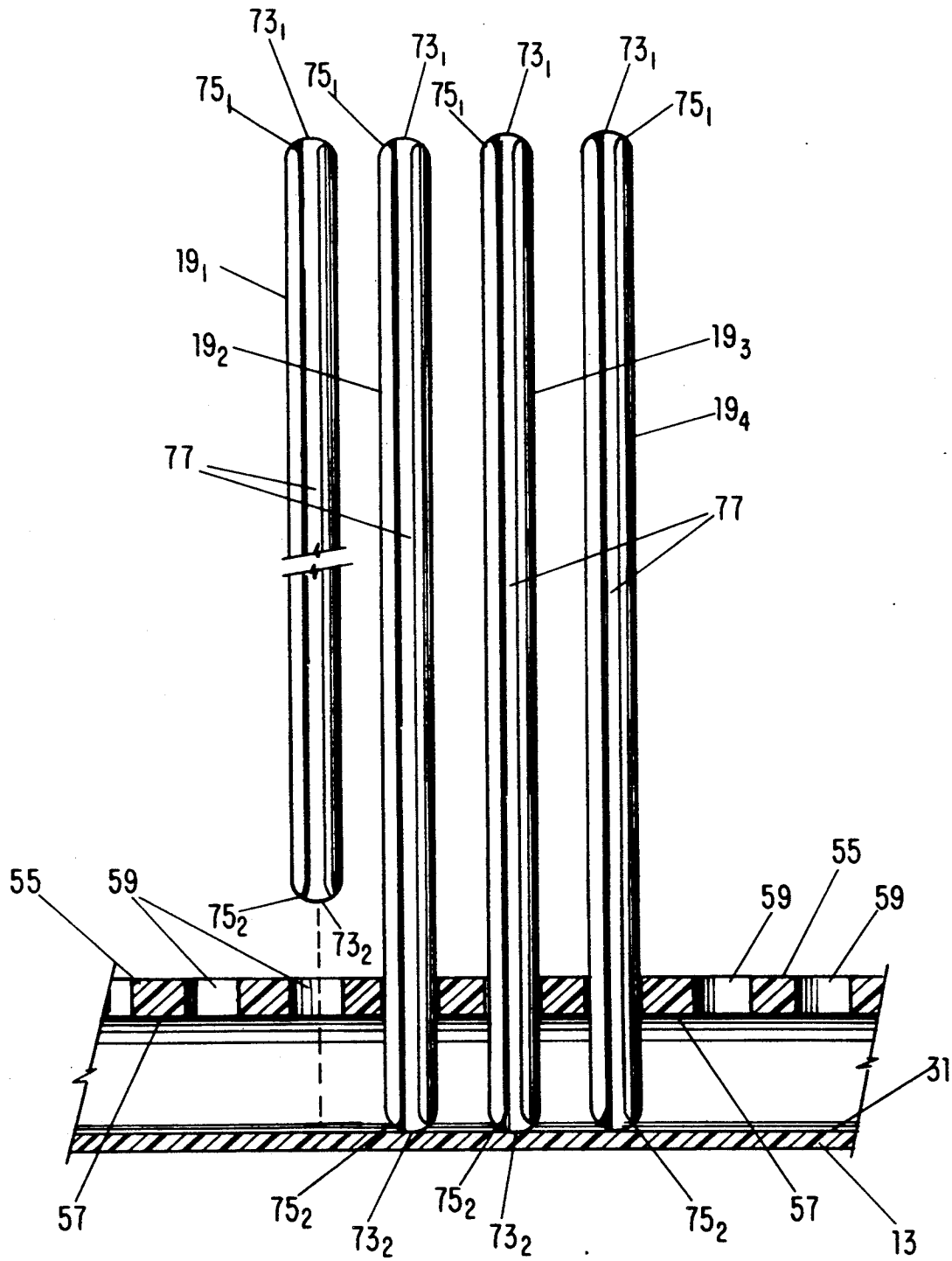


FIG-3

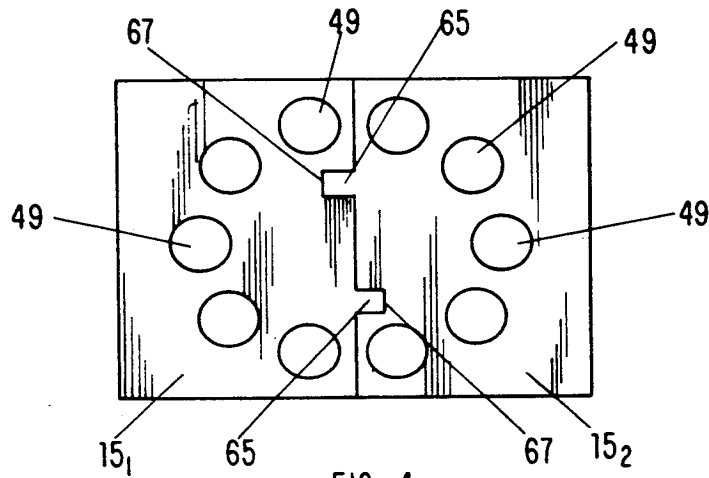


FIG-4

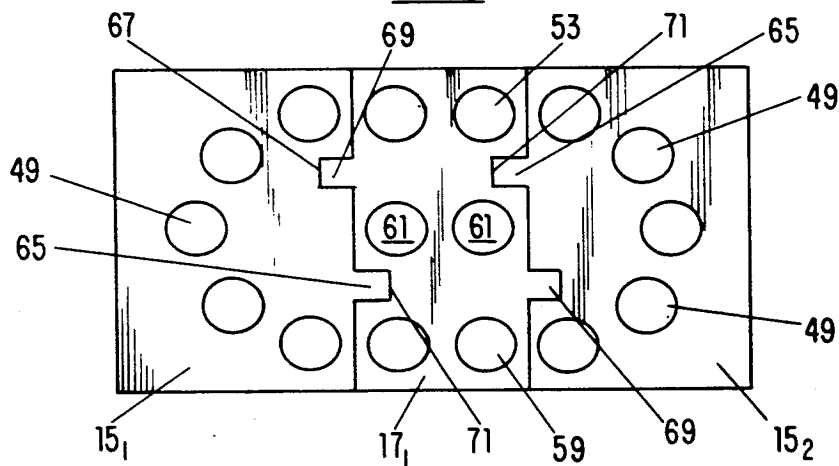


FIG-5

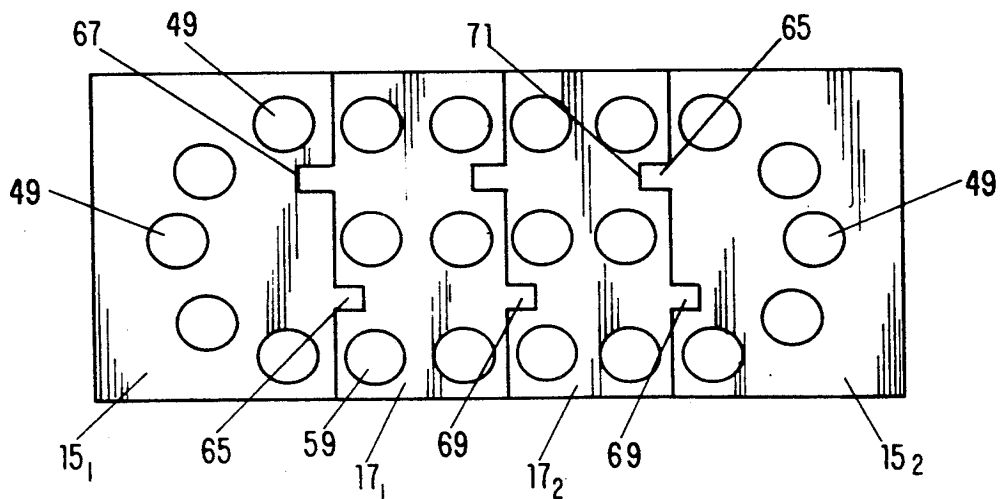


FIG-6

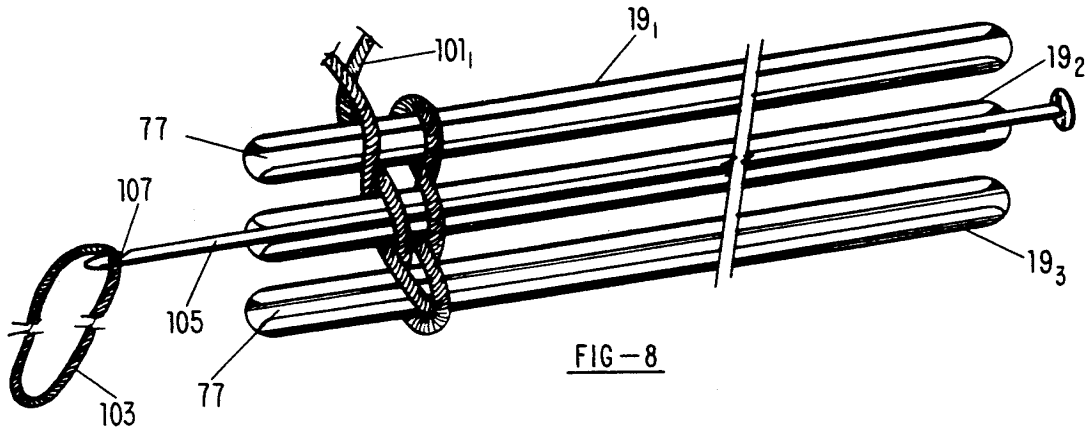


FIG-8

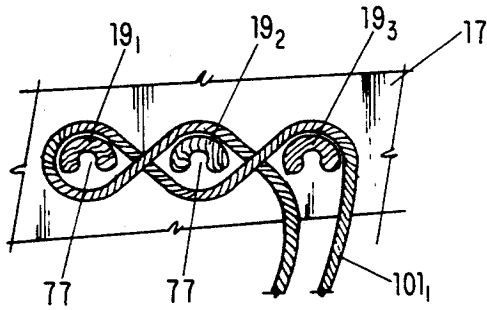


FIG-7A

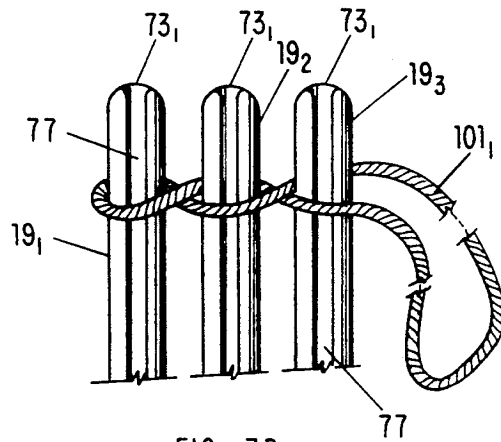


FIG-7B

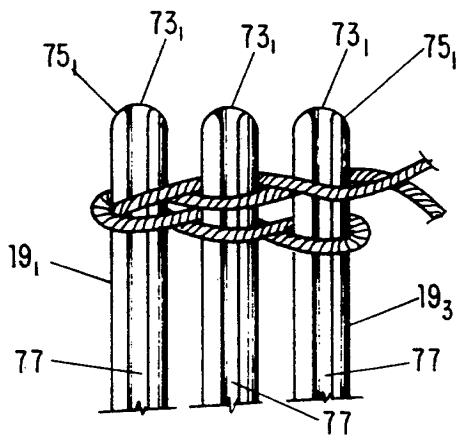


FIG-7C

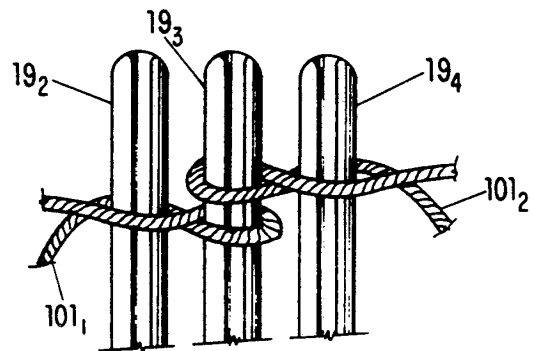


FIG-7D

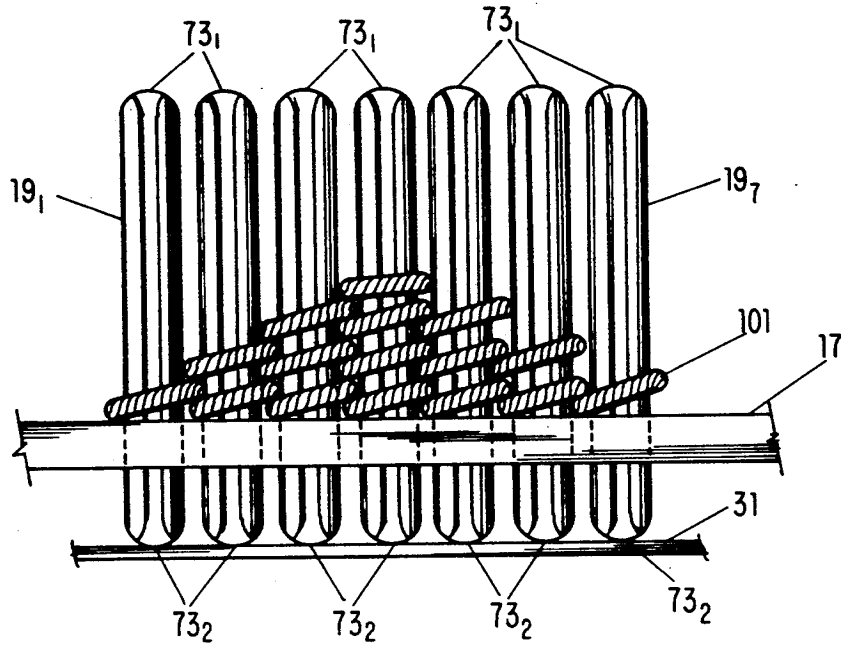


FIG-9A

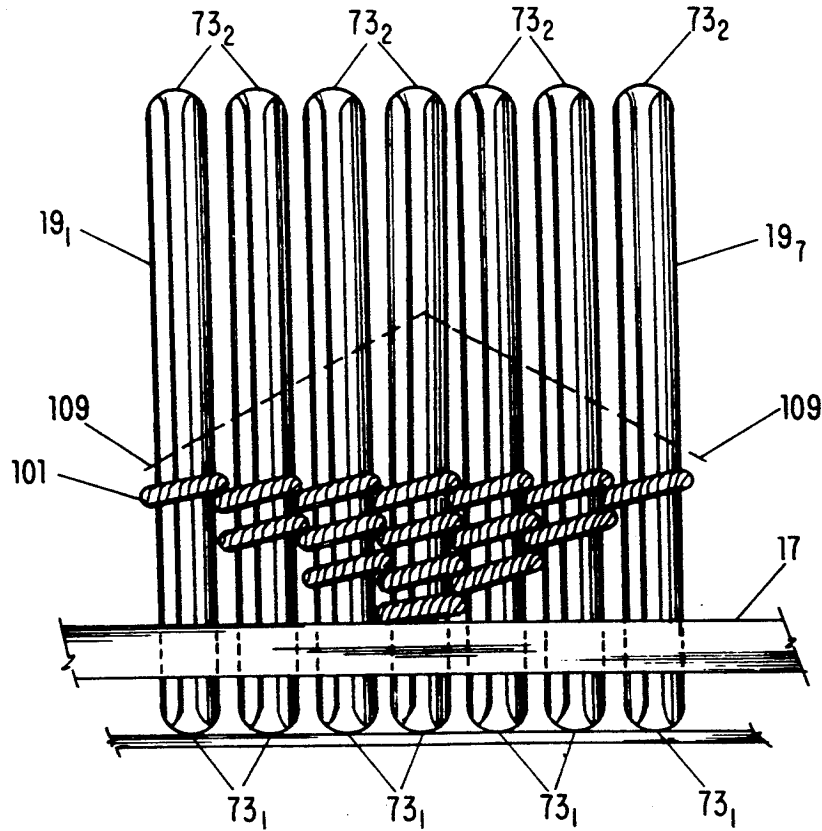


FIG-9B

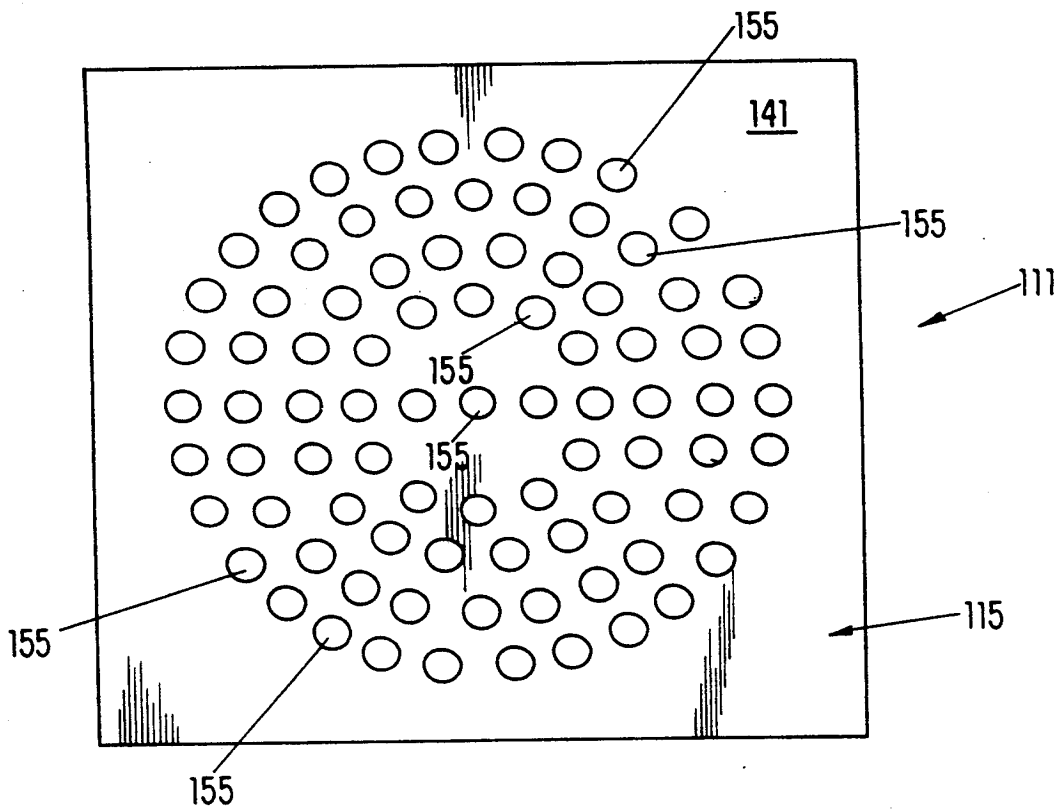


FIG-10

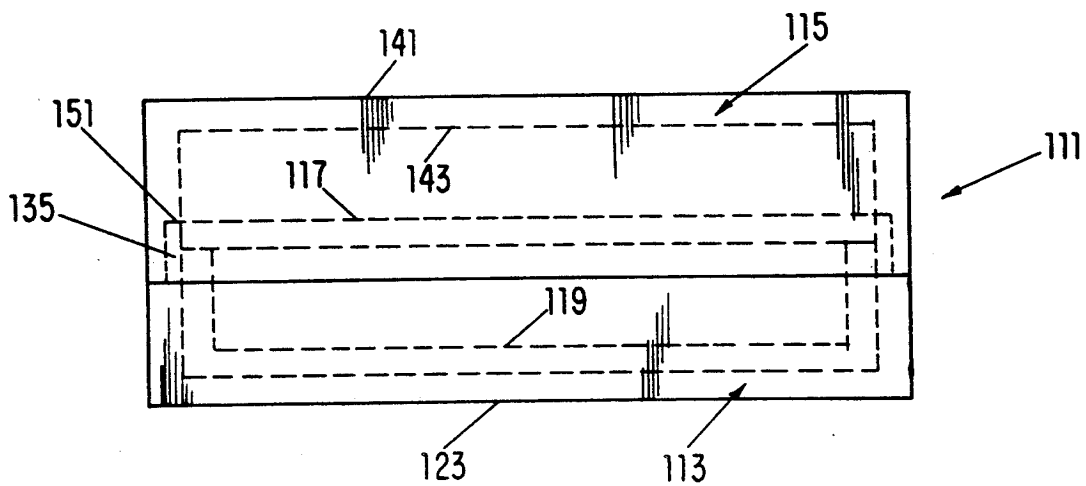


FIG-11

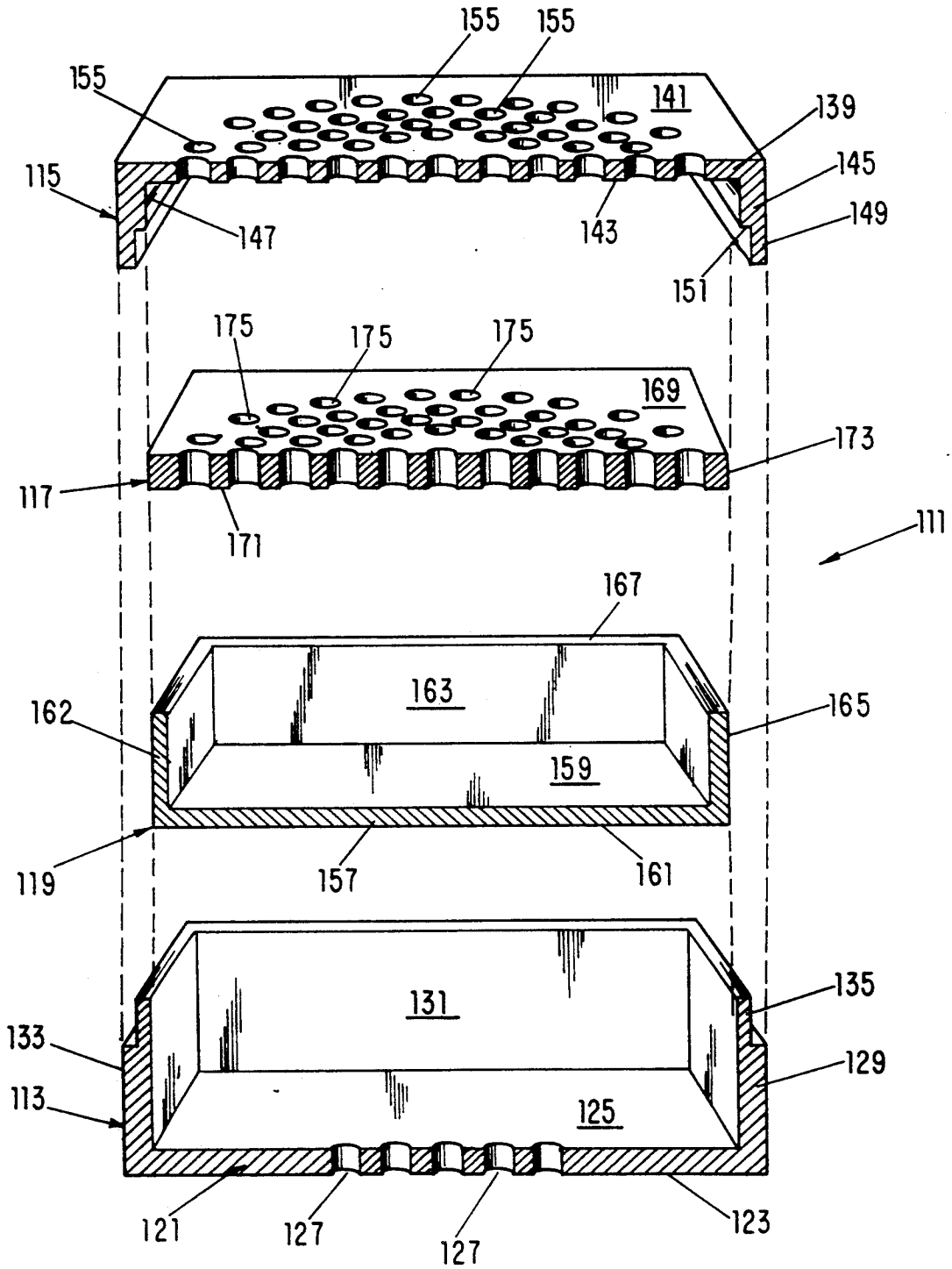


FIG - 12

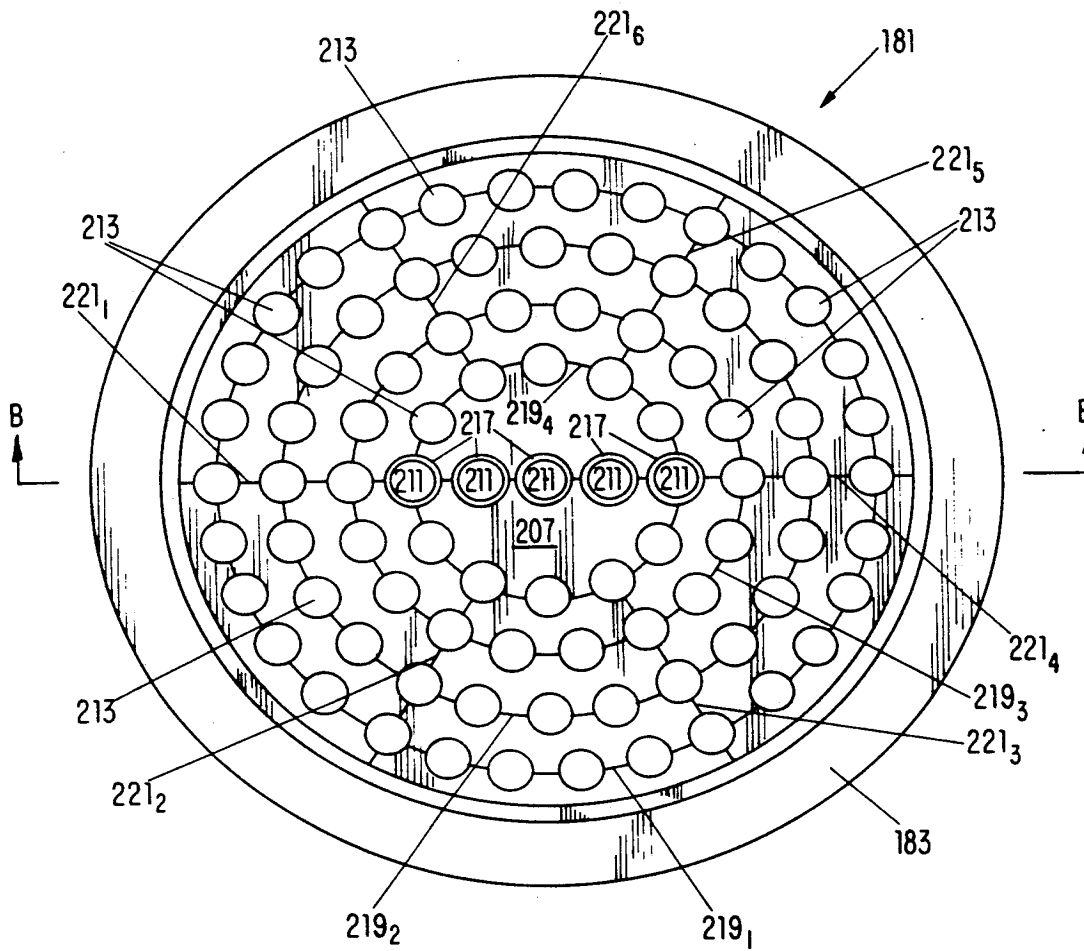


FIG -13

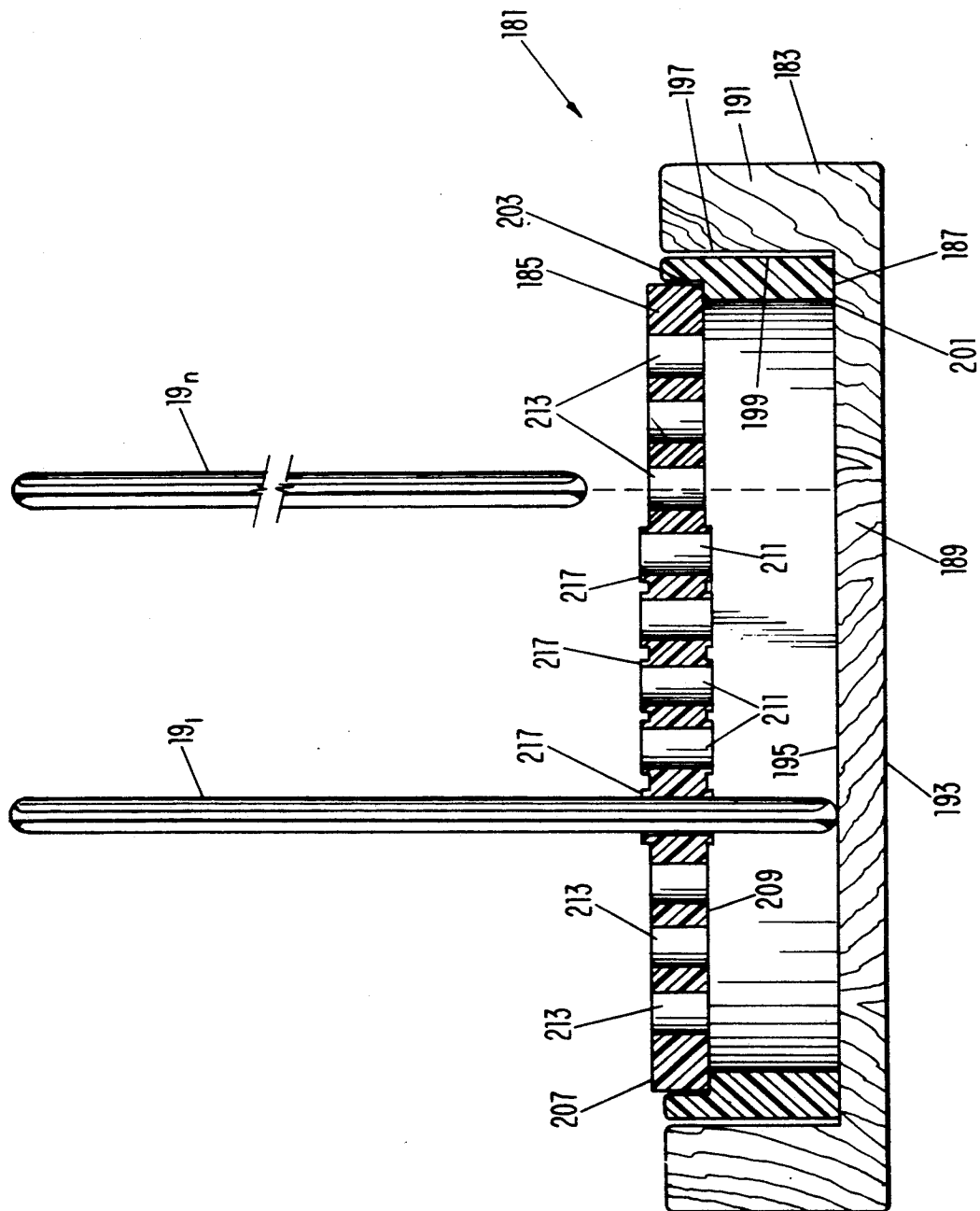


FIG-14

HAND TWINING LOOMS

TECHNICAL FIELD

The present invention relates generally to devices for performing handicraft activities, and more particularly to hand weaving looms.

BACKGROUND OF THE INVENTION

Handicraft activities have always enjoyed popularity for both educational and recreational purposes. Activities such as knitting, needlepoint, crocheting, and the like enhance manual dexterity and coordination, provide relaxation, and provide the satisfaction of creating a handmade article.

A number of hand weaving looms are disclosed in the prior art including: U.S. Pat. Nos. Re. 30,656, 4,192,046, 3,971,417, 2,739,437, 3,530,558, 2,803,051, 2,726,434, 2,563,510, 2,224,563, 2,166,668, 2,065,498, 1,975,924, 1,675,881, and 1,317,367; Canadian patents Nos. 1,044,573 and 1,003,305; and Swiss patents Nos. 258,565 and 164,808.

U.S. Pat. No. Re. 30,656 to Davitian discloses a weaving apparatus that includes a base portion 4, formed of resinous material, wood or metal. Mounted in and extending from base 4 are a plurality of elongated rods 8, which may be permanently or removably mounted in base 4 to form a comb-like frame assembly. The free end 22 of each rod 8 is notched. Notches 24 and lug posts 6 formed on base portion 4 cooperate to support the weft.

In the apparatus disclosed in van der Bosch-Meeves et al., U.S. Pat. No. 4,192,046, a locking apparatus, including lower block 1 and upper block 2, is used to hold a plurality of wooden weaving bars 11. At one end thereof, bars 11 have hooks 15 to which warp threads 18 are attached. In operation, those portions of bars 11 upon which the weft threads have already been drawn are locked between blocks 1 and 2 and the weaving proceeds on the ends opposite to hooks 15.

Gentil, U.S. Pat. No. 3,971,417 discloses a hand loom formed of a first set of needles 2_{1,3,5...13} held by holder 3 and a second set of parallel and alternating needles 2_{2,4,6...14} held by a second holder 5. All of these needles have at one end, a semicircular hook. At the opposite end each needle has a flattened region having an eye therein through which a warp filament is threaded. Holder 3 and the needles secured to it are movable laterally relative to holder 5, to permit the odd numbered hooks to move relatively to the even number of hooks as the weft filament 17 is laid.

U.S. Pat. No. 3,739,437 discloses a weaving device in the form of a comb with a first set of fingers 36 being somewhat longer than a second set of fingers 38. This permits fingers 36 to be easily deflected relative to fingers 38 during the weaving process. U.S. Pat. No. 2,166,688 discloses a similar device.

Bacheller, U.S. Pat. No. 2,065,498 discloses what is described as a comb loom including a base 13 having a plurality of evenly spaced grooves 14. Fixed in the grooves are a like plurality of channel members 15. In addition to a straight base, a circular block 34 may be used to support the channel members. The open channel in each of members 15 permits a bodkin 20, to which is attached the warp thread, to pass through the weft. The bodkin has to be flexible to work and the channel members have to face in the same direction and align with the grooves 14. After the desired piece has been woven

on the loom it is, presumably, worked off members 15 with great difficulty. Denney, U.S. Pat. No. 1,675,881 also discloses a comb-like weaving structure in which a plurality of bars 19 are locked in a parallel arrangement by a timber 12 and a mating clamping bar or plate 13. Similarly, U.S. Pat. No. 1,317,367 to Hansen discloses a plurality of needles 10 firmly held by a holder of sheet metal. Swiss patents Nos. 258,565 and 164,808 appear to disclose similar structures.

The benefits associated with handicraft activities can be particularly important when working with children, including handicapped children, or with persons having learning and physical disabilities. For children, these activities can be stimulating and entertaining, and help instill the motivation required for initiating a project and following it through to completion. For persons having learning or physical disabilities, handicraft activities also provide rehabilitation and therapy, and can provide feelings of accomplishment and pride that come with creating an attractive craft item from simple starting materials. Even the set up of the loom provides a beneficial fine motor activity.

While activities such as knitting and needlepoint can be performed to make both useful and decorative items, these activities may be too complex and time-consuming for children and the learning or physically disabled. Handicrafts for these people can be most rewarding if they can be easily learned, and readily performed to create a finished article in a relatively short time. A handicraft activity which can be easily learned in a simple form, and can be further practiced employing more sophisticated techniques, is particularly desirable.

To this end, the present invention concerns a hand weaving device which: (1) is straightforward in construction for economical manufacture; (2) is easy to use; and (3) lends itself to use in various ways to permit practice of more sophisticated techniques as proficiency with the device is gained.

SUMMARY OF THE INVENTION

A method and apparatus for twining or weaving. The apparatus includes a plurality of elongated loom fingers and a loom. Each of the loom fingers is elongated, has first and second symmetrical tapered ends, and has an elongated groove running the entire length thereof. The loom includes: a first support that includes at least one plate-like member having a plurality of through holes therein which loosely support the loom fingers in a substantially parallel manner; a second support that has a finger engagement surface which, in the assembled form is adopted to engage one of the ends of each loom finger being used; and structure for detachably supporting the plate-like member altitudinally with respect to the second support.

The number of through openings in the plate-like member depends upon its size and shape. The through openings are arranged in one or more patterns, including straight lines, circles and/or ovals, or portions thereof. The pattern selected and the number of loom fingers used is at the discretion of the user.

In one embodiment, the second support is an elongated channel, with the structure for detachably supporting including a tongue and groove arrangement. In another embodiment, the second support includes a raised annular ring which has a lip thereon. The plate-like member is disc shaped and has an edge which cooperates with the lip for relative rotation thereto. In a

third embodiment the loom is in the form of a box like structure, with both the top and bottom have a hole pattern therein. In this case, the first support includes an intermediate master plate; the second support includes a tray for supporting this plate.

The method includes: positioning the plate-like member relative to the finger engagement surface; positioning the desired plurality of loom fingers in the through holes; wrapping or twining weft on the loom fingers; disengaging the plate-like member from the second support; moving the plate-like member relative to the finger ends which were in contact with the finger engaging surface; removing the fingers and the weft, as a unit, from the plate-like member; inserting the warp (from either end); and removing the loom fingers (without distorting the weaving). The loom fingers and weft can be repositioned relative to the second support with the opposite ends of the loom fingers in contact with the engaging surface, to reverse the direction of the weaving/twining of the weft.

The invention also contemplates the use of closed loop material as the weft, wherein the finger on which one loop ends is the same finger for starting the next loop.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the first preferred embodiment of the present invention, showing the loom finger storage tray;

FIG. 2 is an additional perspective view of the embodiment of FIG. 1;

FIG. 3 is a sectional view of the first embodiment taken along lines A—A of FIG. 2;

FIGS. 4, 5 and 6 are top plane schematics showing alternate tile and hole arrangements obtainable with the embodiment of FIG. 1;

FIGS. 7A, 7B, 7C and 7D are partial views illustrating the preferred method of weaving or twining the weft;

FIG. 8 is a perspective view illustrating the use of a hook and how it is used to pull the warp through the weft;

FIGS. 9A and 9B are schematics illustrating the method of weaving by reversing the direction of the loom fingers;

FIG. 10 is a top plane view of an alternate embodiment of the present invention;

FIG. 11 is an end view of the embodiment of FIG. 10;

FIG. 12 is an exploded perspective view of the embodiment of FIG. 10;

FIG. 13 is a top plane view of a third preferred embodiment of the present invention; and

FIG. 14 is a sectional view of the embodiment of FIG. 13, taken along lines B—B, with the addition of loom fingers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIGS. 1-3, loom 11 includes a base 13, two loom finger positioning end plates 15₁₋₂, intermediate loom finger positioning plates 17₁₋₄, and a plurality of loom fingers 19_{1,2,3...n}. Loom 11 also includes loom finger and hook storage tray 21.

Base 13 includes a bottom portion 23, and integral curved side portions 25 and 27. Bottom portion 23 has a flat exterior surface 29 and an interior loom finger support surface 31. Side portions 25 and 27 terminate in opposing parallel faces 33 and 35 which have, respec-

tively, facing longitudinal, parallel grooves 37 and 39. The exterior curved surfaces 41 and 42 are continuous with bottom surface 29; the interior surfaces 15 43 and 44, with surface 31.

Each plate 15 has a top surface 45, a bottom surface 47, and a plurality of loom finger receiving through openings 49. Each plate 15 also includes opposite and parallel tongues 51 and 53 which are designed to be slidably received in grooves 37 and 39 of base 13, as illustrated. Similarly, each plate 17 has a top surface 55, a bottom surface 57, a plurality of loom finger receiving perimeter through openings 59, and a plurality of loom finger receiving center through openings 61. Each plate 17 also has a pair of opposite and parallel tongues (not illustrated) which are also slidably received in grooves 37 and 39. When assembled with base 13, surfaces 45 and 55 lie in substantially the same plane which is continuous with curved surfaces 41 and 42. The distance between surfaces 45, 55 and 47, 57 and the diameter of openings 49, 59 and 61 are chosen such that plates 15 and 17 support a plurality of loom fingers 19 in substantially parallel fashion, without binding such loom fingers in their respective openings.

With reference to FIGS. 1, 2 and 4-6, it will also be seen that each plate 15₁₋₂ has a tongue 65, and a notch 67. Similarly, each plate 17₁₋₄ has a pair of tongues 69 and a pair of notches 71. Each tongue 65, 69 may have one or more dimples (not shown) for, in the assembled position, mating with depressions (also not shown) in the mating notches 67, 71, to form a unitary plate structure. However, as those skilled in the art will appreciate, the tongue and notch locking arrangement is optional and may be replaced with an alternate mechanism for holding plates 15 and 17 together, or dispensed with altogether.

Also with reference to FIGS. 1, 5 and 6 it can be seen that the pattern of openings 49 and openings 59 is a closed loop. The pattern formed by openings 61 is a straight line. As is also evident with reference to FIGS. 4, 5, and 6, the number of plates held by base 13 can be varied to form the desired hole pattern (e.g. circle, oval, partial oval, semi-circle, or straight line) and the desired size. As should also be apparent to those skilled in the art, a single unitary plate having the desired hole pattern or patterns could be used instead of a plurality of plates 15₁₋₂ and 17₁₋₄. Further, long plates could be used to link two or more base members 13.

As is evident from FIGS. 2 and 3, each loom finger 19 has symmetrical ends 73₁ and 73₂, symmetrical tapered portions 75₁, 75₂ and an elongated groove 77 running the entire length thereof, which results in a C-shaped cross-section. As is also evident from FIGS. 2 and 3, each loom finger is slidably received in a through opening (49, 59 or 61, as the case may be) in plates 15 and/or 17, with one of its ends 73₂ in contact with surface 31. Each loom finger 19 is formed of wood, plastic or metal.

As an optional feature, loom 11 may also be provided with a storage tray 21 for loom fingers 19 and one or more hooks (such as illustrated in FIG. 8). Tray 21 includes an elongated channel portion 81, having curved exterior sides 83 and 85, a top end portion 87 and a bottom end portion 89. Exterior surfaces 83 and 85 and the bottom surface (not shown) are shaped and dimensioned to be slidable received within the channel formed by interior support surface 31 and surfaces 43 and 44. Bottom end portion 89 includes a continuous lip 91 which, when tray 79 is received within base 13, abuts

one of the end faces of base 13. Channel portion 81 has the same length as base 13 so when tray 79 is received in base 13, the exposed face (not shown) of top end portion 87 is flush with other of the end faces of base 13. Top end portion 87 also includes a handle 93 which can be used for carrying or hanging up loom 11.

Base 13, tray 79 and plates 15₁₋₂ and 17₁₋₄ are, preferably, made of plastic. However, other materials such as wood or aluminum, or combinations thereof, could also be used.

In operation, with plates 15 and 17 assembled with base 13 as illustrated in FIGS. 2 and 3, the desired plurality of loom fingers 19_{1,2,3,4...} are slidably received in openings 49, 59 and/or 61. For each loom finger 19, one of its symmetrical ends 73₂ touches and is supported by surface 31. While only four loom fingers 19 are illustrated, it will be appreciated that, for instance, an elongated straight line of loom fingers can be formed utilizing all of openings 49 and 59. With the loom fingers 19_{1,2,3,4} positioned as illustrated in FIG. 3, the weft can be applied with any conventional soft weaving material such as knits, bias fabrics, twines and yarns, in any conventional manner. However, it is preferred to use closed loop material made from fabric which has some elasticity, such as closed loops made from T-shirt type material.

With reference to FIGS. 7A, 7B, 7C and 7D, the preferred and what is believed to be a unique weaving technique is illustrated. As illustrated in FIGS. 7A and 7B the closed loop weft 101₁ is simultaneously wrapped around opposite sides of each loom finger 19_{1,2}. When the user reaches the end of a row, weft 101₁ is double turned around loom finger 19₃, as illustrated in FIG. 7C. Weaving or twining of weft 101₁ can proceed from left-to-right and then back (i.e., from right-to-left), which encourages the user to use opposite hands. Alternately, the position of loom 11 can be rotated 180°, as illustrated in FIG. 7C. The ending of weft 101₁ is illustrated in FIG. 7D, as is the starting of a second weft 101₂. The first loop of the second weft 101₂ always goes on the same loom finger 19₃ as the previous weft 101₁ ended on. This procedure eliminates two of the major chores of conventional weaving: knotting and burying ends.

After the weft weaving or twining has been completed, it and loom fingers 19_{1-n} can easily be removed from loom 11. Removal of a completed weft from apparatus such as disclosed in Bacheller, U.S. Pat. No. 2,065,498, is likely to be slow as the weaving has to be carefully worked off the fixed loom fingers of the comb loom. Even if carefully worked off, this causes distortion of the weaving. In contrast, with loom 11 of the present invention, plates 15 and/or 17 are slidably removed from base 13 and then quickly pushed off loom fingers 19 by placing the ends 73₂, which were in contact with surface 31, onto a flat surface and then pushing plates 15 and/or 17 toward such flat surface, whereby the tapered end portions 75₂ of loom fingers 19 are only loosely received in openings 49, 59 and/or 61 and can be easily removed from plates 15 and/or 17.

With reference to FIG. 8, after removal of loom fingers 19_{1-n} from plates 15 and/or 17, warp thread 103 or other suitable material is inserted in the weft formation by attaching such warp to a conventional hook 105 which is passed through channels 77 of loom fingers 19. Preferably the hook portion 107 of hook 105 faces the inside of channel 77. After the warp has been added,

each loom finger 19 can quickly and easily be removed on an individual basis, rather than trying to remove all loom fingers simultaneously, as required by Bacheller, U.S. Pat. No. 2,065,498.

The ability to quickly and easily remove loom fingers 19 (together with the weft formation thereon) from plates 15 and/or 17 provides an additional unique advantage of permitting weaving from the center out. For instance, as schematically illustrated in FIGS. 9A and 9B, a diamond pattern is easily created, by first weaving a triangle as illustrated in FIG. 9A. Loom fingers 19_{1,2,3,4,5,6,7} are then separated from plates 17 in the manner set forth above, plates 17 reassembled with base 13 and loom fingers 19_{1,2,3,4,5,6,7} reinserted such that opposite ends 73₁ now engage surface 31 of base 13. Weaving or twining of the other half of the diamond, such as illustrated by phantom lines 109 may now proceed with, for instance, the same type and color material. The foregoing is in contrast with conventional weaving techniques where, to weave a diamond or other shape, one has to weave the background first. For many people, particularly novice weavers, this is conceptually difficult.

With reference to FIGS. 10, 11 and 12, alternate loom embodiment 111 is illustrated. Loom 111 includes a base 113, a top 115, a master plate 117, and an intermediate and reversible tray 119. For purpose of illustration the width and breadth of loom 111 are reduced in scale. Wall thickness is also not to scale.

Base 113 includes a bottom 121, having an exterior surface 123 and a parallel interior surface 125, and a plurality of through loom finger receiving openings 127. Openings 127 are evenly spaced along a line which bisects bottom 121. Base 113 also includes a continuous side having an interior surface 131, an exterior surface 133 and a continuous lip 135.

Top portion 115 includes: a top 139, having exterior surface 141 and interior surface 143; and a continuous side 145, which includes interior surface 147, exterior surface 149, and continuous shoulder 151. As illustrated in FIG. 11, when assembled with base 113, lip 135 seals against shoulder 151; surfaces 133 and 149 form a continuous exterior side surface; and surfaces 131 and 147 form a smooth continuous interior side surface. As best illustrated in FIG. 10, top 139 includes a plurality of loom finger receiving through openings 155, with three in the middle and the rest evenly distributed around four concentric circles. The three middle openings, together with opposing pairs on each of the concentric circles form a straight line of eleven openings.

Reversible tray 119 includes a bottom 157, having interior surface 159 and exterior surface 161; and a continuous side 162, having interior surface 163, exterior surface 165 and continuous top edge 167. Tray 119 is dimensioned such that it fits, without too much lateral play, within both the interior of base 113 (as illustrated in FIGS. 11 and 12) or, alternatively, within the interior of top portion 115. When received in top portion 115, exterior surface 161 is in contact with interior surface 143.

Master plate 117 includes a top surface 169, a bottom surface 171, a continuous edge 173, and a plurality of loom finger receiving openings 175. The pattern of openings 175 matches that of openings 155; eleven in a straight line in the middle, the rest evenly distributed around four concentric circles.

In operation, with loom 111 assembled as illustrated in FIGS. 11 and 12, with plate 117 resting on top edge

167. A plurality of loom fingers 19_{1-n} is then placed in openings 155 and matching openings 175 in the desired pattern, with the loom finger ends 73₂ resting on surface 159 of tray 119. A straight line of up to eleven loom fingers is one pattern option; a continuous circle using the openings in the outermost concentric circle is another. After the weft is twined on loom fingers 19_{1-n}, top portion 115 of loom 111 is separated from base 113. Because of the lateral forces placed on loom fingers 19_{1-n} by the weft, loom fingers 19_{1-n}, top 115 and plate 117 are held together. Tray 119 is then removed from base 113 and placed on a flat surface with edge 167 in contact with such flat surface. The ends 73₂ of loom fingers 19_{1-n} are then placed in contact with surface 161 and plate 117 and top 115 pushed in a downward direction to move such loom fingers 19_{1-n} upward to the point where the tapered portions 75₂ are loosely received in openings 155 and 175 and can easily be removed therefrom.

If the user is a beginner, loom 111 can be flipped over so that the five hole pattern of openings 127 is exposed. Internally, the positions of tray 119 and plate 117 are reversed. Tray 119 is also flipped over, such that interior surface 159 faces one of surfaces 169, 171 of plate 117. The center five openings 175 of plate 117 match the straight line pattern of holes 127 in base 113. The operation of twining, removing the loom fingers from the loom, inserting the warp and then removing the loom fingers 19₁₋₅ is the same as described above.

A third embodiment of the invention is illustrated in FIGS. 13 and 14. Loom 181 includes a base 183, a loom finger positioning plate 185, a ring member 187 and a plurality of loom fingers 19_{1-n}. Base 183 includes a bottom portion 189 and a donut shaped side portion 191. Bottom portion has a flat exterior support surface 193 and a flat interior support surface 195. Side portion 191 includes an interior cylindrical surface 197. Ring 187 has an exterior cylindrical surface 199, a bottom surface 201 and an annular notch 203. Ring 187 and base 183 are made of suitable materials, such as plastic and wood, with cylindrical surface 199 dimensioned to be slidably and rotatably received within cylindrical surface 197, without either binding or undue slop.

Plate 185, which serves the same function as plates 15 and/or 17, includes a top surface 207, a parallel bottom surface 209 and a plurality of loom finger receiving through holes 211₁₋₅ and 213_{1-n}. Plate 185 also includes a cylindrical edge 215 which is dimensioned to slidably fit within notch 203 in ring 187. Openings 211 and 213 all have the same diameter. Openings 211 are, however, each provided with a raised cylindrical collar 217 to make the line defined by these openings more visible to the user, particularly the visually impaired user. As with the embodiment of FIGS. 1-3, the distance between surfaces 207 and 209 and the diameter of openings 211 and 213 is such that, when assembled, loom fingers 19 are held in substantially parallel fashion. Top surface 207 is also inscribed with a pattern of circular lines 219₁₋₄ and straight lines 221₁₋₆ to identify potential loom finger patterns for the user.

In operation, the embodiment of FIGS. 13 and 14 is the same as that of the embodiment of FIGS. 1-3. The pattern of openings 211 and 213 permits the formation of both rectangular and cylindrical woven articles. The use of ring 187 permits plate 185 to be rotated relative to base 183 for the convenience of the user, without undue wobbling of plate 185 relative to base 183.

Whereas the drawings and accompanying description have shown and described the preferred embodiment of the present invention, it should be apparent to those skilled in the art that various changes may be made in the form of the invention without affecting the scope thereof.

What I claim is:

1. A loom comprising:

- (a) a plurality of elongated loom finger elements, each of said elements having a first and a second end and an elongated groove therein, each said groove running the length of each said element;
- (b) a first loom finger support means including first and second surfaces interconnected by a plurality of openings, each of said openings adapted to slidably receive one of said loom finger elements, said surfaces being spaced from each other a distance which, in conjunction with the diameter of said openings is sufficient to position said plurality of said loom finger elements in substantially parallel fashion;
- (c) a second loom finger support means, said second support mean including a third surface for supporting one of said first or second ends of each of said loom finger elements when said first loom finger support means is assembled with said second loom finger support means and when said loom finger elements are received in said openings of said first loom finger support means; and
- (d) means provided on said first and second loom finger support means for detachably assembling said first loom finger support means relative to said second loom finger support means, whereby said first and second surfaces are spaced altitudinally with respect to said third surface, and whereby each of said loom finger elements passes through one of said openings in said first loom finger support means has its said first or second end in contact with said third surface, and whereby, when said means for detachably assembling are not positioning said first loom finger support means relative to said second loom finger support means, said loom finger elements can be moved relative to said openings by moving said first loom finger support means toward said ends which contacted said third surface.

2. The loom as set forth in claim 1, wherein said first loom finger support means comprises at least one plate-like member, and said second loom finger support means includes at least one side portion, said means for detachably assembling being provided on said first loom finger support means and said side portion.

3. The loom as set forth in claim 2, wherein said second finger support means includes two side portions which define a generally U-shaped channel member, said means for detachably assembling being provided on said, first loom finger support means and said side portions.

4. The loom as set forth in claim 3, wherein said side portions have a pair of elongated grooves therein and said plate-like member has a pair of tongues which are slidably received in said grooves, whereby said plate-like member may be detached from said second loom finger support means by a sliding motion to expose each of said one of said first or second ends which had been in contact with said third surface.

5. The loom as set forth in claim 3, wherein said first loom finger support member comprises a plurality of

plate-like members, each of said members having a pair of tongues and at least one said openings, which plate-like members can be selectively added and/or interchanged to vary the number of said openings available for said loom finger elements.

6. The loom as set forth in claim 5, wherein each of said plate-like members includes means for interlocking with an adjacent said plate-like member.

7. The loom as set forth in claim 3, further including an elongated tray for the storage of said loom finger elements which is slidably received within said second loom finger support means.

8. The loom as set forth in claim 2, wherein said side portion is a continuous closed perimeter which, in conjunction with said third surface, defines a cavity, said third surface defining the bottom of said cavity.

9. The loom as set forth in claim 8, wherein said plate-like member has said plurality of openings therein, which openings are arranged in circular, linear and semi-circular patterns which permit a multitude of choices for positioning said loom finger elements.

10. The loom as set forth in claim 8, wherein said plate-like member is disc shaped, said continuous side portion includes an annular ring, said means for detachably assembling including a lip on said ring, said disc shaped plate being rotatably received in said annular ring.

11. The loom as set forth in claim 10, wherein said ring is separate from said side portion and is received in said cavity for rotation relative to said side portion.

12. The loom as set forth in claim 1, wherein said first loom finger support means includes a first plate-like member having a plurality of said openings therein, said first loom finger support means also including a second plate-like member spaced from first plate-like member and having a plurality of said openings therein, said openings in said second plate-like member being in alignment with at least some of said openings in said first plate-like member.

13. The loom as set forth in claim 12, wherein said second loom finger support means includes a third plate-like member, and wherein said loom includes a fourth plate-like member having a plurality of openings therein which are in alignment with some of said openings in said second plate-like member.

14. The loom as set forth in claim 13, wherein said means for detachably assembling said finger support means and said second finger support means includes mating portions on said first and fourth plate-like members.

15. The loom as set forth in claim 14, wherein both said first plate-like member and said fourth plate-like member include projecting lips, said lips cooperating to, in the assembled loom, form a box-like structure.

16. The loom as set forth in claim 13, further including means on said third plate-like member for supporting said second plate-like member relative to both said first and fourth plate-like members.

17. The loom as set forth in claim 16, wherein said third plate-like member is a tray-like member having a flat bottom, said flat bottom forming said third surface.

18. The loom as set forth in claim 17, wherein said tray-like member can be placed on either side of second plate-like member for supporting said second plate-like member.

19. A method of twining or weaving comprising the steps of:

(a) positioning a plurality of elongated loom finger elements having first and second tapered ends and an elongated groove therein in a support which includes first and second movable member contacting said first tapered ends;

(b) wrapping weft on said loom finger elements;

(c) moving said loom finger elements substantially in unison relative to said first movable member whereby said first tapered ends are loosely received in said openings;

(d) removing said loom fingers and said weft, as a unit, from said first movable member;

(e) inserting warp to said weft; and

(f) removing said loom fingers from said warp and said weft.

20. The method as set forth in claim 19, wherein the warp can be inserted from either end of said loom finger elements.

21. The method as set forth in claim 19, wherein said loom finger elements are removed from said weft and warp without distorting said weft and warp.

22. The method as set forth in claim 19 wherein, after said loom fingers and said weft are removed from said first moveable member and before inserting said warp, said second ends of said loom fingers are inserted in said openings, and said loom fingers are moved relative to said first member until said second tapered ends contact said second moveable member, whereby the direction of wrapping said weft is reversed without removing said weft from said loom finger elements.

23. The method as set forth in claim 19, wherein said movement of said loom finger elements relative to said first moveable member includes the steps of moving said first member relative to said second member to expose said first ends, and further including the step of then contacting said first ends with a surface to move said loom finger elements relative to said first movable member whereby said first tapered ends are loosely received in said openings.

24. The method as set forth in claim 23, wherein said movement of said first member relative to said second member is a lateral sliding movement.

25. A method of twining comprising:

(a) positioning a plurality of loom finger elements in a spaced array;

(b) twining a piece of closed loop material on said fingers;

(c) ending said closed loop material on one of said fingers; and

(d) starting a second piece of closed loop material on said one of said fingers.

* * * * *

Jan. 9, 1940.

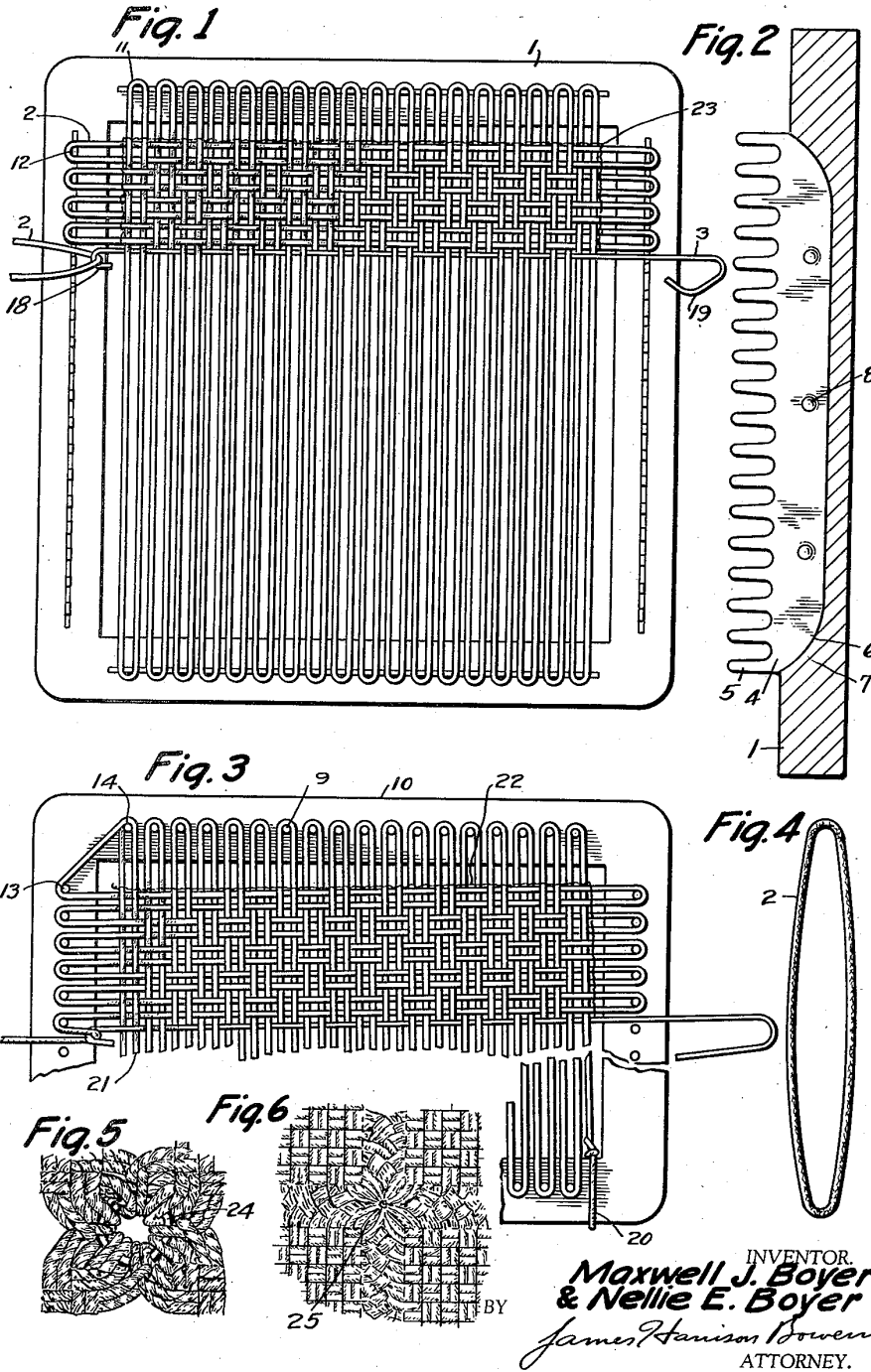
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2,186,692

METHOD OF AND APPARATUS FOR HAND WEAVING

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2 Sheets-Sheet 1



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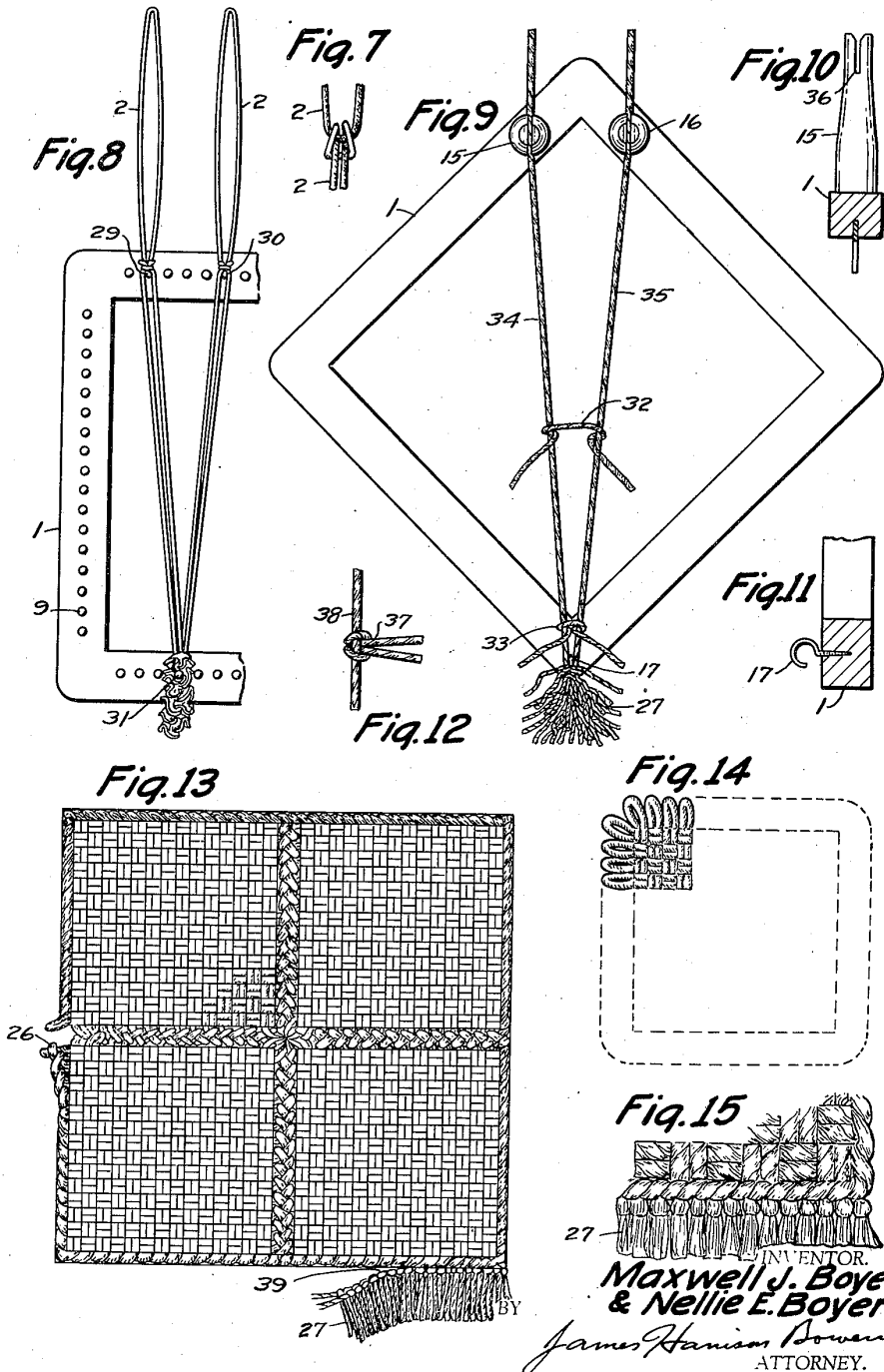
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METHOD OF AND APPARATUS FOR HAND WEAVING

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2 Sheets-Sheet 2



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METHOD OF AND APPARATUS FOR HAND WEAVING

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3 Claims. (Cl. 139—34)

The purpose of this invention is to provide improvements in apparatus and methods of hand weaving which will facilitate and simplify the weaving of various articles, such as mats, scarfs, rugs, bath mats, pot holders, hand bags, and the like, in which the various articles may be woven in rectangular shaped units, and these may readily be joined together to form a mat, scarf, rug, quilt, or the like, of any size or shape.

The invention is a relatively small hand frame adapted to be used as a loom and upon which devices may be woven by loops or strands, and in which the edges may be bound or fringed, or finished in any manner desired.

Weaving frames, looms, curtain stretchers, and various devices have been made of various shapes and designs, and substantially all of these comprise a frame generally of a rectangular shape with pins, hooks, or other thread, yarn, or other holding means at the sides; however, for hand weaving of this type, in which weaving is facilitated by providing the material in endless loops or by using double strands, it has been found desirable to provide a loom or frame of a particular type or size, and in which the pins or holding means are arranged in rows and spaced at the corners to provide angular shaped notches which make it possible to finish the corners to form a complete unit on the loom, or join the corners to form a rosette, and also in which the pins are arranged to form continuous rows of extending loops at the sides which may readily be laced together with joining units. It has also been found desirable, particularly for hand weaving looms, to provide means whereby a fringe or finish may readily be formed on the loom.

The object of this invention is, therefore, to provide a specific form of loom for hand weaving which is adapted to weave strands or loops to form individual units.

Another object is to provide a hand weaving loom in which means is provided for forming a fringe or border.

Another object is to provide a hand loom in which evenly spaced pins are required, in which the pins of each side are formed in separate sections and mounted upon the frame as a unit.

Another object is to provide a method of weaving in which loops, which are obtained by cutting tubular material transversely, and also yarn, are used, either of which may readily be interwoven, using the same material for warp and weft.

Another object is to provide means for connect-

ing the edges of a unit formed of interwoven loops, thereby holding it secure.

Another object is to provide a method of lacing the edges of units formed of interwoven loops without using an additional strand of material.

Another object is to provide means for forming a rosette at the adjoining corners of a plurality of woven units.

A further object is to provide a method of forming a fringe on a hand loom for providing an edge or binding to articles formed on the loom.

And a still further object is to provide a unique hand loom and method of weaving thereon, in which articles may be produced in a relatively simple manner and at a relatively low cost.

With these ends in view the invention embodies a rectangular shaped frame having equally spaced pins arranged in rows in units on the opposite sides thereof, with similar units of rows of pins positioned directly opposite to the units providing means holding loops in perpendicular relation, and a method of weaving articles with loops or double strands, combining the edges and corners, and providing a finish or fringe.

Other features and advantages of the invention will appear from the following description, taken in connection with the drawings, wherein:

Figure 1 is a plan view of a frame or loom showing loops on one section thereof, and a few loops on the opposite section with a needle in the position of drawing a loop through the oppositely positioned loops.

Figure 2 is a cross section through the loom shown in Figure 1, showing the method of construction.

Figure 3 is a view showing a frame of an alternate design, in which the pins are provided independently and also in which single strands of material are woven on the frame, showing the strands laced to form the warp on one section and being drawn through to form the weft in the transverse direction, illustrating the method of weaving with a double strand even when using a single strand of material.

Figure 4 is a view illustrating a single loop of material as used in Figure 1.

Figure 5 is a detail showing a method of joining the loops at the corners after units have been formed on the frame shown in Figure 1.

Figure 6 is a detail showing a rosette formed after joining the loops as shown in Figure 5.

Figure 7 is a detail showing a method of joining loops to form a fringe on the loom.

Figure 8 is a view showing a plurality of loops joined as shown in Figure 7 to form strands, and

arranged on the loom shown in either Figures 1 or 3 to form a foundation for making fringe as shown in Figure 13.

Figure 9 is a view showing posts and a hook on the reverse side or back of the loom shown in Figures 1 and 3, illustrating an alternate method for forming a finishing fringe or binding.

Figure 10 is a detail showing one of the posts at the back of the loom.

Figure 11 is a similar detail showing a hook at the opposite corner of the loom.

Figure 12 is a detail showing a method of forming the fringe with a single strand of material.

Figure 13 is a view showing a plurality of units forming a mat with the loops being laced together, and with the fringe formed as shown in Figure 9 partly attached.

Figure 14 is a detail showing a unit with a portion of the loops at the ends shown on a larger scale to indicate a finished article.

Figure 15 is a detail showing a corner of the unit shown in Figure 14 having fringe attached thereto.

In the drawings the loom is shown and the method is illustrated as it may be used, wherein numeral 1 indicates a frame, numeral 2, loops adapted to be woven on the frame, and numeral 3, a needle adapted to be used for weaving the loops on the frame.

In the design shown in Figures 1 and 2, the frame 1 is formed of a rectangular shape, with the pins or holding means provided in the form of teeth of a comb 4 having teeth 5 and a back or flange 6 wedged into slots or grooves 7 in the four sides of the frame. The part 6 may be provided with small raised portions 8 formed by indentations in the opposite sides, so that the combs may be forced into the slots of the frame, thereby securing the combs in position. The teeth of the combs may be of any shape or design, and any means may be provided for securing the combs in the frame. The holding means may also be formed of pins 9 illustrated in Figure 3, in which the pins are placed directly in the frame 10; however it will be noted in both designs that the pins terminate at the points 11 and 12 shown in Figure 1, and 13 and 14 in Figure 3, providing open spaces at the corners in which triangular shaped areas are formed between the end loops as shown. The remaining pins are evenly spaced, and the pins in the opposite sections of the frame are positioned directly opposite, so that all of the strands on the loom passing in one direction will be parallel, and the transverse strands perpendicular. The loom, therefore, consists of a rectangular shaped frame having four sides and with a plurality of pins extending upward from each side, with the pins spaced from the ends providing open spaces at the corners, and with the pins of one side directly opposite those of the other.

The frame may also be provided with posts 15 and 16 extending outward from the opposite side, as shown in Figures 9 and 10, and a hook 17 as shown in Figures 9 and 11, so that fringe for the article formed on the loom may be made on the opposite side. The posts 15 and 16 may also be used as legs to elevate part of the loom to facilitate weaving.

The needle 3 used in weaving on the loom may be made as shown in Figures 1 and 3, with a relatively small hook 18 at one end, and a larger loop 19 at the other by which it may be held, and it will be noted that the hook may be laced through the strands, as illustrated in figures 1 and 3, and

may then draw a double strand or loop back through the strands of the opposite side, and, after the loop or double strand is drawn through, it may be hooked over the pin on the frame, and, where loops are used, the opposite end is hooked over a pin directly opposite and on the opposite side of the frame.

When weaving with a single strand, as shown in Figure 3, one end of the strand may be tied to the frame, as shown at the point 20, and the strand may then be placed over the pins at the opposite sides with a backward and forward movement until all of the strands forming the warp are on the frame, and then the strand may be passed from the pin indicated by the numeral 14 to the pin indicated by the numeral 13, and then caught by the hook 18 which has been woven through the strands of the warp, and drawn through the strands indicated by the numeral 21, drawing a double strand across the warp strands, thereby forming the weft, substantially the same as shown in Figure 1, the ball of yarn remaining on the left hand side of the loom, and a double strand being drawn across each time. This action is continued until the entire unit is formed, and then the loops at the edges may be connected by a chain stitch or single crochet stitch, or any suitable means as indicated at the point 22. The loops in the design shown in Figure 1 may also be bound in a similar manner by a stitch or thread 23. After the loops at the edges are connected with a chain stitch or the like, the unit is removed from the frame and the loops of one unit may be laced with the loops of another, as shown in Figures 5 and 13, leaving two loops at each corner, particularly as shown in Figure 5, and the two loops of the adjoining corners of four units, with the adjoining laced or seam loop of each unit, are bound together by passing a thread 24 through all of the loops, as shown in Figure 5, drawing them together and tying the ends of the thread. This forms a rosette 25 as shown in Figure 6, however it will be understood that the corners may be joined in any other manner or by any means. The loops at the edges of the different units may be laced together as illustrated at the point 26 at the side of the article shown in Figure 13, or the loops at the sides of each unit may be laced together independently, as shown around the edge of the article shown in Figure 13, as they are removed from the loom, forming a finished edge and eliminating the chain stitch or other connecting means.

The frame may also be used to form a fringe 26, and this may be made by loops as shown in Figure 8, or single strands as shown in Figure 9, using the pins of the frame or friction holding posts on the back thereof. In the design shown in Figure 8, the fringe is formed by loops 2 with the ends held together by slip knots 27, as shown in Figures 7 and 8, and with the loops connected in this manner two of the knots 29 and 30 may be placed over two of the pins of the frame, with the opposite ends of the loops converging and placed over a pin at the opposite side of the frame, as indicated at the point 31, and the fringe may be made thereon by short pieces of yarn, as shown in Figure 9, or pieces of any suitable material, and these are placed across the two strands as shown at the point 32 in Figure 9, with the ends drawn upward between the strands, and then this is moved downward to the point 33 where, with the knot pulled tight, the two strands are secured together, and, as a plurality of short pieces are placed on the

strands, one against the other, the fringe is formed. In Figure 9, the fringe is formed of two strands 34 and 35, and these may be tied together at the ends or held by one of the slip knots, as shown at the point 33, and this end may be placed over the hook 17 with the strands placed in slots 36 in the upper ends of the posts 15 and 16, and, as the fringe is formed, the strands 34 and 35 may be drawn through the posts and the finished fringe moved downward on the hook.

It will also be understood that fringe may be formed on a single strand, as shown in Figure 12, in which a small strip of material 37 is looped around a strand 38. These sections of material may be made of yarn or any suitable material, and, although this fringe is illustrated as being particularly adapted for the edges of mats, it will also be understood that it may be curled, coiled, or laminated with the strands in layers and stitched together to form a mat, rug, or the like. In Figure 13, the fringe 26 is shown as being attached to the outer edge of the mat, as illustrated at the point 39, and it will also be understood that a fringe having either a single or double strand as a foundation may be used as a fringe for the mat or rug, or either may be used to form a rug. These strips of fringe may be attached together or to the edge of the mat by yarn, thread, or jersey of a suitable weight or thickness.

It will be understood that changes may be made in the construction without departing from the spirit of the invention. One of which changes may be in the shape or design of the frame which forms a loom, another may be in the use of a needle of any other type, another may be in the use of other means for removably mounting the pins or points on the frame, and still another may be in the use of the frame or loom for any other purpose.

The construction will be readily understood from the foregoing description. In use, individual frames are provided as shown and described, and, when weaving with the loops, the individual loops are placed across the frame as shown in Figure 1, with the ends held upon the pins, and the cross loops are woven through these loops by running the hook 18 of the needle through the loops from the right hand side, then hooking the end of another loop in the hook 18 and drawing the loop through the former loops, so that one end may be hooked over a pin on one side with the other over a pin on the opposite side, as illustrated by the loops in the upper part of the frame.

The same is true of the frame illustrated in Figure 3, except that the yarn is drawn backward and forward, with the corner formed as hereinbefore described on the pins 13 and 14, and the yarn is then drawn backward and forward through the double strands, drawing a double strand through with the needle, as described and illustrated. Larger devices may be made, as illustrated in Figure 13, by lacing the ends of the loops at the sides together and joining the corners to form rosettes, and the fringe may or may not be added as may be desired. The loops may also be laced together, as shown in Figure 13, to form a border instead of ex-

tending outward as shown in Figure 14, or these may be bound or arranged in any manner.

Having thus fully described the invention, what we claim as new, and desire to secure by Letters Patent, is:

1. A hand loom comprising a relatively small rectangularly shaped frame having slots in the upper surfaces of the side and end members, and combs with backs and outwardly extending teeth providing yarn holding pins positioned with the backs of the combs frictionally held in the slots and with the teeth extending outward from the face of the frame, the combs being shorter than the distance between opposite frame members and the end tooth of each comb being spaced inwardly from the inside surface of the adjoining frame member whereby fringe is formed on the margins of the fabric by strands extending between opposite combs.

2. A method of weaving on a hand loom with endless loops of material on a rigid rectangular frame forming a solid unit having equally spaced stationary straight projections on the upper faces of the four sides thereof, which comprises placing the said endless loops in parallel position continuously over each of the oppositely positioned projections on two opposite sides of the frame to form the warp of fabric formed thereon, and interweaving other endless loops of material, to form the weft, with the said former loops by first weaving a hooked member alternately up and down through the loops forming the warp and drawing, thereby, the said other endless loops of material therethrough, with the said other endless loops also placed over oppositely positioned projections on two other opposite sides of the frame, the weaving terminating a substantial distance from the sides of the frame whereby fringe is formed on the margins of the fabric by extending ends of the loops.

3. A method of weaving on a hand loom with yarn with a rectangular frame having spaced projections on the upper surface of the four sides thereof with projections at the corners or intersections of the said sides omitted, which comprises tying one end of the yarn around the frame adjacent one corner thereof, lacing the yarn in substantially parallel relation back and forth over the projections of two of the opposite sides of the frame, carrying the yarn from the last projection of one of the said opposite sides diagonally across and around the first projection of an adjacent side, lacing the yarn back and forth over the projections of the two remaining sides and, at the same time, drawing the yarn with a hook through the parallel strands thereof formerly laced on the two opposite sides, weaving the said strands through said opposite strands, under two strands and then over two strands; and characterized in that the yarn being woven through the parallel strands first placed on the two opposite sides is woven by drawing two strands at a time with the connecting end of the said two strands placed over one of the said projections after being woven through the strands, whereby a substantially continuous fringe of closed loops is formed around an article woven thereby.

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[54] **ADJUSTABLE LOOM FOR HAND WEAVING**

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[52] **U.S. Cl.** **28/15**

[51] **Int. Cl.** **D06c 3/08**

[58] **Field of Search**..... 28/15; 139/29

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Primary Examiner—Louis K. Rimrod

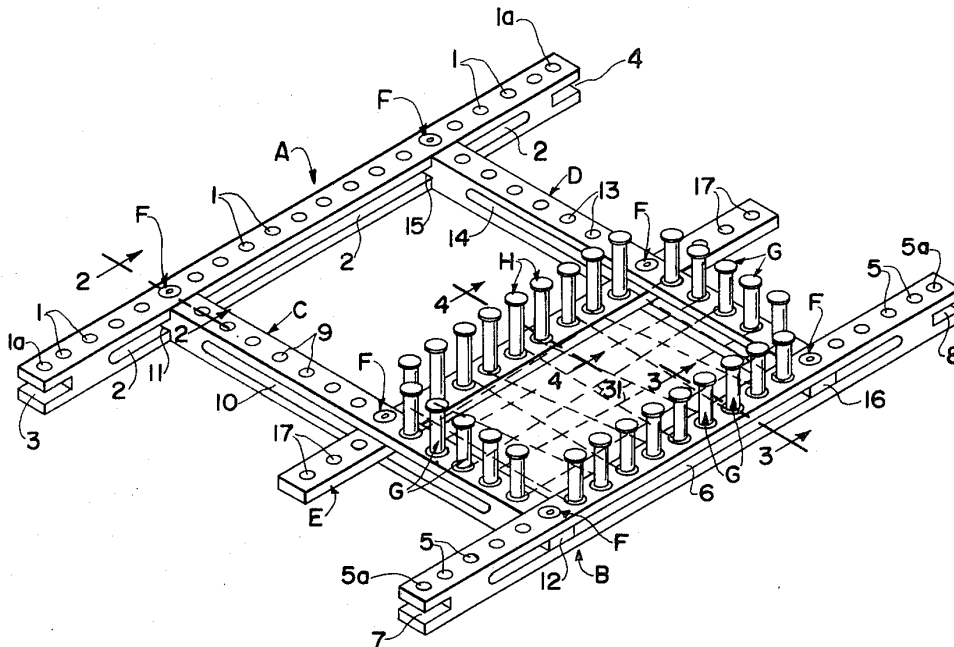
Attorney, Agent, or Firm—William R. Piper

[57] **ABSTRACT**

An adjustable loom for hand weaving comprising

upper and lower rails with elongated slots therein and left hand and right hand rails with tongues at their ends that are adjustably receivable in the elongated slots of the upper and lower rails or are receivable in mortised ends of the upper and lower rails. The left and right hand rails also have elongated slots adapted to adjustably receive an intermediate rail. Each of the rails has a row of openings, the openings being equally spaced from each other at the same distance for all of the rails. Headed pins are removably received in the desired openings. The pins that are received in the intermediate rail are longer than those mounted in the other rails so that the tops of all of the pins will lie in the same plane. Corner posts secure the rails together in their adjusted positions. In this manner the weaving loom may be readily adjusted for weaving articles of different sizes. Also, the loom rails may be disassembled and stored in a small space when the loom is not used.

3 Claims, 4 Drawing Figures



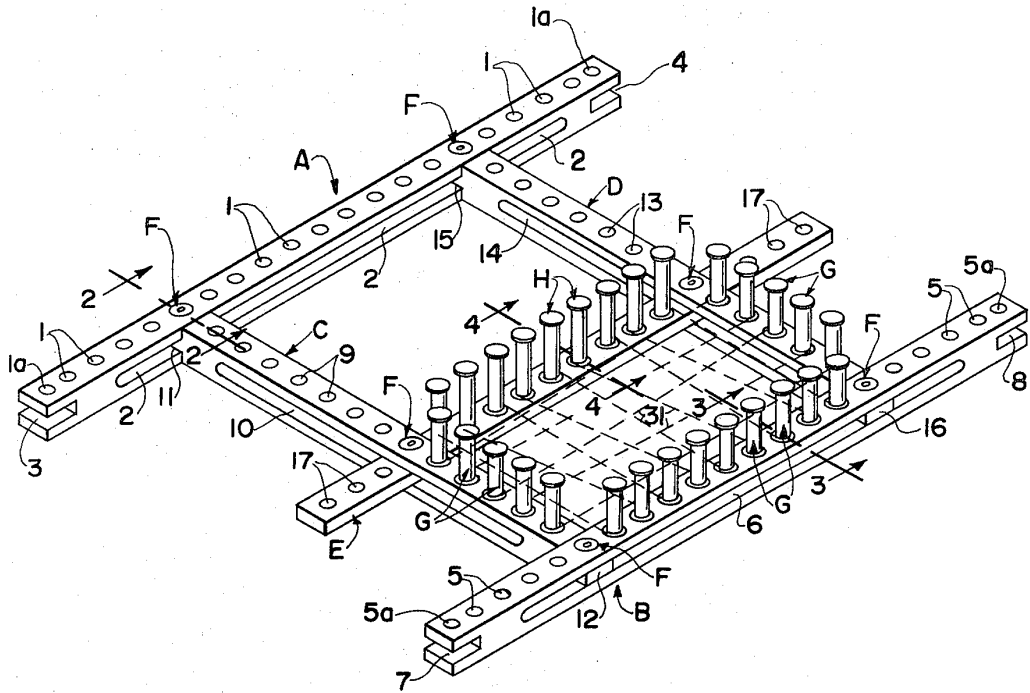


Fig-1

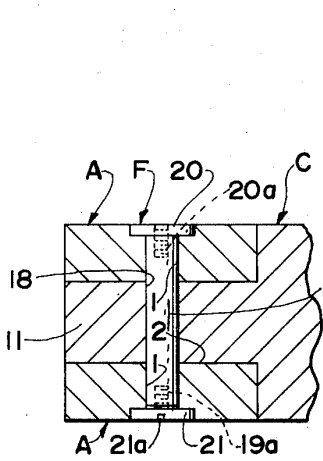


Fig 2

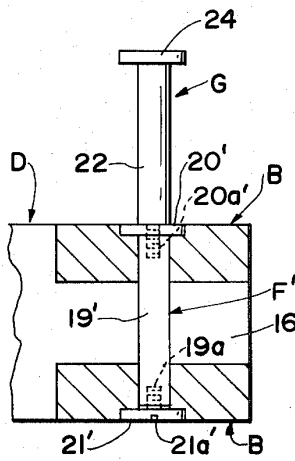


Fig-3

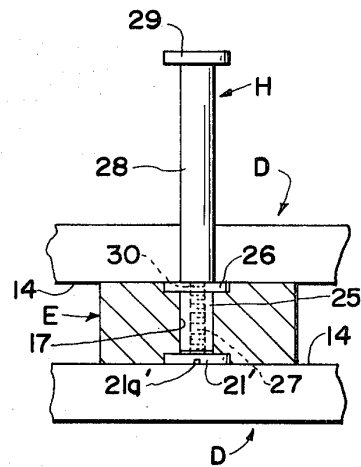


Fig-4

ADJUSTABLE LOOM FOR HAND WEAVING

BACKGROUND OF THE INVENTION

1. Field of the Invention

Adjustable looms are desirable so as to permit an operator to decide not only on the size of the article to be woven but also its shape up to the limits of the full size of the loom. The loom is formed from a plurality of rails that can be interconnected quickly to form a loom of the desired size and after use the rails may be disconnected from each other and arranged in parallel relation so as to require a minimum of storage space. The row of openings in each rail is provided for receiving pins that in turn hold the warp and woof threads or yarn in proper position. These same openings can also receive corner posts for interconnecting the rails in a desired manner for forming a loom having a working area of a desired size.

2. Description of the Prior Art

The U. S. Pat. to Daniel A. Berger, et al., No. 2,663,066, issued Dec. 22, 1953, discloses an adjustable loom for hand weaving. However, the loom comprises a rectangular frame in which the four sides are made from a single metal stamping. This means that the rectangular frame cannot be altered in size. In the present invention, the four rails that form the outer limits of the loom can be connected together to form a work area that is smaller in size than the work area of the loom when used at its largest size.

Furthermore, the patent shows two cross pieces that have a length equal to the length of one of the sides of the fixed frame and these cross pieces are placed in the fixed frame so as to extend thereacross and to intersect each other at right angles so as to form four juxtaposed rectangular areas of smaller sizes. Any one of these smaller areas may be used as a work area for weaving purposes. The four sides of the fixed frame and the two cross pieces are provided with fixed teeth around which the thread or yarn may be passed in making a hand woven article. In the present invention not only can the four rails that form the outer limits of the loom be rearranged and interconnected to form a work area having lesser size, but an intermediate rail can be used and connected to two of the outer rails to divide this lesser size area into two juxtaposed areas either one of which may be used as a work area for making a hand woven article. Other points of difference between the patent and the present invention will appear as the description of the invention progresses.

SUMMARY OF THE INVENTION

An object of my invention is to provide an inexpensive and adjustable loom in which the various parts comprise rails that can be interconnected to form loom-weaving areas of different sizes thus enabling the operator to decide on an area that suits him. Each rail has a row of openings and any one of these may be used for receiving corner posts for securing the rails together to form a work area of a size that suits the operator. Then the other rail openings surrounding the chosen work area can have pins removably mounted therein that constitute a border around the work area and these pins hold the warp and woof thread or yarn in proper position when making the woven article.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an isometric view of my invention.

FIG. 2 is an enlarged section taken along the line 2—2 of FIG. 1 and illustrates one of the corner posts that interconnects two of the rails.

FIG. 3 is an enlarged section taken along the line 3—3 of FIG. 1 and illustrates one of the longer length pins removably mounted in an opening provided in the rails having elongated slots that extend substantially throughout the length of the rails.

FIG. 4 is an enlarged section taken along the line 4—4 of FIG. 1 and illustrates one of the shorter length pins removably mounted in an opening provided in the intermediate rail that is of less thickness than the rails that have the elongated slots.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The manner of hand-weaving an article on my adjustable loom forms no part of my present invention and therefore it will not be described in detail. The present invention resides in the construction of the adjustable loom which permits it to be quickly adjusted to form a work area of a desired size and shape that is less than the greatest area the loom is capable of when fully expanded. The claims will be directed to the loom structure.

In carrying out my invention I provide an adjustable loom that is formed from a plurality of rails interconnected in a novel manner. The loom frame comprises an upper rail A, a lower rail B, a left hand side rail C, and a right hand side rail D, see FIG. 1. The upper and lower rails A and B are identical to each other and likewise the left and right hand side rails C and D are identical to each other.

The upper rail A has a plurality of openings 1 arranged in a single row and being spaced apart by equal distances. In addition, the rail A has an elongated slot 2 and it has two mortised ends 3 and 4, see FIG. 1. In like manner the lower rail B has a row of openings 5, spaced the same distance apart as are the openings 1 in the rail A. Also, the rail B has an elongated slot 6 of the same length as the slot 2 in the rail A and it has mortised ends 7 and 8 that are similar to the mortised ends 3 and 4 in the rail A.

The left hand side rail C is provided with a row of openings 9 that are spaced the same distance apart as are the openings 1 in the rail A and the openings 5 in the rail B. The rail C also has an elongated slot 10 therein and the ends of the rail are provided with tenons 11 and 12 that can be removably received in the mortised ends 3 and 7 of the rails A and B, respectively, or they can be adjustably received in the elongated slots 2 and 6 in the same rails A and B, respectively, as shown in FIG. 1.

In like manner the right hand side rail D has a row of openings 13 that are spaced the same distance apart as are the openings in the other rails A, B and C, see FIG. 1. An elongated slot 14 is provided in the rail D and this slot is similar to the elongated slot 10 in the rail C. The ends of the rail D have tenons 15 and 16 that can be removably received in the mortised ends 4 and 8 of the rails A and B, respectively, or they can be adjustably received in the elongated slots 2 and 6 in the same rails A and B, respectively.

The elongated slots 10 and 14 in the side rails C and D, respectively, are for the purpose of removably and adjustably receiving an intermediate rail E, see FIG. 1, that parallels the rails A and B. The rail E is provided with a row of openings 17 and these openings are spaced the same distance apart from each other as are the openings in the other rows 1, 5, 9 and 13. The intermediate rail E is not used when the operator wishes to use the loom at full size. The two side rails C and D will be connected to the mortised ends of the rails A and B when the loom is at its greatest size. The tennons 11 and 12 of the side rail C would be inserted in the mortised ends 3 and 7 of the rails A and B, respectively, and the tennons 15 and 16 of the side rail D would be inserted in the mortised ends 4 and 8 of the same rails A and B, respectively. Each tennon 11, 12, 15 and 16 of the side rail D would be inserted in the mortised ends 4 and 8 of the same rails A and B, respectively. Each tennon 11, 12, 15 and 16 has an opening therein which registers with the end openings 1a, 1a in the rail A and the end openings 5a, 5a in the rail B. A corner post F, of the type shown in FIG. 2, is inserted through the aligned openings in the mortise and tennons for connecting the side rails C and D to the rails A and B.

FIG. 1 does not illustrate the loom at its greatest enlargement. This Figure does show the arrangement of the various rails A to E inclusive when the operator wishes to use a smaller area of the loom in which to do the hand weaving. FIG. 1 shows the side rails C and D with their tennons 11 and 15, adjustably received in the slot 2 in the rail A and shows the tennons 12 and 16 of the same side rails C and D adjustably received in the slot 6 in the rail B. The openings in the tennons 11, 12, 15 and 16, will be aligned with the desired openings 1 in the rail A and the openings 5 in the rail B, and then corner posts F will be inserted through the aligned openings for interconnecting the rails A, B, C and D, together.

Before describing how the intermediate rail E is secured in adjusted position to the side rails C and D, it is best to describe the structure of one of the corner posts F. In FIGS. 1 and 2, I show the corner post F inserted through the aligned openings 1 in the rail A and an opening 18 in the tennon 11 of the side rail C. This corner post comprises a cylindrical pin 19 having a diameter of substantially the same size as the diameters of the aligned openings 1 in the rail A, see FIG. 2, and the opening 18 in the tennon 11 of the side rail C. The pin 19 has a head 20 that has an axially aligned bore 20a therein. If desired, the head 20 of the pin 19 may be received in a recess formed in the upper surface of the rail A so that the top of the head 20 will lie flush with the upper surface of the rail. The lower end of the pin 19 has an axially aligned threaded bore 19a that is adapted to removably receive the threaded shank of a cap screw 21. The head of the cap screw may have a kerf 21a therein and, if desired, the head may be counter-sunk in a recess provided in the undersurface of the rail A, so that the outer surface of the cap screw head will lie flush with the undersurface of the rail A. A slight space is provided between the lower end of the pin 19 and the head of the cap screw 21 so that the cap screw can be screwed down into clamping arrangement with the rail A. Four of the corner posts F are provided for connecting the side rails C and D, in adjusted position with respect to the rails A and B.

Let us assume that the operator wishes to use only a portion of the area bounded by the rails A, B, C and D, as shown in FIG. 1. He then makes use of the intermediate rail E and inserts this rail through the slots 10 and 14 of the side rails C and D, respectively. The intermediate rail E parallels the rails A and B, and it may be placed any desired distance between these rails. When this position is reached, the operator inserts two additional corner posts F in the openings 9 and 13 of the side rails C and D, respectively, that align with the openings 17 in the rail E.

The operator is now in a position to surround the chosen work area with a plurality of string or yarn-holding pins, see FIGS. 1, 3 and 4. Two types of pins are used, one type for use in the rails B, C and D, that have elongated slots 6, 10 and 17, respectively, therein, and the other type used on the intermediate rail E. The purpose for these two types of pins is to have the heads of both pin types lie in the same horizontal plane.

I will first describe the type of pin G used on the rails B, C and D, that have the elongated slots 6, 10 and 14, respectively, therein, see FIGS. 1 and 3. The pin G is in two sections. The lower section, shown in detail in FIG. 3, is identical in structure to the corner post F, shown in FIG. 2. I will therefore label this lower portion F', and will prime the various parts that are identical to similar parts in the corner post F of FIG. 2. The pin G includes the lower or base section F', and an upper thread or yarn-holding section 22 that is cylindrical in shape and has a threaded shank 23 at its lower end and having the same diameter as the diameter of the threaded axial bore 20a' provided in the top of the cylindrical portion 19' of the lower pin section F'. The thread or yarn-holding section 22 is topped by an integral head 24 that may be flat, as shown in FIG. 3, or it may be spherical in shape, not shown. The upper section or portion 22 of the pin G is secured to the lower or base portion F' by screwing the threaded shank 23 into the threaded bore 20a' disposed at the top of the member 19'. FIG. 1 shows the portion of the lower rail B, that lies between the side rails C and D provided with the pins G. These pins are mounted in the openings 5 in the rail B. Also the portions of the side rails C and D that extend from the rail B to the intermediate rail E, are provided with the pins G, these pins being mounted in openings 9 in the side rail C, and in openings 13 in the side rail D. The chosen work area is now enclosed on three sides by a plurality of the pins G.

The other type of thread or yarn-holding pin is shown at H, in FIGS. 1 and 4. These pins are mounted on the intermediate rail E and are shown in detail in FIG. 4. A headed sleeve 25 forms a part of the base portion for the pin H and the sleeve is receivable in an opening 17 provided in the intermediate rail E. The sleeve 25 has a head 26 and the interior of the sleeve is threaded throughout its length, as indicated at 27. The length of the sleeve 25 is less than the thickness of the intermediate rail E. A cap screw 21', similar to the cap screw 21' shown in FIG. 3 and the cap screw 21, shown in FIG. 2, has a threaded shank removably receivable in the lower end of the threaded bore 27 in the sleeve 25. The cap screw 21' has a kerf 21a' by means of which a screw driver can be used for removably connecting the cap screw to the sleeve 25.

The upper part 28 of the pin H is cylindrical and it has a head 29 at its upper end and a threaded shank 30 at its lower end designed to be received in the threaded

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bore 27 in the headed sleeve 25, see FIG. 4. The upper part 28 of the pin H is similar to the upper part 22 of the pin G, except that the part 28 is longer. The purpose of this is to have the heads 29 of the pins H disposed at the same level as the heads 24 of the pins G. The heads 29 may be spherical in shape, not shown, if desired. FIG. 1 shows the portion of the intermediate rail E that lies between the side rails C and D, provided with a row of pins H. This completes the arrangement of the pins G and H, on all four sides of the work selected area.

I have indicated in dash lines 31 one example of how the thread or yarn can be passed around the various pins G and H, in FIG. 1, to form a woven article of a desired type. Since the weaving of the thread or yarn 31 about the pins forms no part of my present invention, further description need not be given.

After the loom has been used it may be readily disassembled for storage in a small space because the rails A to E inclusive, when disconnected from each other, can be arranged parallel to each other. One of the novel features of the invention lies in the interchanging of parts forming the corner posts F, and the base portions F' for the pins G. The loom is of simple construction and is very durable. The openings in the tennons are spaced the same distance from the adjacent opening in the side rails C and D, as is the spacing between adjacent openings in the same rail. The pins G have the length of their upper portions 22, see FIG. 3, of one inch or longer because the pins are designed to receive a plurality of layers of strands, such as thread or yarn. The other pins H will have the lengths 28 of their upper portion sufficient so that the heads 29 of these pins will lie in the same horizontal plane as the heads 24 of the pins G.

I claim:

1. An adjustable loom for hand weaving, comprising:

- a. a first pair of upper and a lower rails each rail being rectangular in cross section and the rails being spaced apart and parallelly arranged, each rail having a row of openings therein and an elongated slot, said openings extending entirely through said rails from the upper to the lower surfaces thereof and the slots extending entirely through the widths of

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the rails from side to side of the rails, certain of the openings being intersected by the slots;

- b. a second pair of side rails, each side rail having a tennon at each end slidably received in the slots in said upper and lower rails, the side rails extending at right angles to said upper and lower rails, each tennon having an opening therein adapted to register with selected openings in said upper and lower rails so as to dispose the side rails a desired distance apart from each other, each side rail having a row of openings therein;
 - c. corner posts extending through the openings in said tennons that are aligned with the openings in the upper and lower rails; and
 - d. pins mounted in the openings in the first and second pairs of rails that border the area enclosed by these rails.
2. The combination as set forth in claim 1: and in which
- a. said second pair of side rails, each having an elongated slot, the slots lying in the same plane as the slots in said first pair of rails;
 - b. an intermediate rail having its ends adjustably received in the slots in said second pair of rails, said intermediate rail having a row of openings therein, certain of these openings being adapted to register with selected openings in said second pair of rails;
 - c. corner posts extending through the registering openings of the intermediate rail with the second pair of rails; and
 - d. pins mounted in the openings in the intermediate rail that lie between said second pair of side rails, the tops of said last-mentioned pins lying in the same plane as the tops of the other pins.
3. The combination as set forth in claim 1: and in which
- a. said first pair of rails having mortised ends with holes therein;
 - b. the tennons of said second pair of side rails being receivable in said mortised ends and said corner posts extending through the registering openings in the tennons and mortises.

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(12) **United States Patent**
Ng

(10) **Patent No.:** **US 8,684,420 B2**

(45) **Date of Patent:** ***Apr. 1, 2014**

(54) **BRUNNIAN LINK MAKING DEVICE AND KIT**

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(72) Inventor: **Cheong Choon Ng**, Novi, MI (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(21) Appl. No.: **13/951,558**

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Related U.S. Application Data

Primary Examiner — Shaun R Hurley

(63) Continuation of application No. 13/938,717, filed on Jul. 10, 2013, which is a continuation of application No. 13/227,638, filed on Sep. 8, 2011, now Pat. No. 8,485,565.

(74) *Attorney, Agent, or Firm* — Carlson, Gaskey & Olds, P.C.

(60) Provisional application No. 61/410,399, filed on Nov. 5, 2010.

(57) **ABSTRACT**

(51) **Int. Cl.**
B65H 69/04 (2006.01)

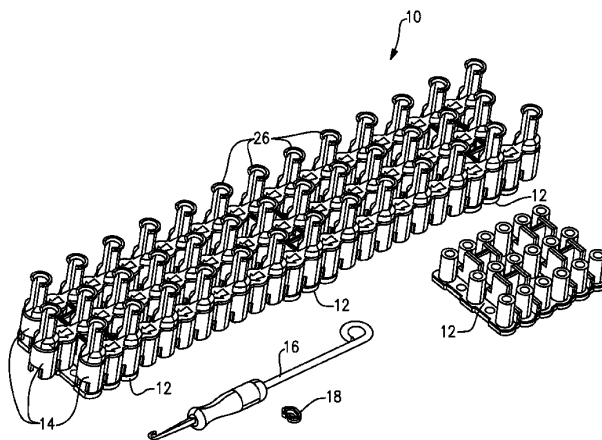
A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. The example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques and includes several pin bars that are supported in a desired special orientation by at least one base. The desired special orientation is dependent on the desired linked configuration of the completed article. The pins may be assembled in various combination and orientations to provide endless variation of completed link orientations.

(52) **U.S. Cl.**
USPC 289/17

(58) **Field of Classification Search**
USPC 289/2, 16.5, 17, 18.1; D21/334; 273/281, 288, 309

See application file for complete search history.

16 Claims, 10 Drawing Sheets



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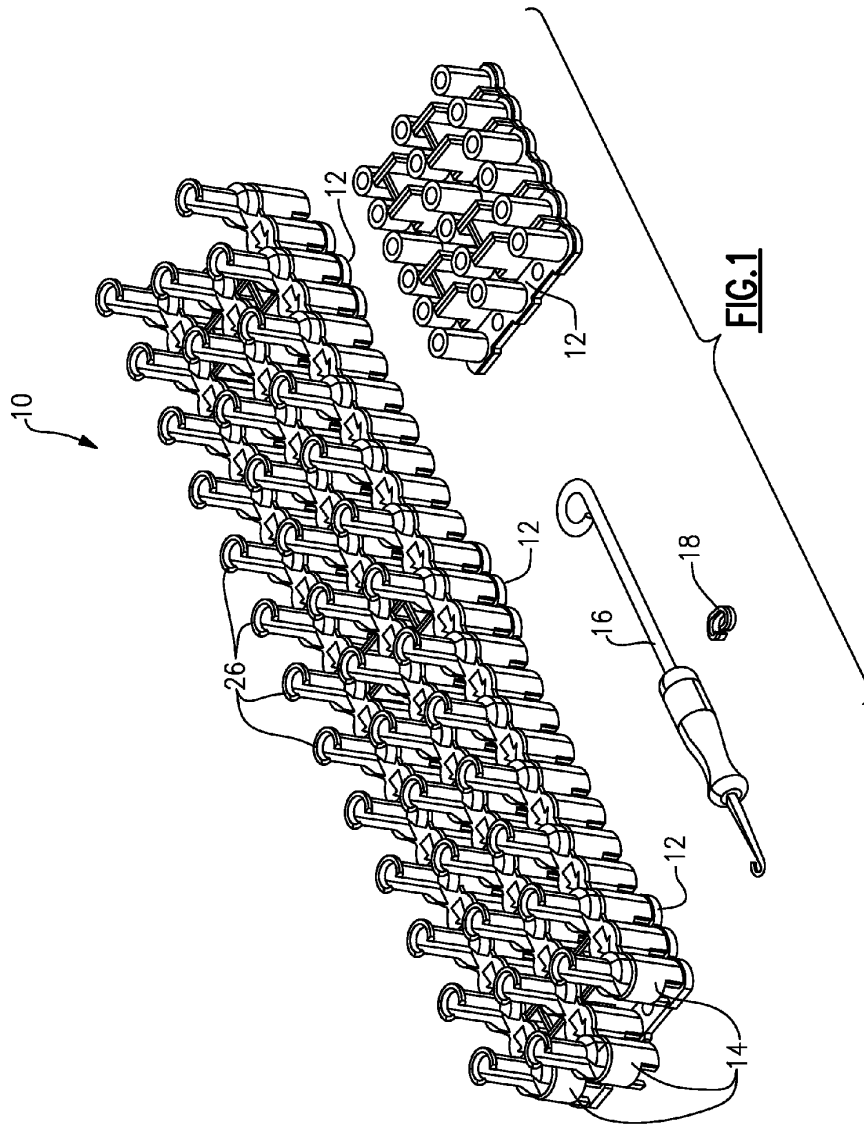




FIG. 2

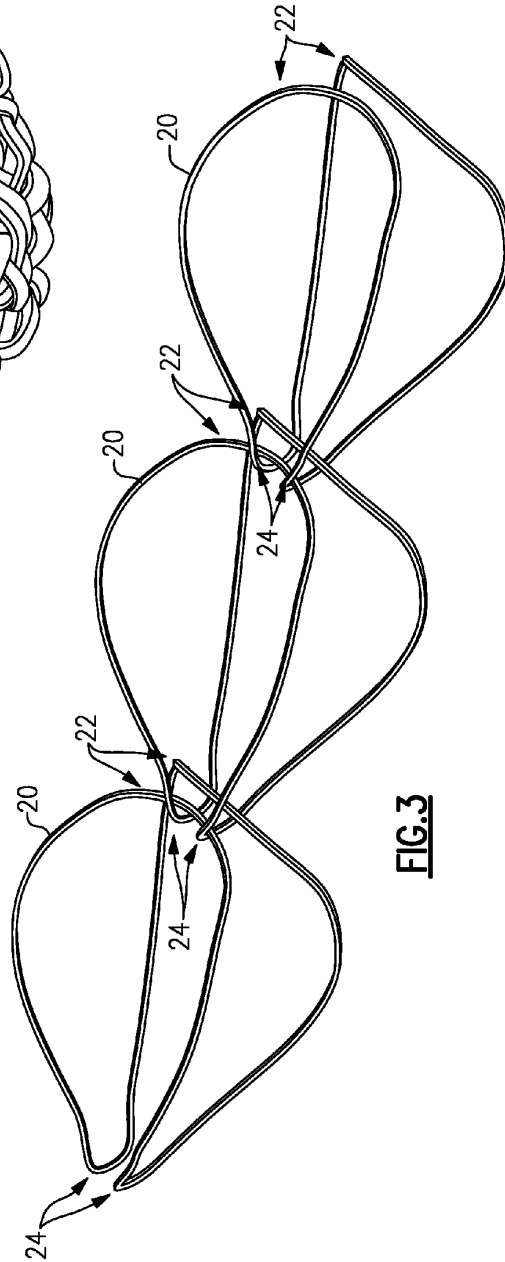
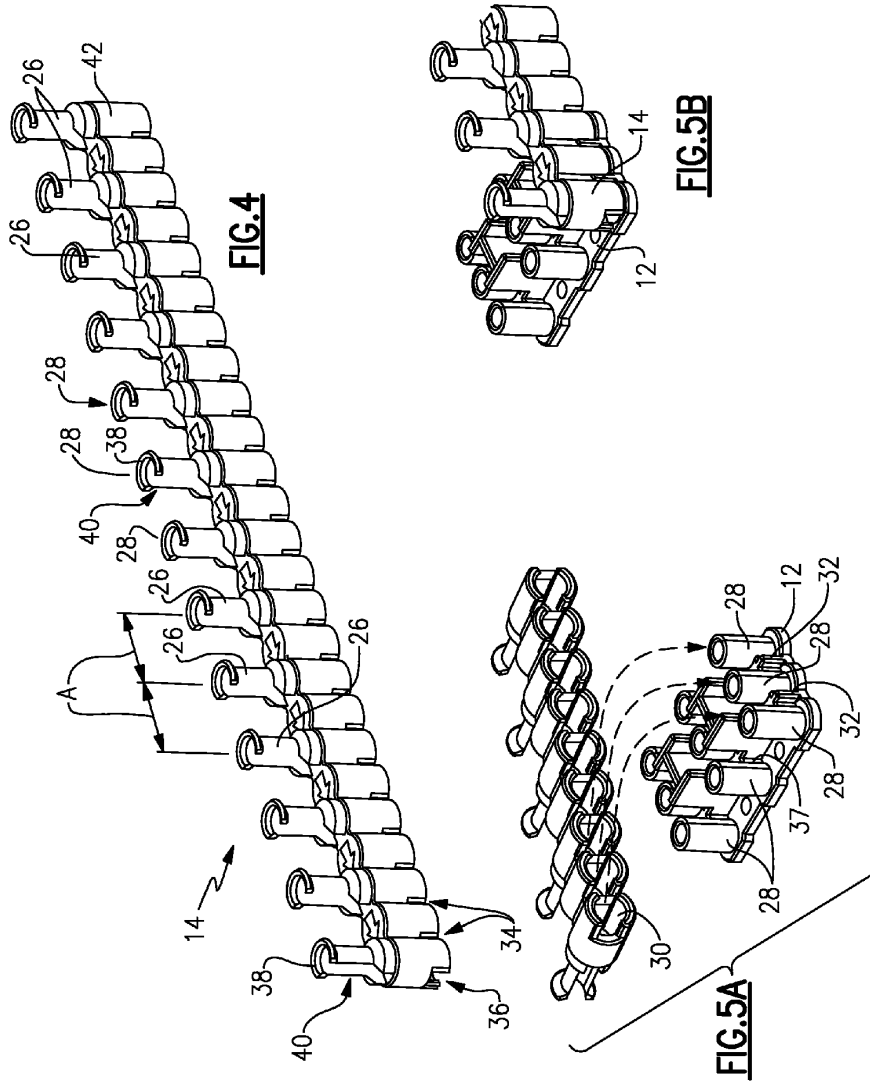
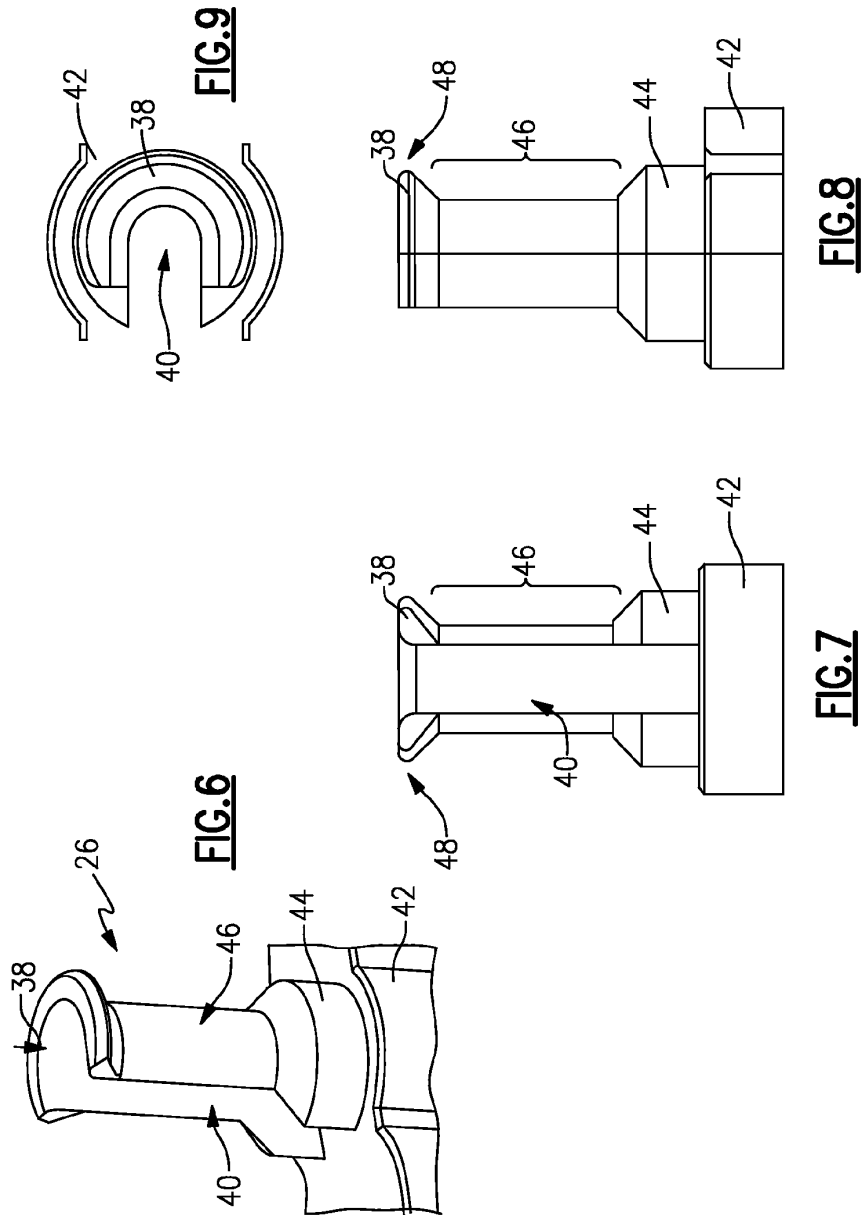


FIG. 3





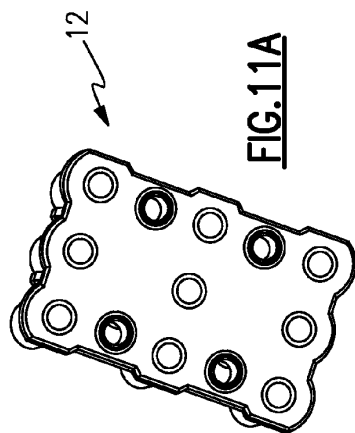


FIG. 11A

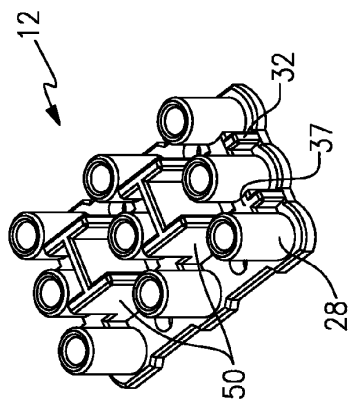


FIG. 10A

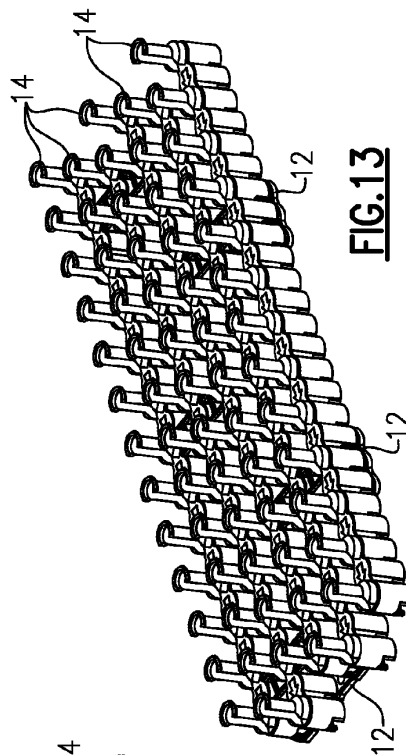


FIG. 13

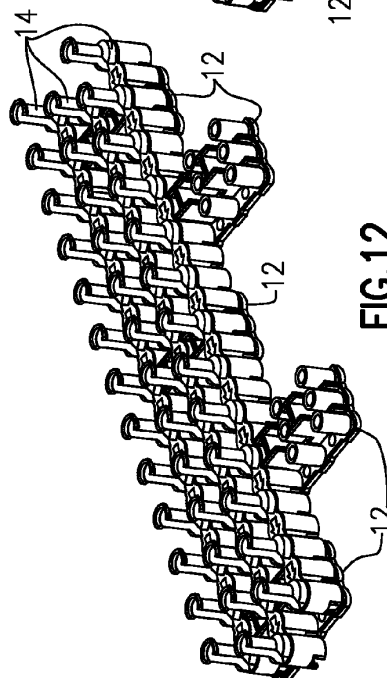


FIG. 12

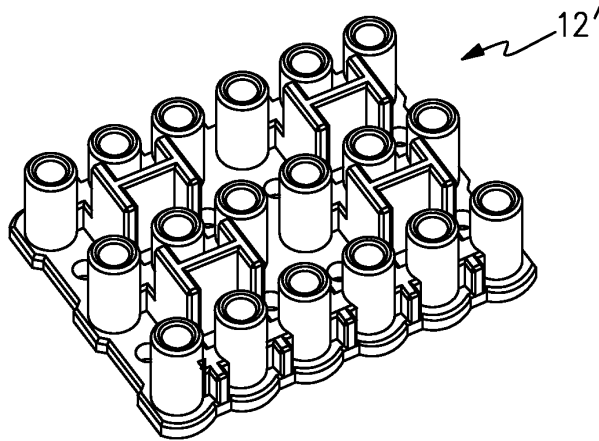


FIG. 10B

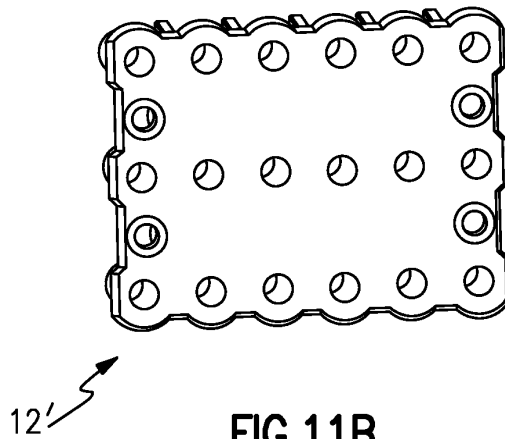


FIG. 11B

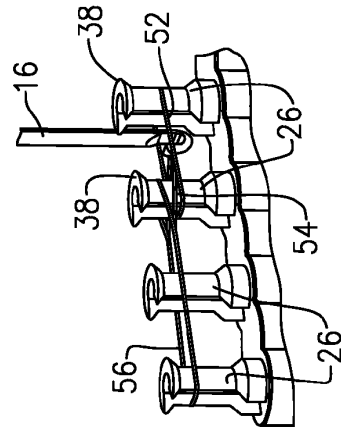


FIG. 14C

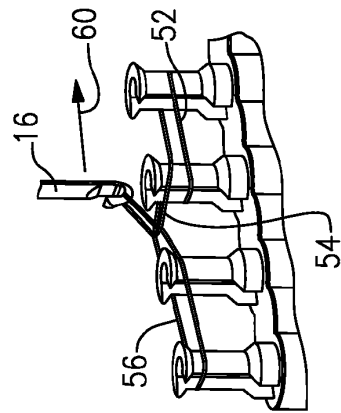


FIG. 14B

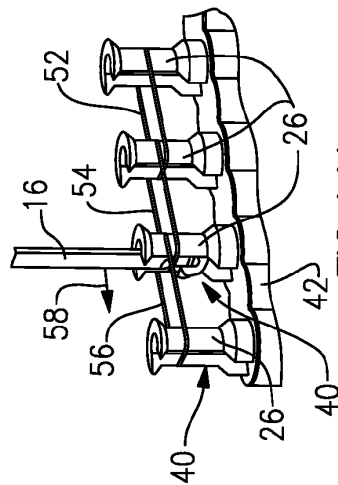


FIG. 14A

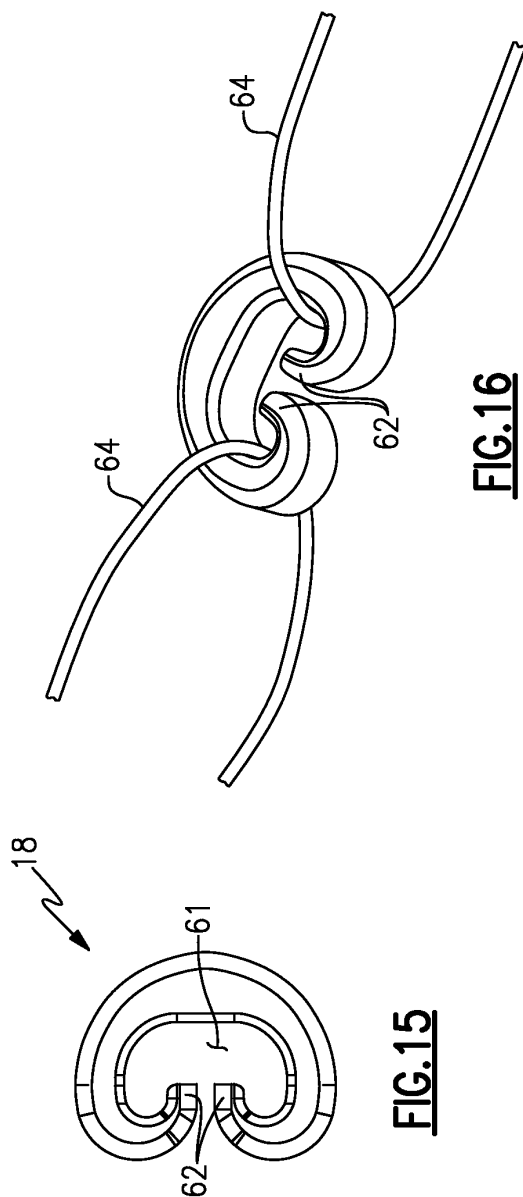


FIG.15

FIG.16

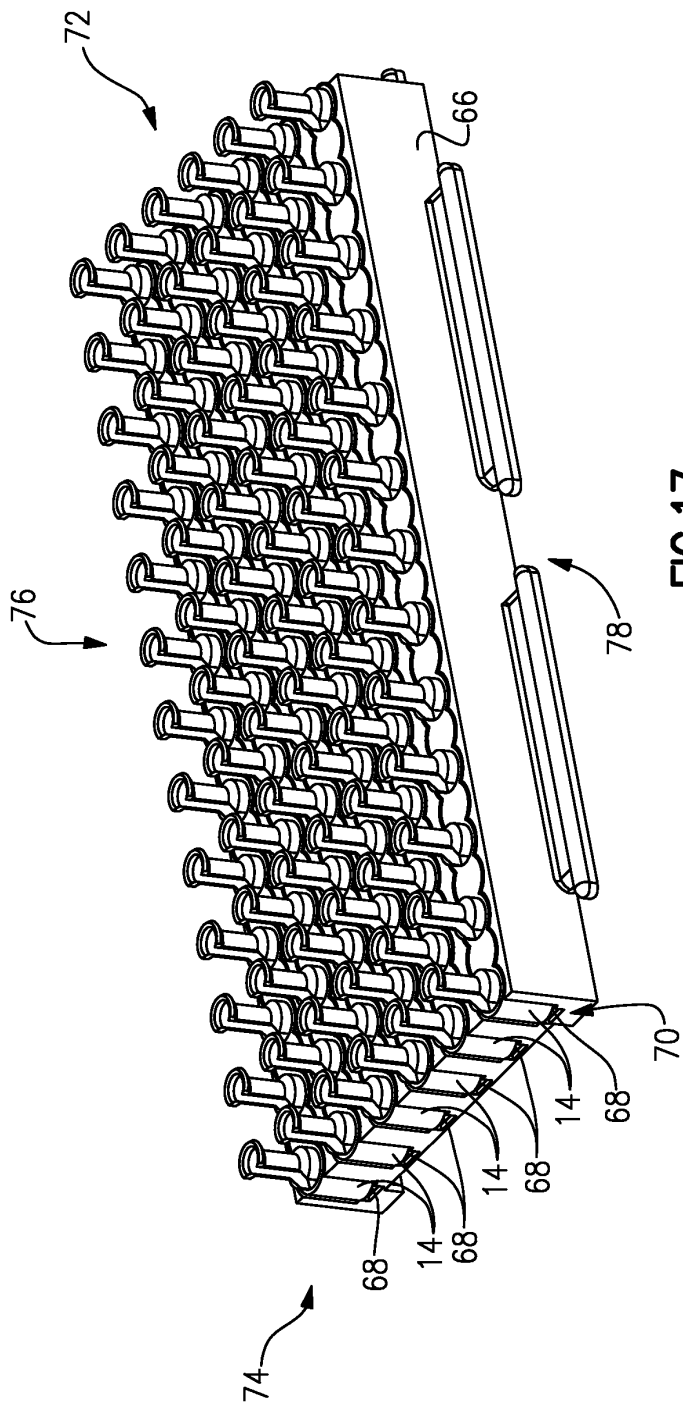
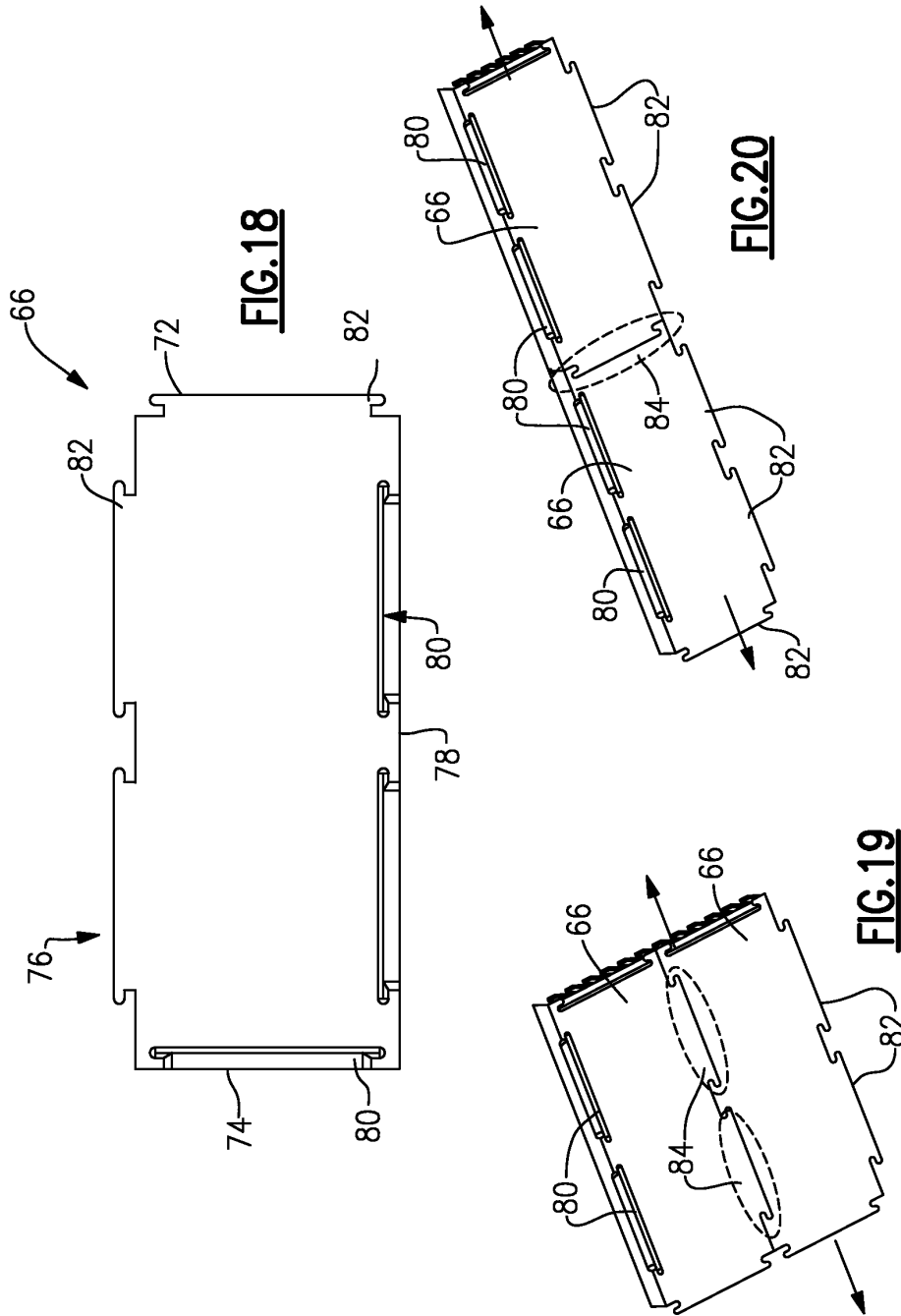


FIG. 17



BRUNNIAN LINK MAKING DEVICE AND KIT

REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. application Ser. No. 13/938,717 filed on Jul. 10, 2013, which is a continuation of U.S. application Ser. No. 13/227,638 filed on Sep. 8, 2011 that claims priority to U.S. Provisional Application No. 61/410,399 filed on Nov. 5, 2010.

BACKGROUND

This disclosure generally relates to method and device for creating a linked item. More particularly, this disclosure relates to a method and device for creating a linked wearable item from elastic bands.

Kits that include materials for making a uniquely colored bracelet or necklace have always enjoyed some popularity. However such kits usually just include the raw materials such as different colored threads and beads and rely on the individual's skill and talent to construct a usable and desirable item. Accordingly there is a need and desire for a kit that provides not only the materials for creating a unique wearable item, but also that simplifies construction to make it easy for people of many skill and artistic levels to successfully create a desirable and durable wearable item.

SUMMARY

A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. Elastic bands can be utilized to form such links in a desired manner. The example kit and device provides for creation of Brunnian link articles of complex configurations. Moreover, the example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques.

The example kit includes several pin bars that are supported in a desired spatial orientation by at least one base. The desired spatial orientation is dependent on the desired link configuration of the completed article. The base and pin bars may be assembled in various combination and orientations to provide endless variation of completed link orientations. Moreover, additional bases and pin bars can be added to further expand possible completed article creation.

Each of the pin bars includes a flanged top portion for holding elastic bands in place and a front access groove. The front access groove provides for a hook to be inserted below a top most elastic band such that a lower band can be grasped and pulled over an adjacent band to form the Brunnian link. The disclosed kit provides for many possible orientations of adjacent pins, and therefore different orientations of and designs for a completed linked article.

These and other features disclosed herein can be best understood from the following specification and drawings, the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an example kit for creating a Brunnian link article.

FIG. 2 is schematic view of Brunnian link articles.

FIG. 3 is a schematic view of a series of Brunnian links.

FIG. 4 is a perspective view of an example pin bar.

FIG. 5A is a perspective view of interfacing surfaces of an example base and the example pin bar.

FIG. 5B is a perspective view of a pin bar mounted to an example base.

FIG. 6 is a perspective view of one pin of the example pin bar.

FIG. 7 is front view of one example pin.

FIG. 8 is side view of an example pin.

FIG. 9 is a top view of an example pin.

FIG. 10A is a perspective view of an example base.

FIG. 10B is a perspective view of another example base.

FIG. 11A is a bottom view of the example base.

FIG. 11B is a bottom view of another example base.

FIG. 12 is an assembly view of several bases assembled to several pin bars.

FIG. 13 is an assembly view of several pin bars mounted relative to each other in one desired special orientation.

FIGS. 14A-C are perspective views of assembly steps for creating a Brunnian linked article.

FIG. 15 is a plan view of an example clip for securing loose ends of a Brunnian linked article.

FIG. 16 is perspective view illustrating elastic bands secured with the example clip.

FIG. 17 is a perspective view of an example base template for holding pin bars in a desired special orientation.

FIG. 18 is a bottom view of the example base template.

FIG. 19 is a perspective view of side by side attachment of two base templates.

FIG. 20 is a perspective view of an end to end attachment of two base templates.

DETAILED DESCRIPTION

Referring to FIG. 1, an example kit is indicated at 10 for creating Brunnian link items such as bracelets, necklaces and other wearable or decorative items shown in FIG. 2.

Referring to FIG. 3, a Brunnian link 20 is formed from a continuous looped structure without forming an actual knot. Several links are formed in a chain to form a circular structure. The ends are then secured and a durable wearable item is created. In this example three closed looped elastic items 20 such as rubber bands are shown forming a single chain. Each link is formed by capturing ends 22 of one loop structure with a mid portion 24 of another loop structure in series. Each link depends on the previous and subsequent links to maintain the desired shape and integrity. Removing one link 20 results in all of the links becoming loose from each other.

Referring to FIG. 1, the example kit 10 includes a base 12 that supports pin bars 14 that each includes a plurality of pins 26. A hook tool 16 is included for grasping and moving bands from one pin 26 to another. A clip 18 receives ends of the completed links to complete and secure the linked item. One or several pin bars 14 are mounted to several bases 12 as is shown to support the pin bars 14 and the corresponding pins 26 in a desired alignment. In this example, a center pin bar 14 is incremented one up from the two outermost pin bars 14. This alignment provides for creation of a desired linked item. In this example three bases 12 are utilized to support the pin bars 14 in a desired relative orientation.

Referring to FIGS. 4, 5A-B, with continued reference to FIG. 1, the base 12 includes a plurality of upward extending cylinders 28 that are received within a corresponding opening 30 defined at the bottom of each pin 26 the pin bar 14. The cylinders 28 of the base 12 and the openings 30 receiving the cylinders 28 are mating features that define a slight interference fit to hold the pin bar 14 in place. Although three bases 12 are shown in this example, more or less could be utilized to support additional numbers of pin bars 14.

The base 12 includes tabs 32 disposed between the cylinders 28 that fit within corresponding slots 34 defined on the pin bar 14. The interface between the tabs 32 and slots 34 provide alignment and maintain the upright orientation of the pin bars 14. Each of the pins 26 includes a front slot 36 that receives a boss 38 defined between cylinders 28 of the base 12. The front slot 34 and boss 38 interface further aligns and supports the pin bar 14 on the base 12.

The pin bar 14 is an integral structure having the plurality of pins 28 defined in a single row. Each of the pins 28 are spaced an equal distance A apart. Each of the pins 28 includes a flanged top 38 and a front access groove 40.

Referring to FIGS. 6, 7, 8 and 9, each pin 26 extends upward from a bar portion 42 and include features for holding and spacing rubber bands. Each pin 26 includes the flanged top 38 that is flared outward to an outer edge 48 to prevent errant release of a rubber band during creation of a link. The example outer edge 48 is a rounded edge about the flanged top 38. The access groove 40 is a longitudinal groove that extends inward toward a center of the pin 26. The access groove 40 extends from the bar portion 42 to an open end with the flanged top 38. The groove 40 provides a clearance for insertion of the hook tool 16 (FIG. 1) utilized for moving ends of a rubber band between pins 32.

Each of the pins 26 includes a bottom portion 44 that is flared outward from a diameter of a mid portion 46. The mid portion 46 of the pin 26 is where a rubber band is secured during assembly. The bottom portion 44 is flared outward to prevent the rubber band from slipping downward against the bar portion 42. The top and bottom flared portions 38, 44 centers the rubber bands in the mid portion 46 to provide a desired alignment during assembly. The edges of the flange 38 are rounded over to eliminate sharp edges or surfaces.

Referring to FIGS. 10A and 11A, the example base 12 includes three rows of three cylinders 28 that are spaced equal distance from each other. The tabs 32 and bosses 37 are received within corresponding slots 34 and 36 formed on the pin bar 14. A stabilizer 50 is disposed between each row of cylinders 28 to provide further lateral support for the pin bars 14.

Referring to FIGS. 10B and 11B, another example base 12' includes three rows of six cylinders 28 that are spaced an equal distance from each other. The additional cylinders 28 provided by the larger example base 12' provide for mounting of additional pin bars 14 with the same number of bases 12'. As appreciated, it is within the contemplation of this disclosure to provide a base with any number of rows of and columns of cylinders 28 that provide varying mounting configurations for the pin bars 14.

Referring to FIGS. 12 and 14, the base 12 is utilized to set a desired pattern and uniform spacing between several pin bars 14. Accordingly, each of the bases 12 can engage one or several pin bars 14. The base 12 can engage and be received three pin bars 14 longitudinally, and/or may be added to a side of a group of pin bars to add additional pin bars beyond the three provided for by one base 12. FIG. 12 illustrates a configuration where three bases are supporting three pin bars 14 and two additional bases 12 are engaged to the current pin bars 14 with only one row such that two rows of cylinders 28 extend laterally to receive additional pin bars 14. FIG. 13 illustrates a configuration where five pin bars 14 are aligned side by side as provided by the additional bases 12 extending laterally as shown in FIG. 12. As is appreciated, the extent to which additional bases and pin bars 14 can be added and the configurations possible are limited only by the desire of the user of the disclosed kit. The addition of pin bars 14 provides

for more unique and intricate designs limited only by the imagination of the user of the kit.

Referring to FIGS. 14A-C, a method of forming a Brunian link as provided by the example kit includes the initial step of loading elastic bands onto adjacent pins 26. In this example, beginning at the right most ends each rubber band are stretched over adjacent pins and held at the mid portion. A first elastic band 52 is placed between a first pair of adjacent pins 26. A second elastic band 54 is then placed over one end of the previously assembled first elastic band 52, and then a third elastic band 56 and so on until the desired number of rubber bands have been placed on corresponding pin bars 14. Note that in this example only three elastic bands 52, 54, and 56 are shown for explanation purposes, however, in practice, many elastic bands would be utilized to provide the desired length of a completed article.

Once the elastic bands 52, 54, and 56 are placed on each of the pins 26, the hook 16 is inserted into the access groove 40 and moved downward past the top most elastic bands 56. The hook 16 is then moved outward from the groove in a direction indicated by arrow 58 a sufficient distance to allow for one end of the elastic band 54 to be caught in the hook end. Further lifting pulls the captured end of the second elastic band 54 in the direction indicated by 60 up through the end of the third elastic band 56 for assembly on to another adjacent pin 26 as is shown in FIG. 14B. The captured end is pulled up and over the flanged top 38 and pulled back onto the adjacent pin to form a single link. The captured end of the elastic band 54 is then released to engage the adjacent pin 26. This process is repeated until a chain of links a desired length is obtained.

The example illustrated in FIGS. 14A, 14B and 14C illustrate a chain formed from a single row of links. The example base template 12 can be arranged to support many pin bars 14 and therefore links can be formed longitudinally and laterally across adjacent pin bar 14 to form a wide variety of link configurations and combinations.

Referring to FIGS. 15 and 16, once the link is created, the clip 18 is used to secure the ends such that the fabricated chain of links does not come undone. The clip 18 is substantially C-shaped with an inward facing ends 62 that trap ends of the elastic bands 64 within the inner area 61.

Referring to FIGS. 17-20, an example base template 66 is shown for holding six pin bars 14 in a desired orientation. Each of the example pin bars 14 includes the opening 30 of a defined size and the base template 66 includes a plurality of circular bosses 68 that are sized to provide a desired tight interference fit with the openings 30 in the pin bar 14 such that the pin bar 14 is retained in place within grooves 70 of the base template 66. The interference fit between the pin bar 14 and the bosses of the base template 66 assure a positive mounting and securing of to the base to prevent separation during use and construction of a desired wearable item.

Referring to FIGS. 18, 19 and 20, the base template 66 includes first and second ends 72, 74 and first and second sides 76, 78 between the first and second ends 72, 74. The first end 72 includes a male joint 80 and the second end 74 includes a corresponding female joint 80. The first side 76 includes a male joint 82 and the second side 78 includes a female joint 80. The alternating sides provide for attachment of several base templates 66 to each other to provide extended capability.

FIG. 19 illustrates two base templates 66 connected to each other in a side-to-side configuration by way of joints 84. FIG. 20 illustrates two base templates 66 connected to each other in an end-to-end configuration by way of joint 84. As appreciated, any number of base templates 66 can be secured to each other to form many different desired configurations. The dif-

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ferent configurations provide for many options for creating different shapes and configurations of wearable items.

Accordingly, the example kit and method provide for the creation of many different combinations and configurations of Brunnian links for the creation of bracelets, necklaces, and other wearable items. Moreover, the example kit is expandable to further create and expand the capabilities of potential Brunnian link creations. Further, the example kit provides for the creation of such links and items in an easy manner allowing persons of varying skill levels to be successful in creating unique wearable items.

Although an example embodiment has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this disclosure. For that reason, the following claims should be studied to determine the scope and content of this invention.

What is claimed is:

1. A device for creating an item consisting of a series of links, the device comprising:

a base; and

a plurality of pins supported on the base, wherein each of the plurality of pins includes a top portion for holding a link in a desired orientation and an opening on at least one side of each of the plurality of pins, wherein the plurality of pins comprises rows of offset pins spaced apart and extending upward from the base.

2. The device as recited in claim 1, wherein the opening comprises a slot extending from the top portion toward the base.

3. The device as recited in claim 1, wherein the top portion comprises a flared portion for holding a link in place on at least one of the plurality of pins.

4. The device as recited in claim 1, wherein each of the plurality of pins includes a bottom flared portion spaced apart from the top portion and a mid portion for holding a link.

5. The device as recited in claim 1, wherein the base includes a mating feature for combining additional devices and additional pluralities of pins.

6. A kit for creating an item consisting of a series of links, the kit comprising:

a plurality of pins supported relative to each other including a top portion for holding a link in a desired orientation and an opening on at least one side of each of the plurality of pins, wherein the plurality of pins comprises rows of offset pins spaced apart and extending upward from a base.

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7. The kit as recited in claim 6, including a hook tool for manipulating a link held in a desired orientation on at least one of the plurality of pins.

8. The kit as recited in claim 6 including at least one connector for connecting ends of the series of links, wherein the connector includes inward facing ends for trapping each link within an inner area of the connector.

9. The kit as recited in claim 6, wherein the opening comprises a slot extending from the top portion toward the base.

10. The kit as recited in claim 6, wherein the opening comprises an access groove disposed along at least one side of each of the plurality of pins.

11. The kit as recited in claim 6, wherein the top portion comprises a flared portion for holding a link in place on at least one of the plurality of pins.

12. The kit as recited in claim 6, wherein each of the plurality of pins includes a bottom flared portion spaced apart from the top portion and a mid portion for holding a link.

13. The kit as recited in claim 6, wherein the base includes a mating feature for combining additional devices and additional pluralities of pins.

14. A method of assembling a kit for creating a linked item comprising the steps of:

supporting a plurality of pins to define a desired spatial relationship between pins;

providing an access opening on each of the plurality of pins to provide access for a hook tool to grasp a link supported on one of the plurality of pins;

providing a plurality of links for assembly the plurality of pins according to a desired pattern; and

providing a plurality of connectors for holding links together once a desired pattern is completed.

15. The method as recited in claim 14, including the step of providing a hook tool for insertion into the access opening for manipulating a link supported on one of the plurality of pins.

16. A device for creating an item consisting of a series of links, the device comprising:

a base; and

a plurality of pins supported on the base, wherein each of the plurality of pins includes a top portion for holding a link in a desired orientation and an opening on at least one side of each of the plurality of pins, wherein the base includes a mating feature for combining additional devices and additional pluralities of pins.

* * * * *



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(12) **United States Patent**
Ng

(10) **Patent No.:** **US 8,485,565 B2**
(45) **Date of Patent:** **Jul. 16, 2013**

(54) **BRUNNIAN LINK MAKING DEVICE AND KIT**

(76) Inventor: **Cheong Choon Ng**, Novi, MI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 98 days.

(21) Appl. No.: **13/227,638**

(22) Filed: **Sep. 8, 2011**

(65) **Prior Publication Data**

US 2012/0112457 A1 May 10, 2012

Related U.S. Application Data

(60) Provisional application No. 61/410,399, filed on Nov. 5, 2010.

(51) **Int. Cl.**
B65H 69/04 (2006.01)

(52) **U.S. Cl.**
USPC **289/17**

(58) **Field of Classification Search**
USPC 289/2, 17, 16.5, 18.1; 273/281, 288, 273/309
See application file for complete search history.

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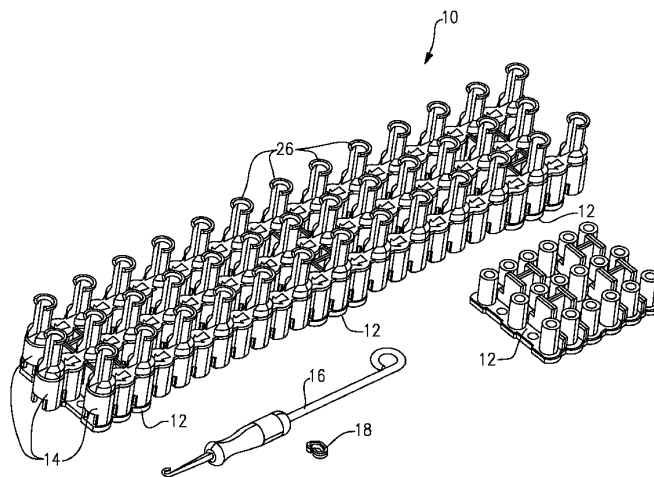
Primary Examiner — Shaun R Hurley

(74) *Attorney, Agent, or Firm* — Carlson, Gaskey & Olds, P.C.

(57) **ABSTRACT**

A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. The example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques and includes several pin bars that are supported in a desired special orientation by at least one base. The desired special orientation is dependent on the desired linked configuration of the completed article. The base and pin bars may be assembled in various combination and orientations to provide endless variation of completed link orientations. Additional bases and pin bars can be to further expand possible completed article creation.

18 Claims, 10 Drawing Sheets



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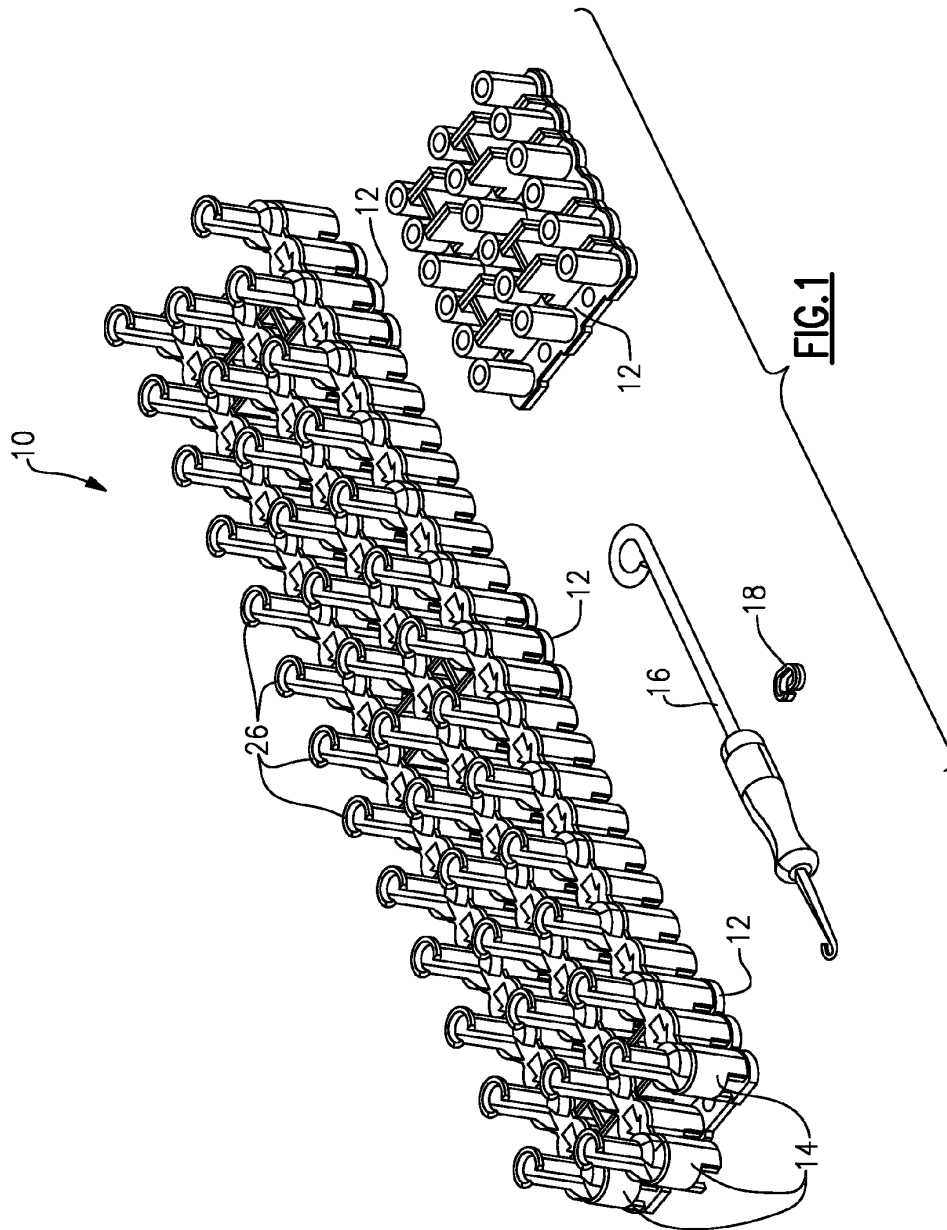




FIG. 2

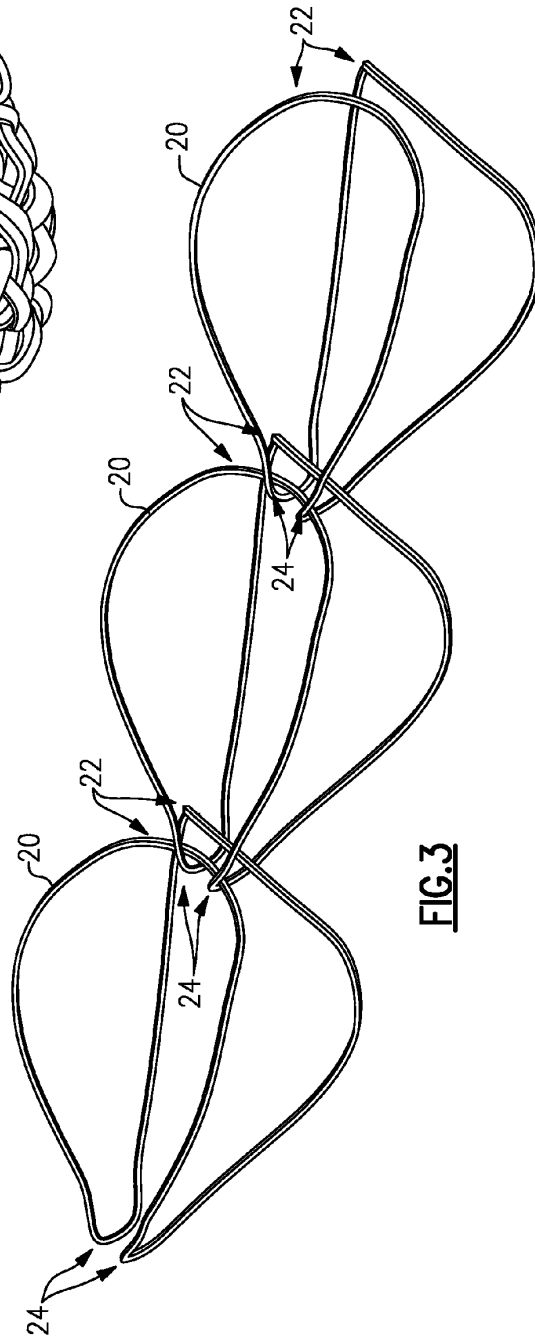
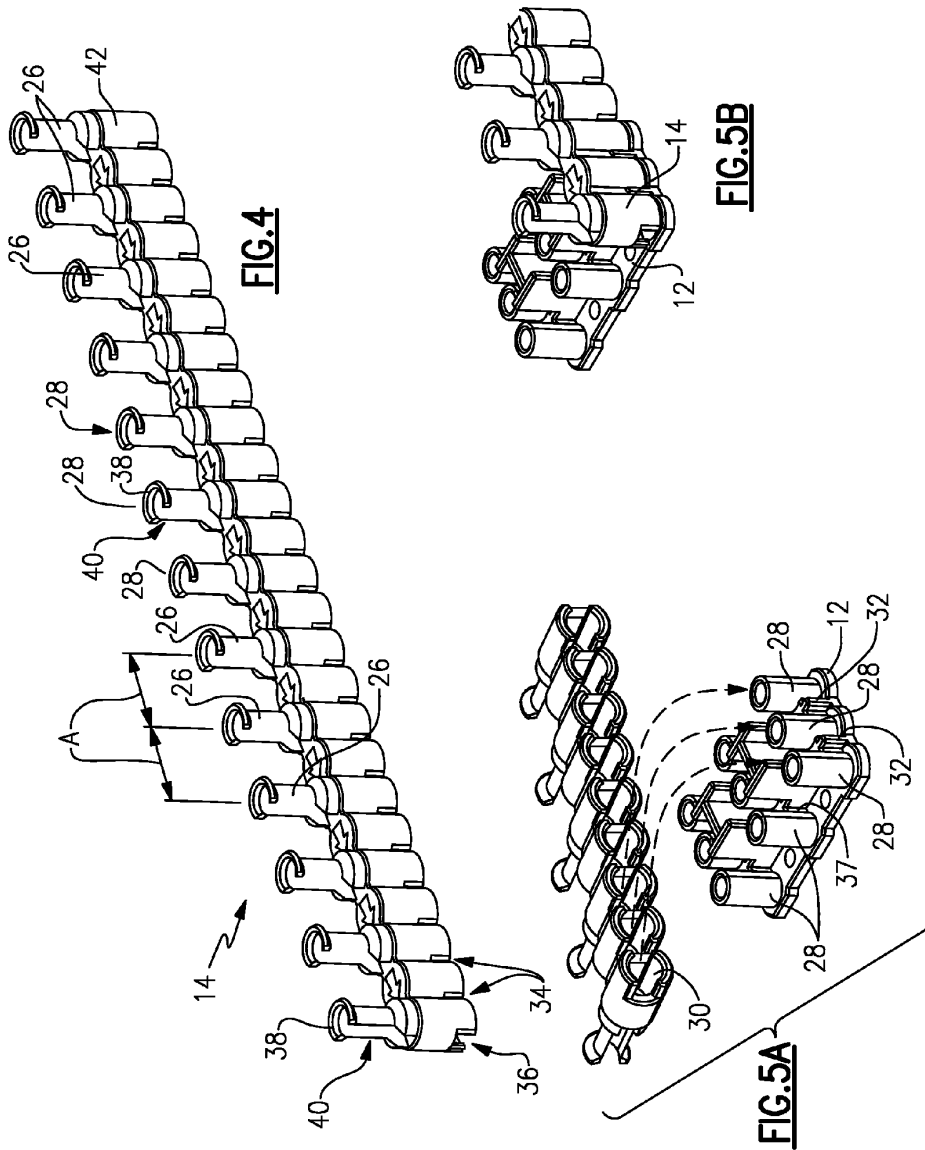
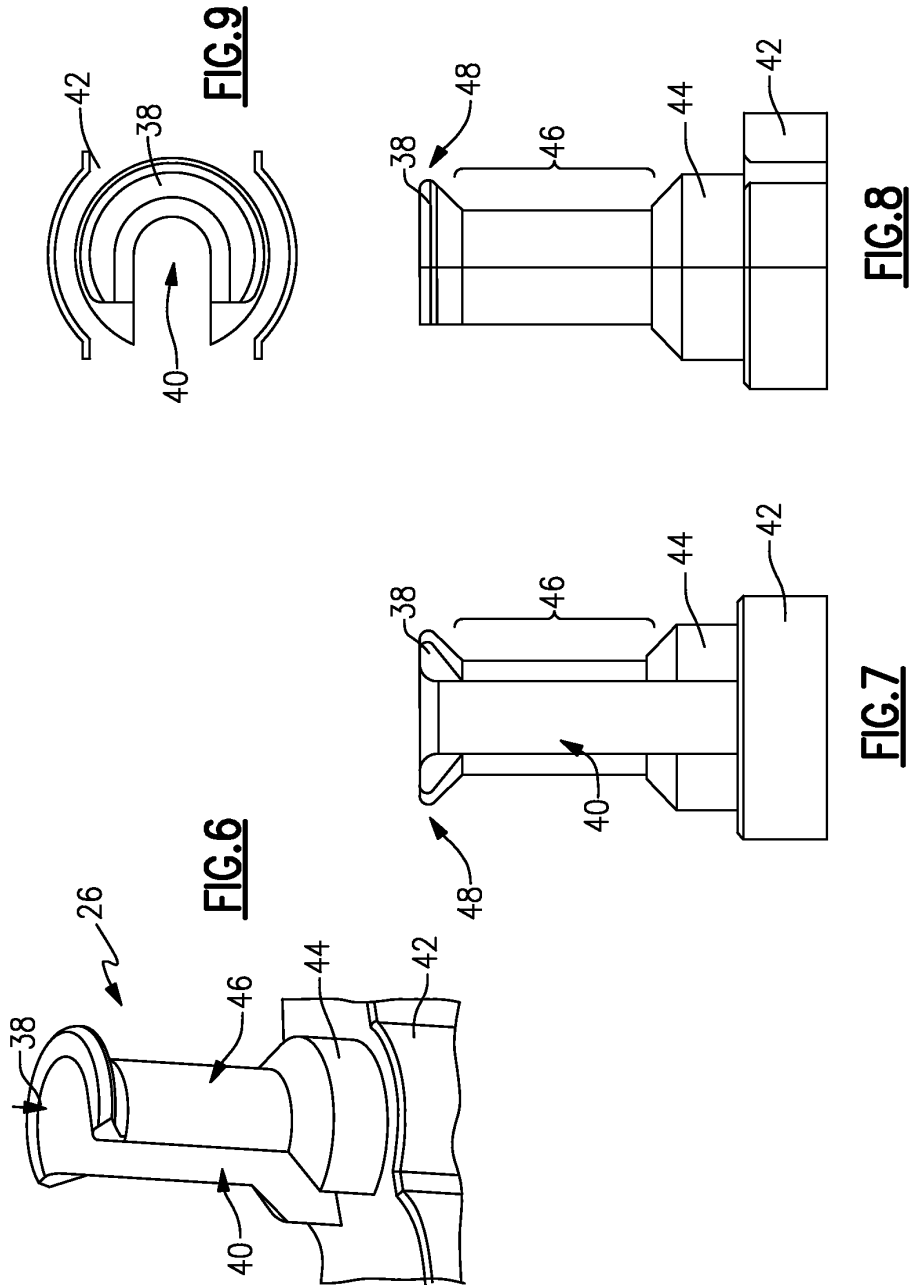


FIG. 3





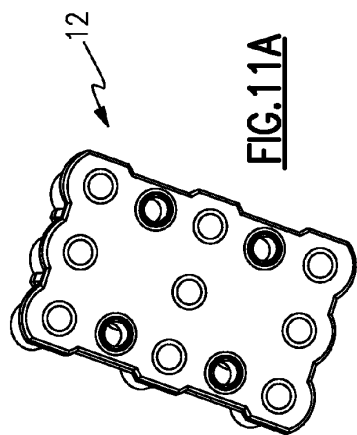


FIG. 11A

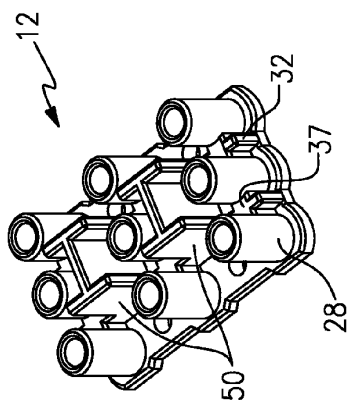


FIG. 10A

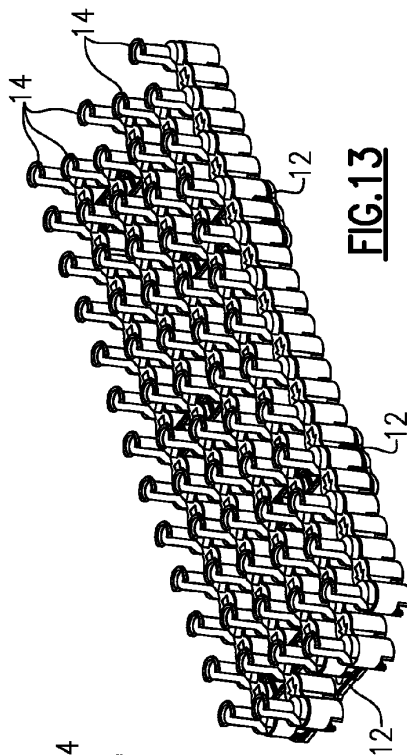


FIG. 13

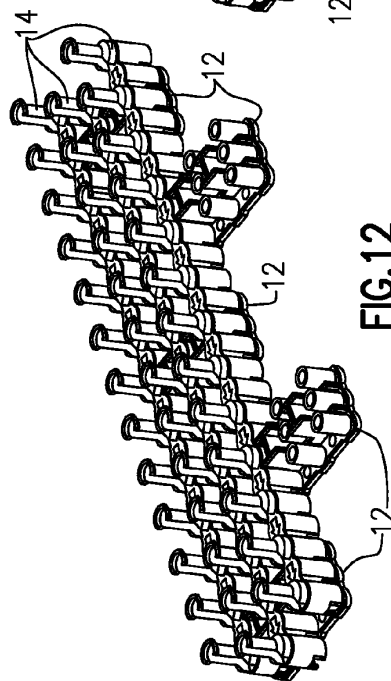


FIG. 12

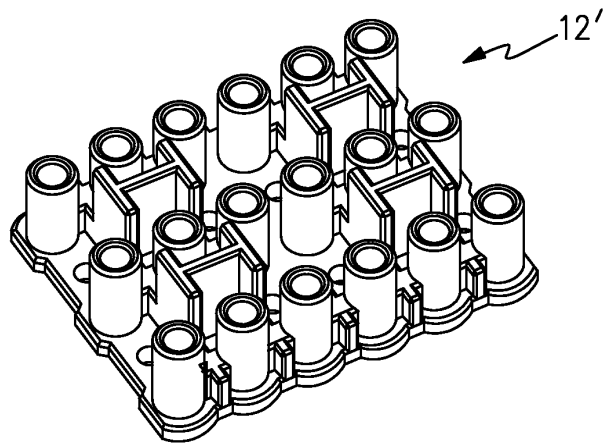


FIG. 10B

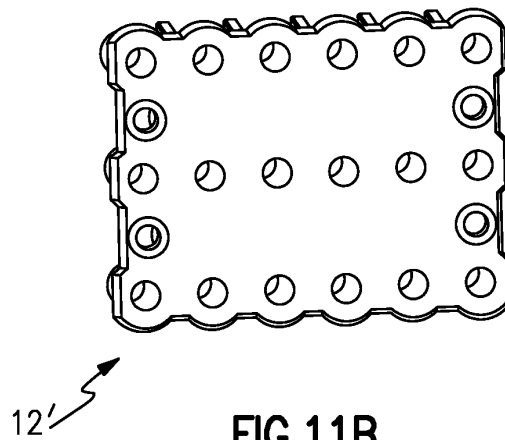


FIG. 11B

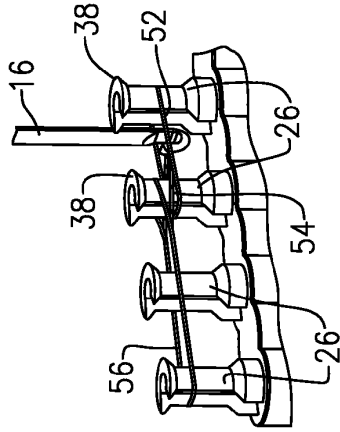


FIG. 14C

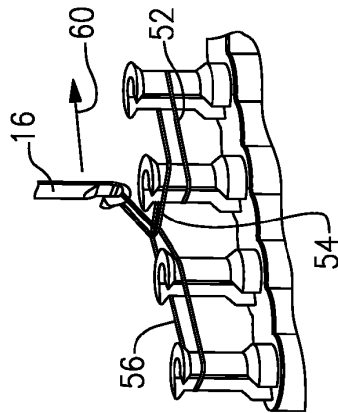


FIG. 14B

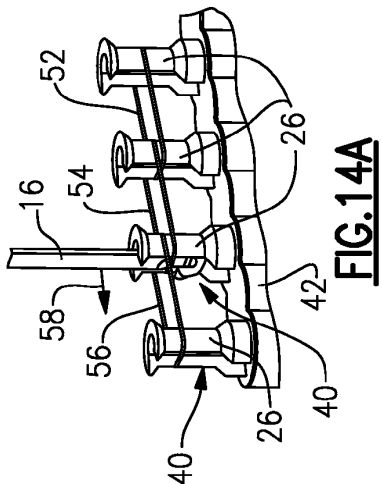
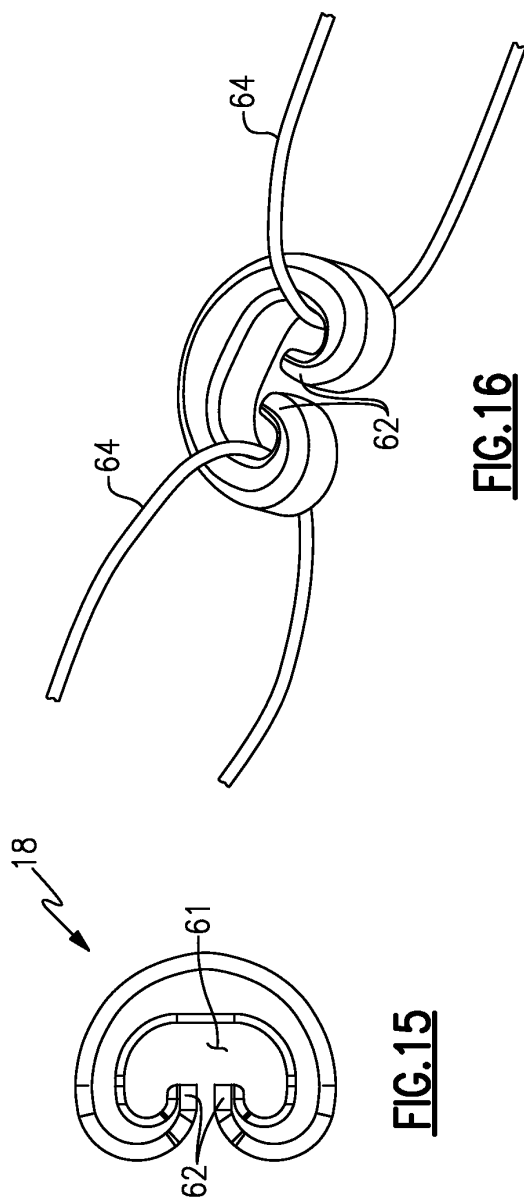


FIG. 14A



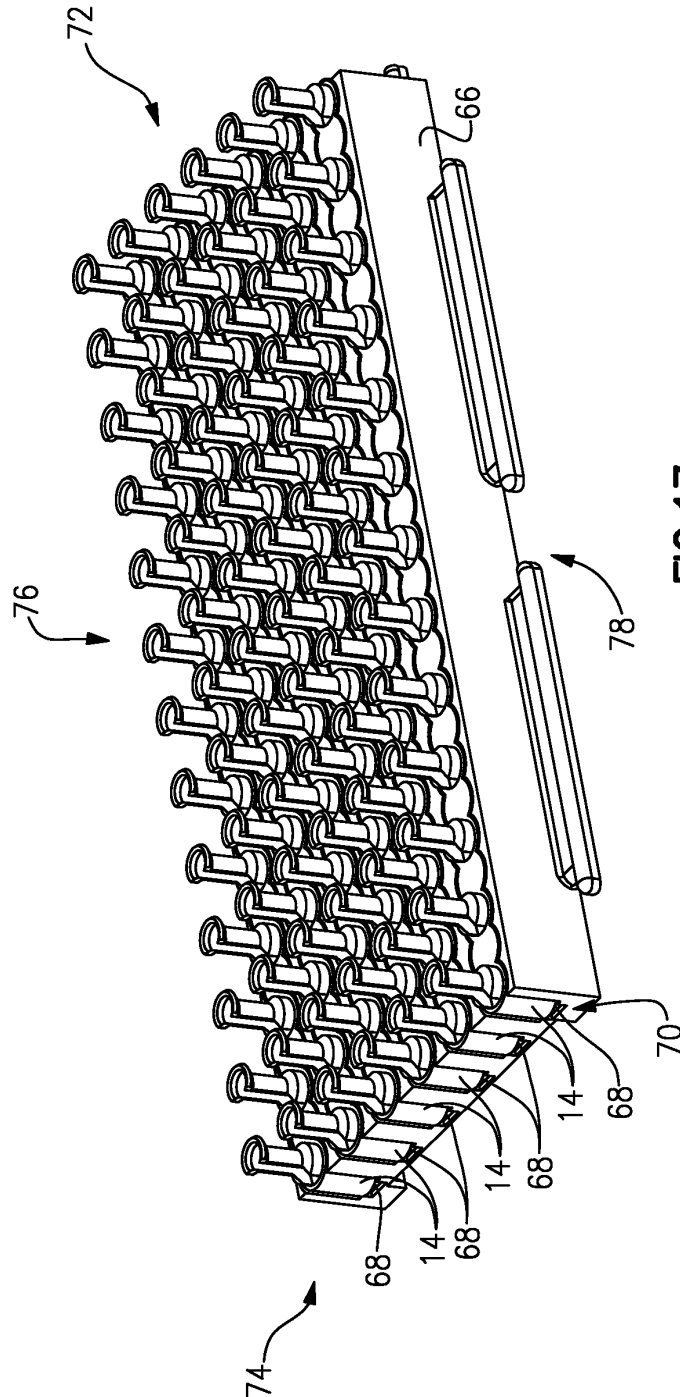
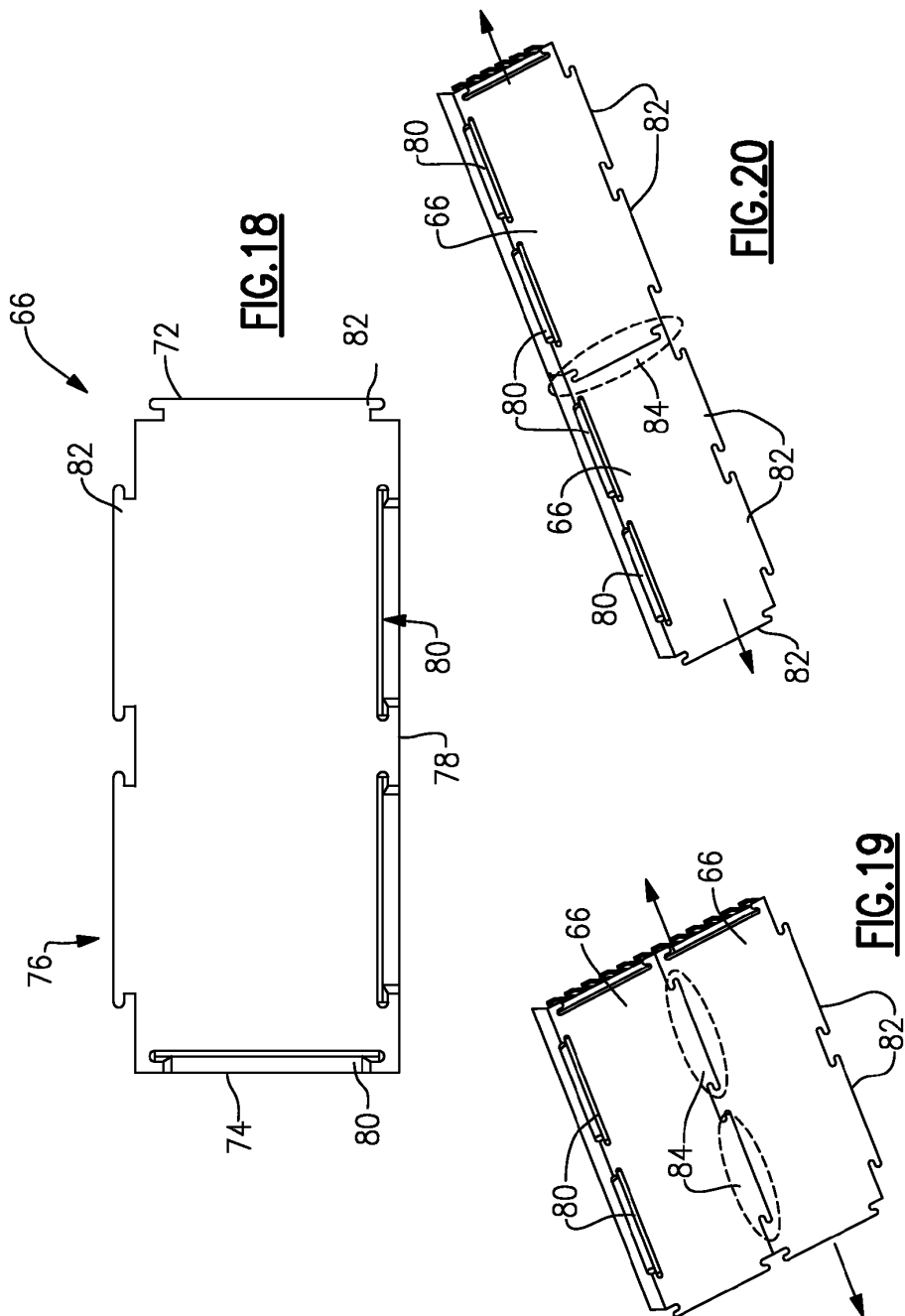


FIG. 17



BRUNNIAN LINK MAKING DEVICE AND KIT

REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Appli- 5
cation No. 61/410,399 filed on Nov. 5, 2010.

BACKGROUND

This disclosure generally relates to method and device for 10
creating a linked item. More particularly, this disclosure
relates to a method and device for creating a linked wearable
item from elastic bands.

Kits that include materials for making a uniquely colored 15
bracelet or necklace have always enjoyed some popularity.
However such kits usually just include the raw materials such
as different colored threads and beads and rely on the indi-
vidual's skill and talent to construct a usable and desirable
item. Accordingly there is a need and desire for a kit that
provides not only the materials for creating a unique wearable 20
item, but also that simplifies construction to make it easy for
people of many skill and artistic levels to successfully create
a desirable and durable wearable item.

SUMMARY

A Brunnian link is a link formed from a closed loop 25
doubled over itself to capture another closed loop to form a
chain. Elastic bands can be utilized to form such links in a
desired manner. The example kit and device provides for
creation of Brunnian link articles of complex configurations.
Moreover, the example kit provides for the successful creation
of unique wearable articles using Brunnian link assembly
techniques.

The example kit includes several pin bars that are sup- 35
ported in a desired spatial orientation by at least one base. The
desired spatial orientation is dependent on the desired link
configuration of the completed article. The base and pin bars
may be assembled in various combination and orientations to
provide endless variation of completed link orientations. 40
Moreover, additional bases and pin bars can be added to
further expand possible completed article creation.

Each of the pin bars includes a flanged top portion for 45
holding elastic bands in place and a front access groove. The
front access groove provides for a hook to be inserted below
a top most elastic band such that a lower band can be grasped
and pulled over an adjacent band to form the Brunnian link.
The disclosed kit provides for many possible orientations of
adjacent pins, and therefore different orientations of and
designs for a completed linked article.

These and other features disclosed herein can be best 50
understood from the following specification and drawings,
the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an example kit for creating
a Brunnian link article.

FIG. 2 is schematic view of Brunnian link articles.

FIG. 3 is a schematic view of a series of Brunnian links.

FIG. 4 is a perspective view of an example pin bar.

FIG. 5A is a perspective view of interfacing surfaces of an
example base and the example pin bar.

FIG. 5B is a perspective view of a pin bar mounted to an
example base.

FIG. 6 is a perspective view of one pin of the example pin
bar.

FIG. 7 is front view of one example pin.

FIG. 8 is side view of an example pin.

FIG. 9 is a top view of an example pin.

FIG. 10A is a perspective view of an example base.

FIG. 10B is a perspective view of another example base.

FIG. 11A is a bottom view of the example base.

FIG. 11B is a bottom view of another example base.

FIG. 12 is an assembly view of several bases assembled to
several pin bars.

FIG. 13 is an assembly view of several pin bars mounted
relative to each other in one desired special orientation.

FIGS. 14A-C are perspective views of assembly steps for
creating a Brunnian linked article.

FIG. 15 is a plan view of an example clip for securing loose
ends of a Brunnian linked article.

FIG. 16 is perspective view illustrating elastic bands
secured with the example clip.

FIG. 17 is a perspective view of an example base template
for holding pin bars in a desired special orientation.

FIG. 18 is a bottom view of the example base template.

FIG. 19 is a perspective view of side by side attachment of
two base templates.

FIG. 20 is a perspective view of an end to end attachment of
two base templates.

DETAILED DESCRIPTION

Referring to FIG. 1, an example kit is indicated at 10 for
creating Brunnian link items such as bracelets, necklaces and
other wearable or decorative items shown in FIG. 2.

Referring to FIG. 3, a Brunnian link 20 is formed from a
continuous looped structure without forming an actual knot.
Several links are formed in a chain to form a circular struc-
ture. The ends are then secured and a durable wearable item
is created. In this example three closed looped elastic items 35
such as rubber bands are shown forming a single chain. Each
link is formed by capturing ends 22 of one loop structure with
a mid portion 24 of another loop structure in series. Each link
depends on the previous and subsequent links to maintain the
desired shape and integrity. Removing one link 20 results in
all of the links becoming loose from each other.

Referring to FIG. 1, the example kit 10 includes a base 12
that supports pin bars 14 that each includes a plurality of pins
26. A hook tool 16 is included for grasping and moving bands
from one pin 26 to another. A clip 18 receives ends of the
completed links to complete and secure the linked item. One
or several pin bars 14 are mounted to several bases 12 as is
shown to support the pin bars 14 and the corresponding pins
26 in a desired alignment. In this example, a center pin bar 14
is incremented one up from the two outermost pin bars 14. 50
This alignment provides for creation of a desired linked item.
In this example three bases 12 are utilized to support the pin
bars 14 in a desired relative orientation.

Referring to FIGS. 4, 5A-B, with continued reference to
FIG. 1, the base 12 includes a plurality of upward extending
cylinders 28 that are received within a corresponding opening
30 defined at the bottom of each pin 26 the pin bar 14. The
cylinders 28 of the base 12 and the openings 30 receiving the
cylinders 28 are mating features that define a slight interfe-
rence fit to hold the pin bar 14 in place. Although three bases
12 are shown in this example, more or less could be utilized to
support additional numbers of pin bars 14.

The base 12 includes tabs 32 disposed between the cylin-
ders 28 that fit within corresponding slots 34 defined on the
pin bar 14. The interface between the tabs 32 and slots 34
provide alignment and maintain the upright orientation of the
pin bars 14. Each of the pins 26 includes a front slot 36 that

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receives a boss 38 defined between cylinders 28 of the base 12. The front slot 34 and boss 38 interface further aligns and supports the pin bar 14 on the base 12.

The pin bar 14 is an integral structure having the plurality of pins 28 defined in a single row. Each of the pins 28 are spaced an equal distance A apart. Each of the pins 28 includes a flanged top 38 and a front access groove 40.

Referring to FIGS. 6, 7, 8 and 9, each pin 26 extends upward from a bar portion 42 and include features for holding and spacing rubber bands. Each pin 26 includes the flanged top 38 that is flared outward to prevent errant release of a rubber band during creation of a link. The access groove 40 is a longitudinal groove that extends inward toward a center of the pin 26. The access groove 40 extends from the bar portion 42 to an open end with the flanged top 38. The groove 40 provides a clearance for insertion of the hook tool 16 (FIG. 1) utilized for moving ends of a rubber band between pins 32.

Each of the pins 26 includes a bottom portion 44 that is flared outward from a diameter of a mid portion 46. The mid portion 46 of the pin 26 is where a rubber band is secured during assembly. The bottom portion 44 is flared outward to prevent the rubber band from slipping downward against the bar portion 42. The top and bottom flared portions 38, 44 centers the rubber bands in the mid portion 46 to provide a desired alignment during assembly. The edges of the flange 38 are rounded over to eliminate sharp edges or surfaces.

Referring to FIGS. 10A and 11A, the example base 12 includes three rows of three cylinders 28 that are spaced equal distance from each other. The tabs 32 and bosses 37 are received within corresponding slots 34 and 36 formed on the pin bar 14. A stabilizer 50 is disposed between each row of cylinders 28 to provide further lateral support for the pin bars 14.

Referring to FIGS. 10B and 11B, another example base 12' includes a three row of six cylinders 28 that are spaced an equal distance from each other. The additional cylinders 28 provided by the larger example base 12' provide for mounting of additional pin bars 14 with the same number of bases 12'. As appreciated, it is within the contemplation of this disclosure to provide a base with any number of rows of and columns of cylinders 28 that provide varying mounting configurations for the pin bars 14.

Referring to FIGS. 12 and 14, the base 12 is utilized to set a desired pattern and uniform spacing between several pin bars 14. Accordingly, each of the bases 12 can engage one or several pin bars 14. The base 12 can engage and receive three pin bars 14 longitudinally, and/or may be added to a side of a group of pin bars to add additional pin bars beyond the three provided for by one base 12. FIG. 12 illustrates a configuration where three bases are supporting three pin bars 14 and two additional bases 12 are engaged to the current pin bars 14 with only one row such that two rows of cylinders 28 extend laterally to receive additional pin bars 14. FIG. 13 illustrates a configuration where five pin bars 14 are aligned side by side as provided by the additional bases 12 extending laterally as shown in FIG. 12. As is appreciated, the extent to which additional bases and pin bars 14 can be added and the configurations possible are limited only by the desire of the user of the disclosed kit. The addition of pin bars 14 provides for more unique and intricate designs limited only by the imagination of the user of the kit.

Referring to FIGS. 14A-C, a method of forming a Brunnian link as provided by the example kit includes the initial step of loading elastic bands onto adjacent pins 26. In this example, beginning at the right most ends each rubber band are stretched over adjacent pins and held at the mid portion. A first elastic band 52 is placed between a first pair of adjacent

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pins 26 A second elastic band 54 is then placed over one end of the previously assembled first elastic band 52, and then a third elastic band 56 and so on until the desired number of rubber bands have been placed on corresponding pin bars 14. Note that in these example only three elastic bands 52, 54, and 56 are shown for explanation purposes, however, in practice, many elastic bands would be utilized to provide the desired length of a completed article.

Once the elastic bands 52, 54, and 56 are placed on each of the pins 26, the hook 16 is inserted into the access groove 40 and moved downward past the top most elastic bands 56. The hook 16 is then moved outward from the groove in a direction indicated by arrow 58 a sufficient distance to allow for one end of the elastic band 54 to be caught in the hook end. Further lifting pulls the captured end of the second elastic band 54 in the direction indicated by 60 up through the end of the third elastic band 56 for assembly on to another adjacent pin 26 as is shown in FIG. 14B. The captured end is pulled up and over the flanged top 38 and pulled back onto the adjacent pin to form a single link. The captured end of the elastic band 54 is then released to engage the adjacent pin 26. This process is repeated until a chain of links a desired length is obtained.

The example illustrated in FIGS. 14A, 14B and 14C illustrate a chain formed from a single row of links. The example base template 12 can be arranged to support many pin bars 14 and therefore links can be formed longitudinally and laterally across adjacent pin bar 14 to form a wide variety of link configurations and combinations.

Referring to FIGS. 15 and 16, once the link is created, the clip 18 is used to secure the ends such that the fabricated chain of links does not come undone. The clip 18 is substantially C-shaped with an inward facing ends 62 that trap ends of the elastic bands 64 within the inner area 61.

Referring to FIGS. 17-20, an example base template 66 is shown for holding six pin bars 14 in a desired orientation. Each of the example pin bars 14 includes the opening 30 of a defined size and the base template 66 includes a plurality of circular bosses 68 that are sized to provide a desired tight interference fit with the openings 30 in the pin bar 14 such that the pin bar 14 is retained in place within grooves 70 of the base template 66. The interference fit between the pin bar 14 and the bosses of the base template 66 assure a positive mounting and securing of to the base to prevent separation during use and construction of a desired wearable item.

Referring to FIGS. 18, 19 and 20, the base template 66 includes first and second ends 72, 74 and first and second sides 76, 78 between the first and second ends 72, 74. The first end 72 includes a male joint 80 and the second end 74 includes a corresponding female joint 80. The first side 76 includes a male joint 82 and the second side 78 includes a female joint 80. The alternating sides provide for attachment of several base templates 66 to each other to provide extended capability.

FIG. 19 illustrates two base templates 66 connected to each other in a side-to-side configuration by way of joints 84. FIG. 20 illustrates two base templates 66 connected to each other in an end-to-end configuration by way of joint 84. As appreciated, any number of base templates 66 can be secured to each other to form many different desired configurations. The different configurations provide for many options for creating different shapes and configurations of wearable items.

Accordingly, the example kit and method provide for the creation of many different combinations and configurations of Brunnian links for the creation of bracelets, necklaces, and other wearable items. Moreover, the example kit is expandable to further create and expand the capabilities of potential Brunnian link creations. Further, the example kit provides for

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the creation of such links and items in an easy manner allowing persons of varying skill levels to be successful in creating unique wearable items.

Although an example embodiment has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this disclosure. For that reason, the following claims should be studied to determine the scope and content of this invention.

What is claimed is:

1. A kit for creating an item consisting of a series of links, the device comprising:
a base; and

at least one pin bar supported on the base, the pin bar including a plurality of pins each including a top flared portion for holding a link in a desired orientation and an opening on a front side of each of the plurality of pins.

2. The kit as recited in claim 1, wherein the pin bar and the base including corresponding mating features for securing the pin bar to the base.

3. The kit as recited in claim 2, wherein the base includes a plurality of mating structures receivable within a mounting opening defined within each of the plurality of pins with an interface between each of the mating structures and mounting openings defining an interference fit.

4. The kit as recited in claim 3, wherein each of the mating structures comprises upright extending cylinders and the mounting openings are round to receive a corresponding one of the cylinders.

5. The kit as recited in claim 1, wherein each of the plurality of pins includes a bottom flared portion spaced apart from the top flared portion and a mid portion for holding a link.

6. The kit as recited in claim 1, wherein the base comprises a plurality of bases for securing a plurality of pin bars in a desired relative special orientation for forming the series of links in a desired pattern.

7. The kit as recited in claim 6, wherein the base comprises a key and each of the plurality of pin bars includes a corresponding slot for aligning each of the plurality of pin bars relative to the base and to others of the plurality of pin bars.

8. The kit as recited in claim 1, including a hook adapted to extend into the access groove for capturing one end of a link.

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9. The kit as recited in claim 1, including a clip for securing ends of the series of links together.

10. The kit as recited in claim 1, wherein the series of links comprises a series of elastic bands.

11. The kit as recited in claim 1, wherein the series of links comprise a series of Brunnian links.

12. A method of creating a linked item comprising the steps of:

supporting at least one pin bar including a plurality of pins to a base to define a desired relative special relationship between at least two adjacent pins;

assembling at least two elastic bands across adjacent pins; capturing one end of an elastic band and pulling the end over and onto an adjacent pin while engaged with another elastic band; and

capturing and pulling subsequent ends over until a desired link length and configuration is obtained.

13. The method as recited in claim 12, wherein a second of the at least two elastic bands is placed atop one end of the first of the at least two elastic bands on a common pin.

14. The method as recited in claim 13, wherein capturing one end of the elastic band includes using a hook tool reaching into an access groove of the pin to extend below the top most elastic band and grasp a bottom elastic band with the hook tool.

15. The method as recited in claim 12, including assembling a plurality of pin bars to a base to provide parallel rows of pins.

16. The method as recited in claim 15, including the step of assembling the plurality of pin bars to a corresponding plurality of bases to define a desired pattern of pins.

17. The method as recited in claim 15, including assembling a plurality elastic bands in a desired pattern to the plurality of pin bars including at least one elastic band that extends between pins of another pin bar.

18. The method as recited in claim 15, including the step of inserting ends of the elastic bands into a clip to form the linked item.

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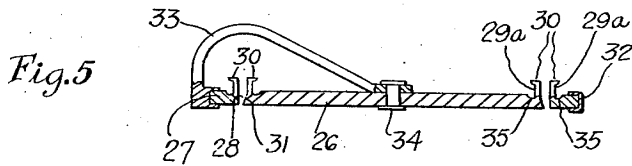
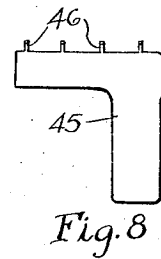
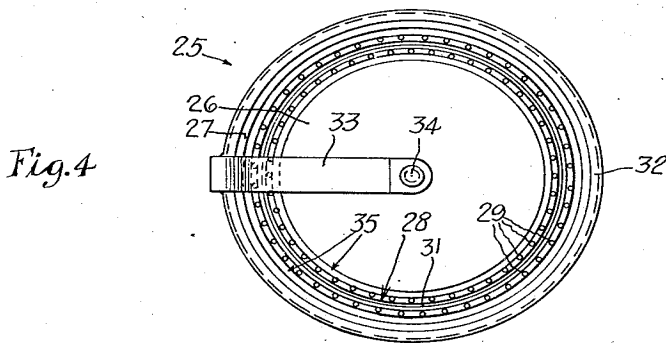
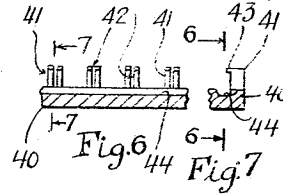
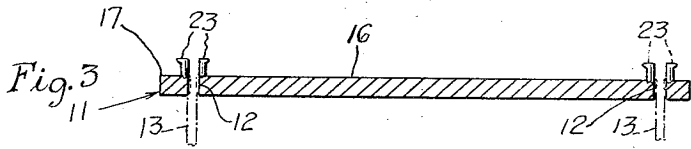
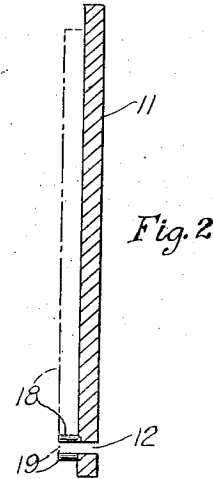
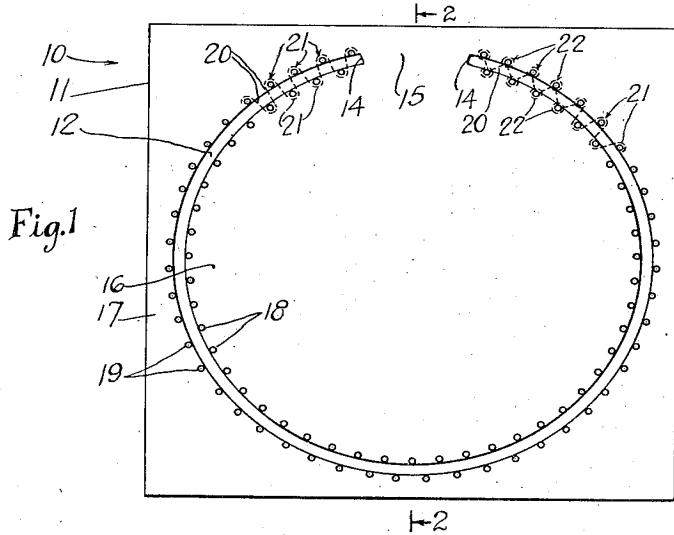
Dec. 21, 1948.

A. PARISI

2,457,064

HAND KNITTING DEVICE

Filed March 18, 1947



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ATTORNEY

UNITED STATES PATENT OFFICE

2,457,064

HAND KNITTING DEVICE

Anthony Parisi, Brooklyn, N. Y.

Application March 18, 1947, Serial No. 735,337

8 Claims. (Cl. 66—4)

1

This invention relates to improvements in the art of knitting garments, fabrics, and other articles.

One object of the invention is to provide a simple and inexpensive device of a portable character having improved means for holding a series of loops that are to be cast off to furnish stitches to produce an article or a fabric.

Another object of the invention is to furnish a device of the nature set forth which is particularly adapted to be used by children and adults, particularly those suffering from various disabilities. The device may accordingly also be used to teach the art of knitting.

Another object of the invention is the provision of improved means whereby knitting can be performed with greater accuracy and uniformity than heretofore, and without likelihood of accidental dropping of stitches.

Another object of the invention is to provide improvements in the art for improved knitting of materials of special shape, such as angular or tubular formations to permit the production of a wide range of articles with greater ease and with less likelihood of error than heretofore.

Another object of the invention is to furnish an improved device which may be made so small as to be readily carried in a lady's handbag, and which permits the production of knitted fabrics having a substantial degree of density.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention comprises the novel features, combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a plan view of a device embodying the invention, showing in dot-dash lines certain steps in knitting an article in accordance with my improved methods.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 with certain parts indicated in dot-dash lines.

Fig. 3 is a cross section of the device and showing in dot-dash lines the fabric produced thereby, with pins modified to provide heads.

Fig. 4 is a plan view of a modification for knitting a tubular article.

Fig. 5 is a transverse section thereof.

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Fig. 6 is a fragmentary section of a modification on line 6—6 of Fig. 7.

Fig. 7 is a section on line 7—7 of Fig. 6.

Fig. 8 is a fragmentary view of a loop casting tool.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined, but useful embodiments may be produced involving less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing a preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a device embodying the invention. The same may include a member 11 which may be in the nature of a plate of metal, plastic, or other suitable material, of any desired configuration and size. This member is formed with a slot or opening 12 therethrough providing a narrow passageway for a fabric 13 that is knitted on the device. For compactness, the passage 12 is of generally circular form, although it may be of other shapes, and may follow a spiral or zig-zag path. The passage 12 has its ends 14 in proximity to each other to define a neck 15, the latter integrally interconnecting the inner and outer sections 16 and 17 of the member 11.

Carried by each of the sections 16 and 17 are the respective series of upstanding pin-like projections or elements 18 and 19. Each of these series extends longitudinally of the passage 12, with the elements thereof closely adjacent thereto and preferably flush with the adjacent edges of the passage 12. While the elements 18 and 19 may consist of nails driven into the member 11, it is preferred to mold them integral with the member 11, thus obtaining the added advantage of permitting these elements to lie at the very edges of the passage 12. All of the elements are generally parallel to each other and to the passage 12. The elements 18 are equally spaced along the passage 12, and this also applies to the elements 19, the spacing of the latter being slightly greater than that of the elements 18 because of the difference of radius involved in the circular arrangement of the passage 12. Preferably the elements 18 and 19 are in staggered relation to each other, this being particularly desirable to facilitate the knitting of a fabric, in view of the fact that the passage 12 is so narrow as to only snugly pass the fabric

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13, and the elements 18 and 19 being thus in relatively close proximity to each other to permit the production of a fabric which will not be loose in texture and will have a required degree of density. The different elements 18 and 19 may be headed as shown in Fig. 3 or in any other suitable manner.

In use, the operator utilizes a yarn 20 by passing the same back and forth between the elements 18 and 19 and across the passage 12 to thus form the loops 21. This looping arrangement may be of any desired form or character. Thus the yarn may be wound around each of the elements to completely encircle the same. Other arrangements will be apparent to those skilled in the art. Floats may be provided where required, to produce various design effects. To form a float it is merely necessary that the yarn 20 shall pass continuously along the outside of two or more of the elements 18 or 19 before it is again passed back and forth between opposed elements across the passage 12. In beginning the knitting of a garment or fabric, the yarn 20 is then caused to follow a reverse path, but in the identical manner described, thus providing two courses of the loops 21 on each element 18 and 19. Now the operator successfully grasps the loops of the lower course with a suitable hook or pointed instrument and lifts the same and casts it over the respective pin element in a direction toward the passage 12, thus producing a stitch 22 herein conventionally shown and being of any suitable type well known in the art. After stitches have thus been formed throughout the knitting path, the operator again manipulates the yarn to form another course of the loops 21 and then casts over the loops of the next preceding course to form another course of stitches 22. By continuing in this manner, a fabric 13 is produced which is fed downwardly through the passage 12. If it be desired to knit an angular article, as for example in making a stocking, the knitting may proceed along any suitable part of the path of knitting furnished by a device 10, and after a given number of courses have been made, the knitting may continue along a smaller or larger part of said path, thus producing an article having portions of different widths. The final stitches along any course may be caught, tacked, or stitched in any suitable manner to prevent unraveling. Numerals may be placed along the elements 18 or 19 for the guidance of the knitter. It is thus seen that I have provided a novel method of knitting which fulfills various objects of the invention.

The device 10 may be produced as a one-piece molded article, and the heads 23 of the pins 18 and 19 can also be molded, or these pins may be produced straight as in Figs. 1 and 2 after which the ends of the pins may be upset to produce the heads. If the device is made of plastic, a suitable platen may be applied in heated condition to form heads 23. The heads herein shown project outwardly from the center of the device for the pins 18 and inwardly for the pins 19.

In Figs. 4 and 5 are shown modifications of the invention to furnish a device 25 for the knitting of a tubular article. This device comprises a disc member 26 and a ring member 27 extending therearound to furnish a continuous intervening annular passage 28 for the fabric 13. Pin elements 29 may be provided according to the same principle as those at 18 or 19, and these elements may be modified as shown at 29a to furnish the heads 30 like those at 23. One face 31 of the passage

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28 may be angular to slightly constrict the passage to frictionally grip the fabric. Journaled on the ring member 27 is a circular channeled track 32 to which is connected an arm 33 which is centrally rotatably connected by a rivet 34 to the disc member 26. This arm 33 may consist of resilient material so that if the member 26 is pressed downwardly, the passage 28 is expanded for free movement of the fabric 13. Adjacent to the pin elements 29 are the grooves 35 so arranged as to facilitate the entering of a hook or pointed instrument under the yarn loops to raise them and cast them over to form stitches.

The device 25 is employed for knitting in the identical manner above described except that the yarn 20 follows a circularly continuous path. The arm 33 will not cause any obstruction in forming the loops 21 or the stitches 22 because this arm may be angularly moved out of the way since it is rotatable with respect to the inner and outer members 26 and 27. The loops 21 serve to interconnect members 26 and 27 against any relative angular movement, and the arm 33 holds these members in a common plane with the fabric 13 gripped in the passage 28 at the inclined face 31. Thus there is little or no opportunity for the fabric to shift upwardly and permit the loops or stitches to accidentally leave the pins. When a course of knitting has been completed, the fabric 13 may merely be pulled downwardly, with the member 26 yielding because of the resilient arm 33, and this may be assisted by a slight downward pressure on the member 26 causing expansion of the passage 28. The grooves 35 substantially facilitate the ease and rapidity with which the loops may be cast over to form the stitches. These grooves may be employed in the device of Figs. 1 to 3 as if specifically shown therein.

In Figs. 6 and 7 is shown a modification which may be regarded as incorporated in devices 10 and 25 and differs therefrom principally in that the pins such as 18, 19 and 29 are slotted for easier engagement by a hook for casting off the loop 21 to form stitches 22. Thus a plate 40 such as at 16, 26, or 27 is formed with pins 41 vertically centrally slotted at 42 in such a direction as to facilitate entrance of a hook. These pins may be headed at 43 like those at 23, 30. The well 44, like the grooves 35, permits entrance of the hooks into the well and thence into the guide slots. The well may extend partially into the space between the tooth sections formed by the open ended guide slots 42.

A tool 45 may have a series of casting off angular hooks 46 so narrow and so placed as to be adapted to simultaneously enter in the well and guide slots to engage and cast off the loops. The row of hooks 46 may be of any desired length and shape, and if the rows of pins such as 41 are in straight lines, the row of hooks may be a yard long or more for manual or machine operation.

I claim:

1. A device for the knitting of a fabric including a one-piece plate-like member having a narrow slot opening extending along a generally curved path whose ends are spaced from each other to define a neck integrally interconnecting the plate portion within the slot with the plate portion beyond the slot, and a series of equally spaced pin-like elements on each section closely adjacent to said opening, the spacing between the elements of one section being approximately equal to those of the other section, and said spacing being such that the fabric is knitted by looping yarn around the elements for stitch

LaRose Ex. 1011, pg. 3

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forming to produce a fabric passing through said opening.

2. A device according to claim 1 wherein the elements are integral with the member and lie flush with the adjacent edges of the opening.

3. A device according to claim 1 wherein the elements are integral with the member and lie at the very edges of the opening, and the elements being headed to releasably retain the yarn loops.

4. A device for the knitting of a fabric comprising a member having a plurality of sections having therebetween a narrow elongated passage for the fabric, a series of upstanding pin-like elements closely adjacent to and extending along the passage for the looping of a yarn around the elements for the subsequent casting over of stitches to produce the fabric, one section providing a side face for the passage, and means resiliently interengaging the sections for relative movement therebetween to constrict the passage to releasably grip the fabric therein.

5. A device for the knitting of a tubular fabric including a disc member, a ring member around the same and spaced therefrom to furnish a continuous annular passage for the fabric, a circular element rotatably mounted on the ring member, means connected to the element and rotatably connected to the other member to maintain the members in operative relation to each other while permitting rotary movement of said means with respect to the members, and a series of pin-like elements on each member extending along and closely adjacent to the passage for the looping of a yarn around the pin-like elements, across the passage, for subsequent stitching to produce the fabric.

6. A device comprising a supporting member, a series of pins about which a yarn is to be looped for subsequent casting off to knit a fabric mounted along an edge of said member, said pins having longitudinal slots to provide guides for hooks used in the casting off of the loops, said supporting member being formed with a well extending parallel to said edge at the base of the

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pins, said slots extending into said well to form a continuous passage for the hooks.

7. A device comprising a supporting member, a series of pins about which a yarn is to be looped for subsequent casting off to knit a fabric mounted along an edge of said member, said pins having longitudinal slots to provide guides for hooks used in the casting off of the loops, said slots extending the entire length of the pin to permit free passage of the hooks.

8. A device for the knitting of a tubular fabric including a disc member, a ring member around the same and spaced therefrom to furnish a continuous annular passage for the fabric, a series of upstanding pin-like elements mounted on said disc member and ring member, said elements being closely adjacent to and extending along said passage for the looping of a yarn around the elements for the subsequent casting over of stitches to produce the fabric, and means slidably connected to the ring member and rotatably connected to said disc member to maintain the members in operative relation to each other while permitting rotary movement of said means with respect to the members.

ANTHONY PARISI.

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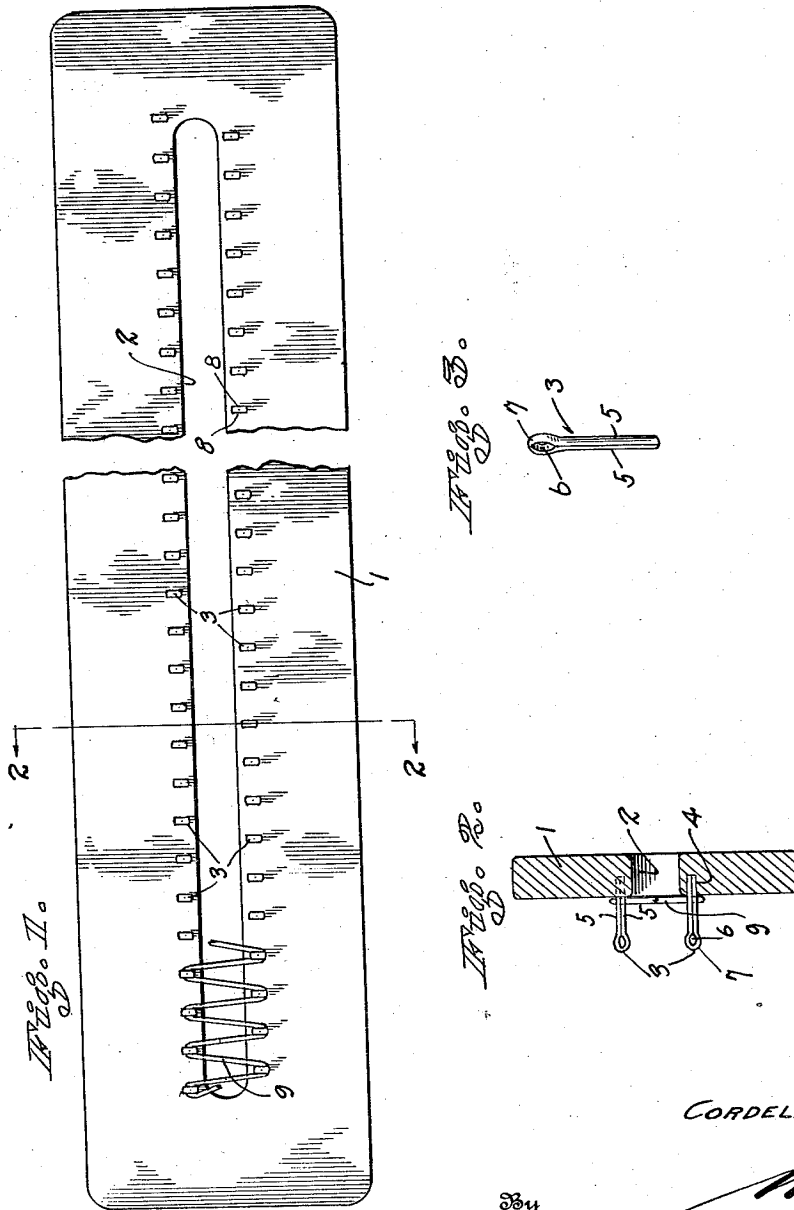
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C. LA CROIX
KNITTING BOARD
Filed Dec. 3, 1927

1,776,561



Inventor
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Mason & Co.
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UNITED STATES PATENT OFFICE

CORDELIA LA CROIX, OF SAN FRANCISCO, CALIFORNIA

KNITTING BOARD

Application filed December 3, 1927. Serial No. 237,462.

My invention relates to improvements in knitting boards; and it consists in the combinations, constructions, and arrangements hereinafter described and claimed.

5 An object of my invention is to provide a knitting board which takes the place of one of the knitting needles, and which has novel means for supporting the yarn, yet permitting different portions of the yarn to be released from the supporting means as the knitting proceeds. The yarn is released by the 10 needle and this needle does not have to carry a part of the knitted work as is usually the practice. A very small needle may therefore be used, or, in fact, any object which will quickly remove the yarn from the supporting member.

A further object of my invention is to provide a device of the type described which is 20 extremely simple in construction, and which makes use of cotter pins for supporting the work.

Other objects and advantages will appear in the following specification, and the novel 25 features of my invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing forming a part of this application, in which:

30 Figure 1 is a top plan view of the device; Figure 2 is a section along the line 2—2 of Figure 1; and

Figure 3 is a perspective view of a cotter pin used with the device.

35 In carrying out my invention I provide a board 1 which may be of any length desired, the length depending upon the size of the work to be knitted. The board is provided with a slot 2 that extends longitudinally 40 thereof, and substantially from end to end of the board. Along each side of this slot I mount cotter pins 3 that are of standard construction. The pins are removably disposed in recesses 4. Figure 3 shows one of these pins 45 and it will be noted that the pin has two leg portions 5, an eyelet 6, a round head 7 and flat faces 8.

From the foregoing description of the various parts of the device, the operation there- 50 of may be readily understood.

The device is designed for various kinds of knitting. In Figure 1 I have shown a piece of yarn 9 passed around the cotter pins 3 in a zigzag fashion. This piece extends the entire length of the board. Additional pieces 55 of yarn are superimposed on the first in a predetermined manner. A needle (not shown) is then employed for removing the yarn from the pins so as to produce a piece of knitted fabric that will depend through 60 the slot 2. The device is adaptable for various kinds of stitches, the design depending entirely upon the manner in which the yarn is placed on the pins 3 and the order in which it is removed therefrom. The knitting operation 65 is continued until the knitted fabric is of the desired length. I have found that the cotter pin is the best type of pin to use for the work, since it has flat sides or faces 8 that permit the yarn to be removed over the 70 head 7 without unduly stretching the yarn. Moreover the pins have a springy quality and will remain fixed in the recesses 4 due to this fact.

Although I have shown and described one 75 embodiment of my invention, it is to be understood that the same is susceptible of various changes and I reserve the right to employ such changes as may come within the scope of the appended claims. 80

I claim:

1. In a knitting device, a supporting member having a recess therein, a pin disposed in said recess and including resilient legs yieldingly held in contact with the walls of the recess, whereby the pin is retained in position, but may be readily removed therefrom. 85

2. In a knitting device, a supporting member having a recess therein, a pin removably disposed in said recess and including legs, a resilient head portion interconnecting said legs for urging the latter into contact with the walls of the recess, whereby the pin is retained in position, but may be readily removed therefrom. 90 95

CORDELIA LA CROIX.

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(19) **United States**
 (12) **Patent Application Publication** (10) **Pub. No.: US 2012/0112457 A1**
 Ng (43) **Pub. Date: May 10, 2012**

(54) **BRUNNIAN LINK MAKING DEVICE AND KIT** (52) **U.S. Cl. 289/1.5; 289/17**

(76) Inventor: **Cheong Choon Ng, Novi, MI (US)**

(57) **ABSTRACT**

(21) Appl. No.: **13/227,638**

A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. The example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques and includes several pin bars that are supported in a desired special orientation by at least one base. The desired special orientation is dependent on the desired linked configuration of the completed article. The base and pin bars may be assembled in various combination and orientations to provide endless variation of completed link orientations. Additional bases and pin bars can be to further expand possible completed article creation.

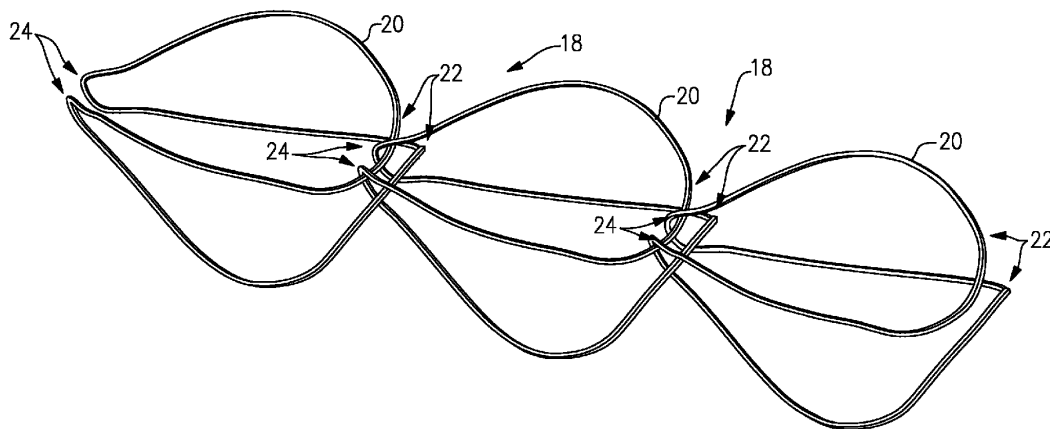
(22) Filed: **Sep. 8, 2011**

Related U.S. Application Data

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Publication Classification

(51) **Int. Cl.**
B65H 69/04 (2006.01)



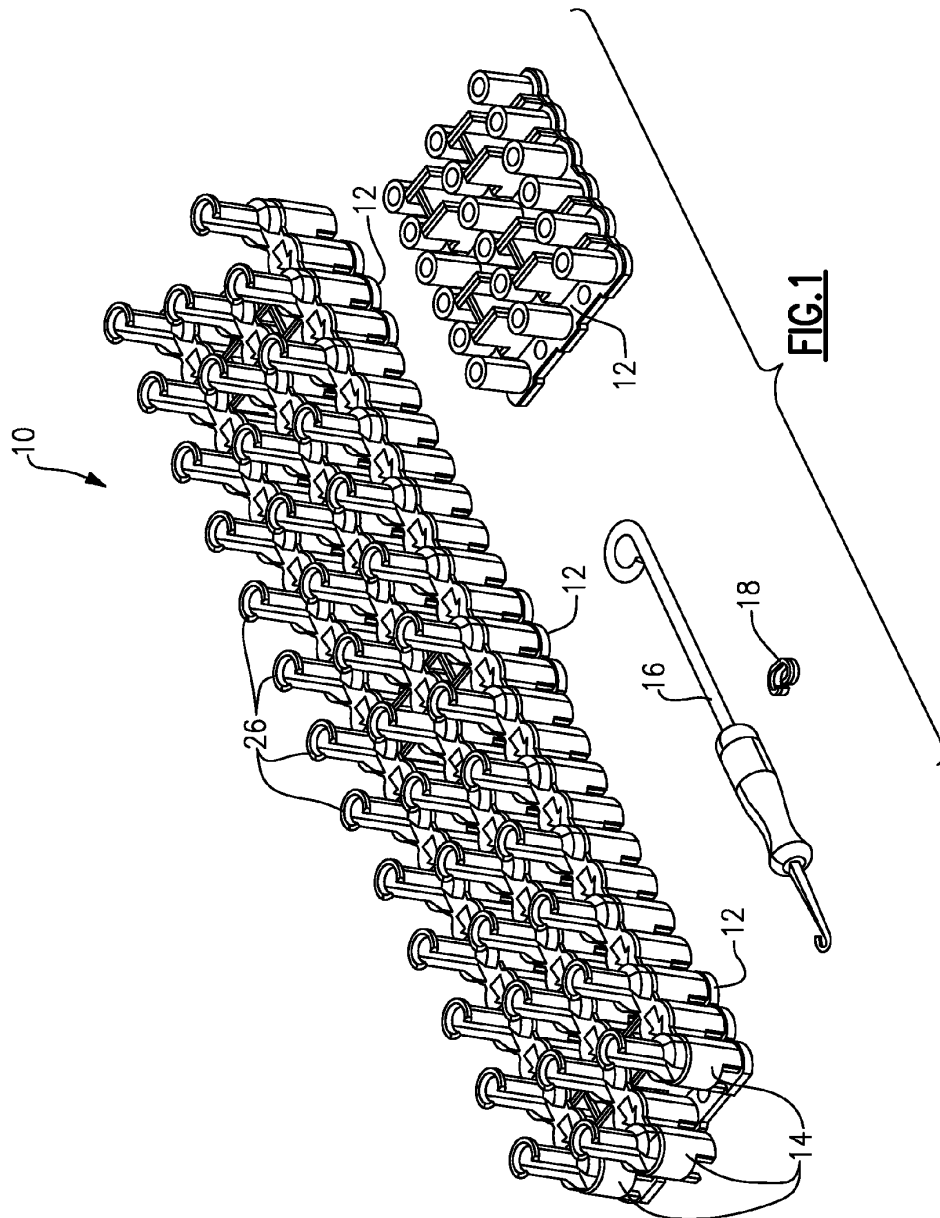




FIG. 2

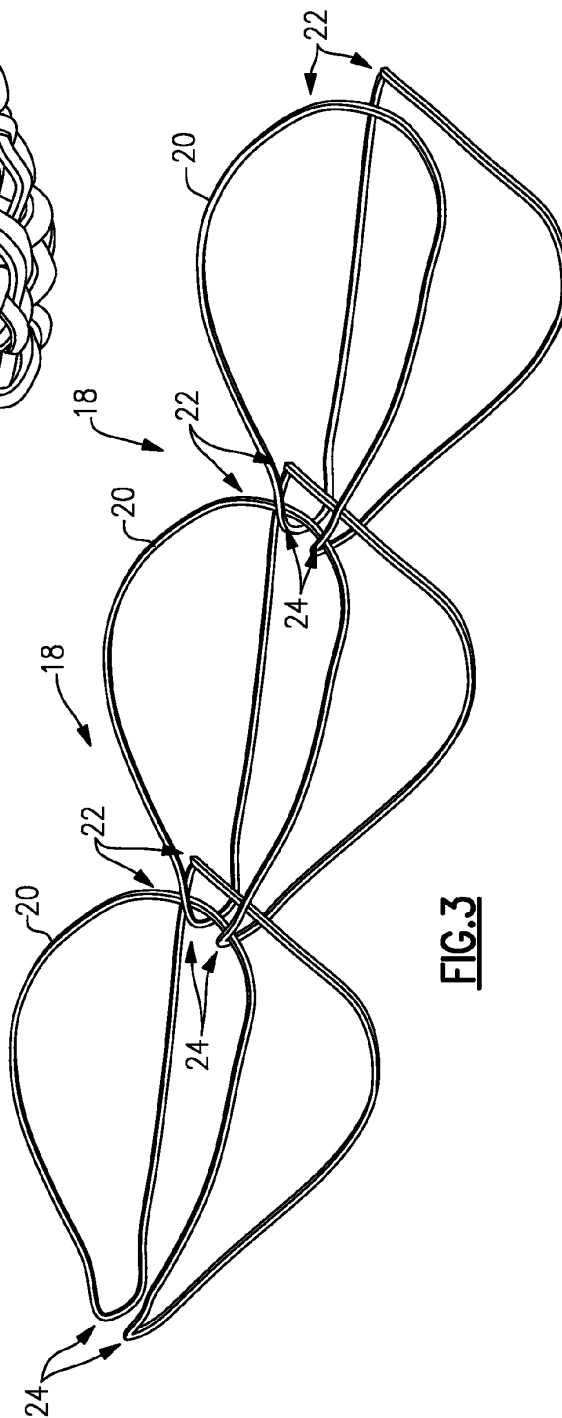
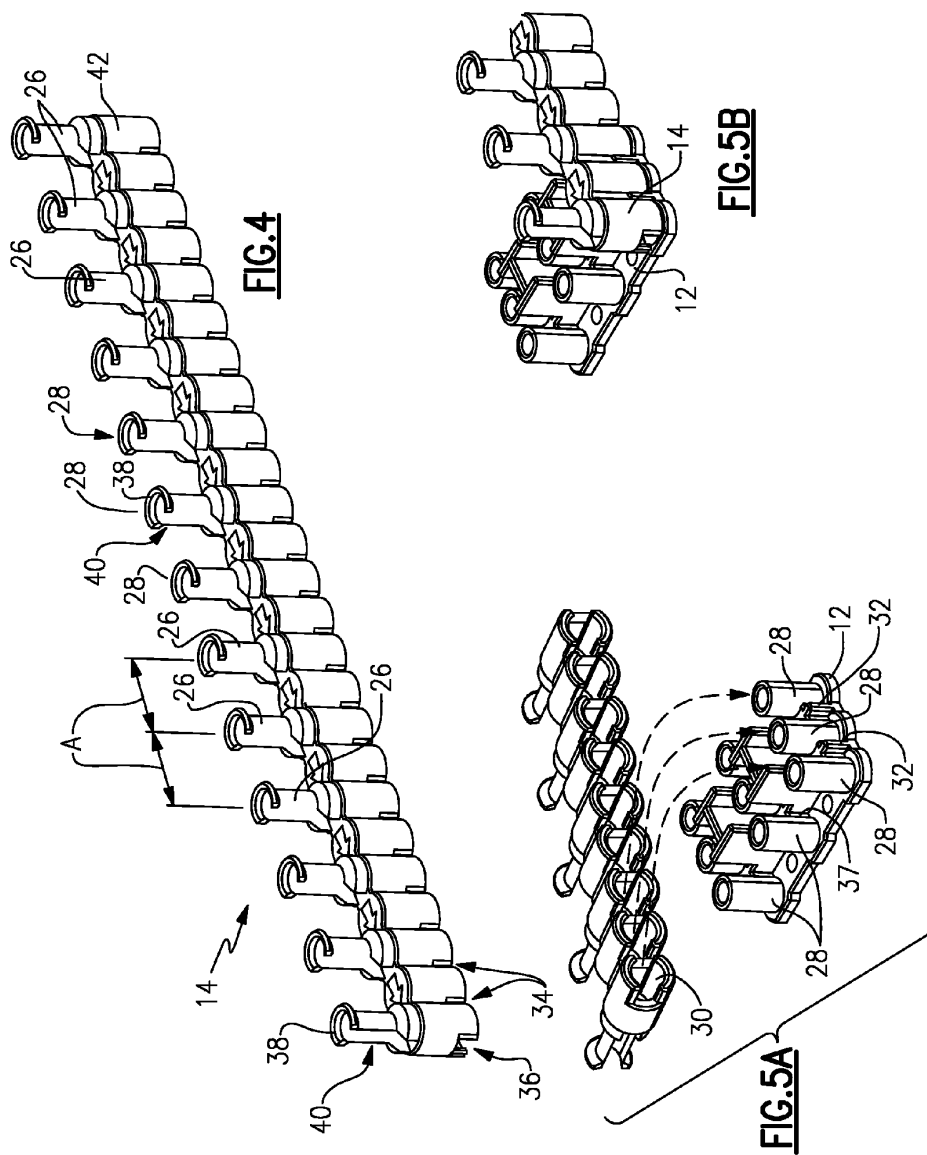
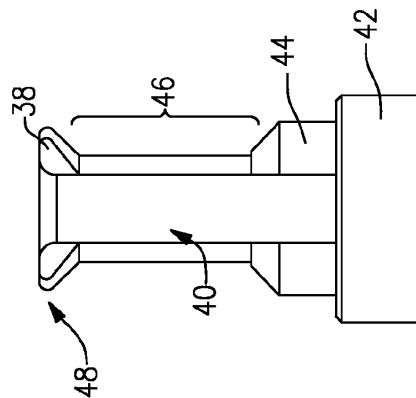
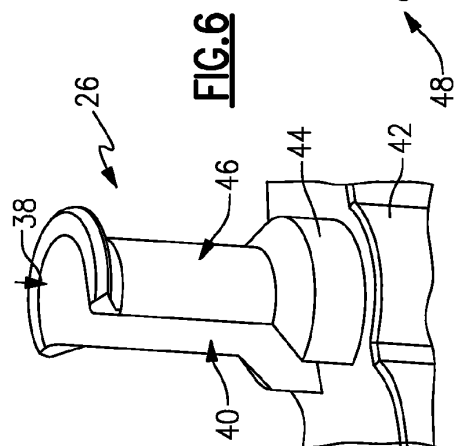
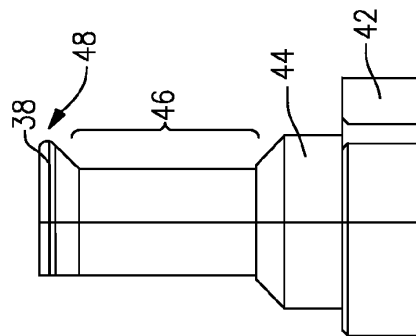
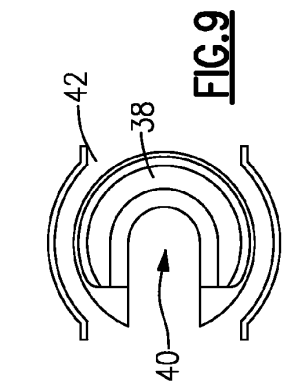
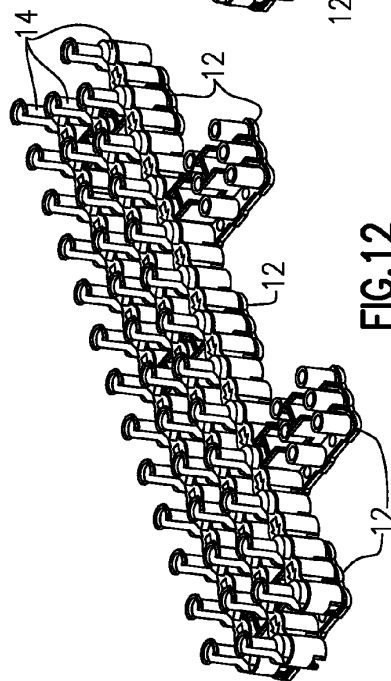
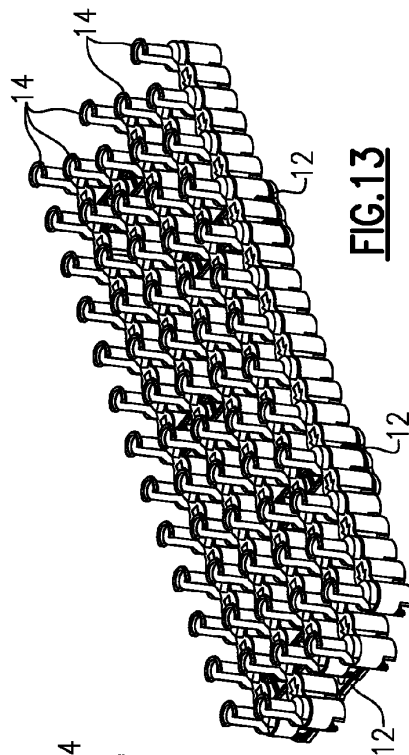
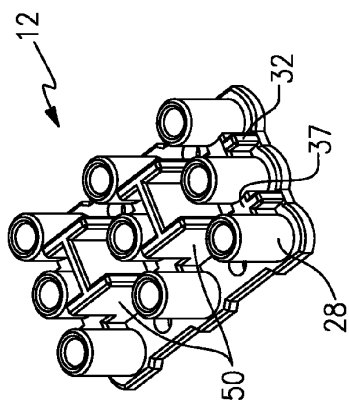
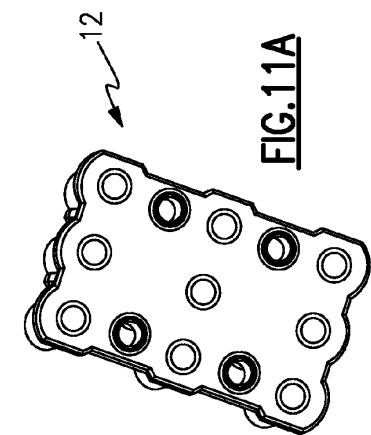


FIG. 3







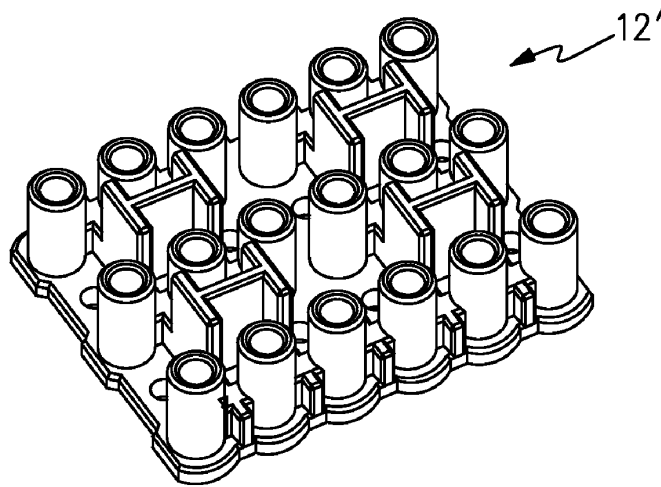


FIG. 10B

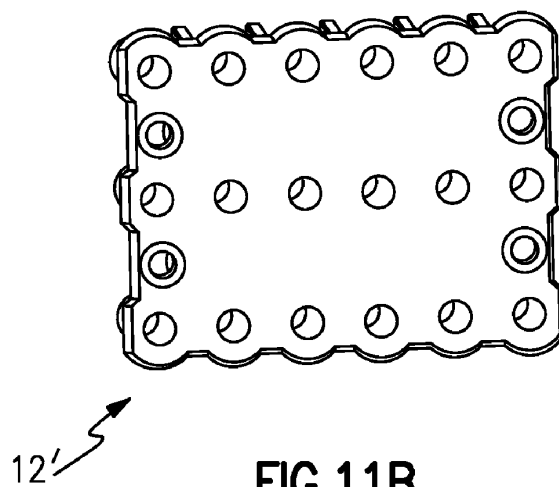


FIG. 11B

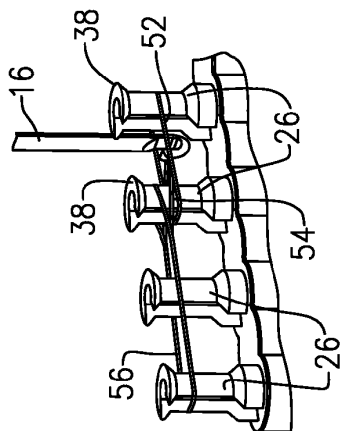


FIG. 14C

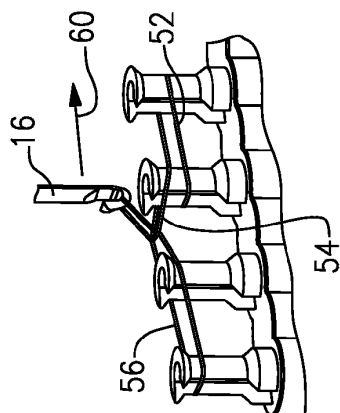


FIG. 14B

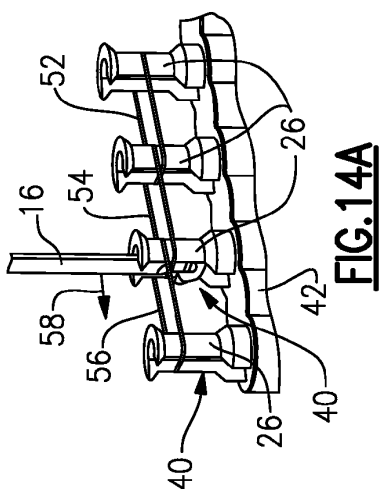
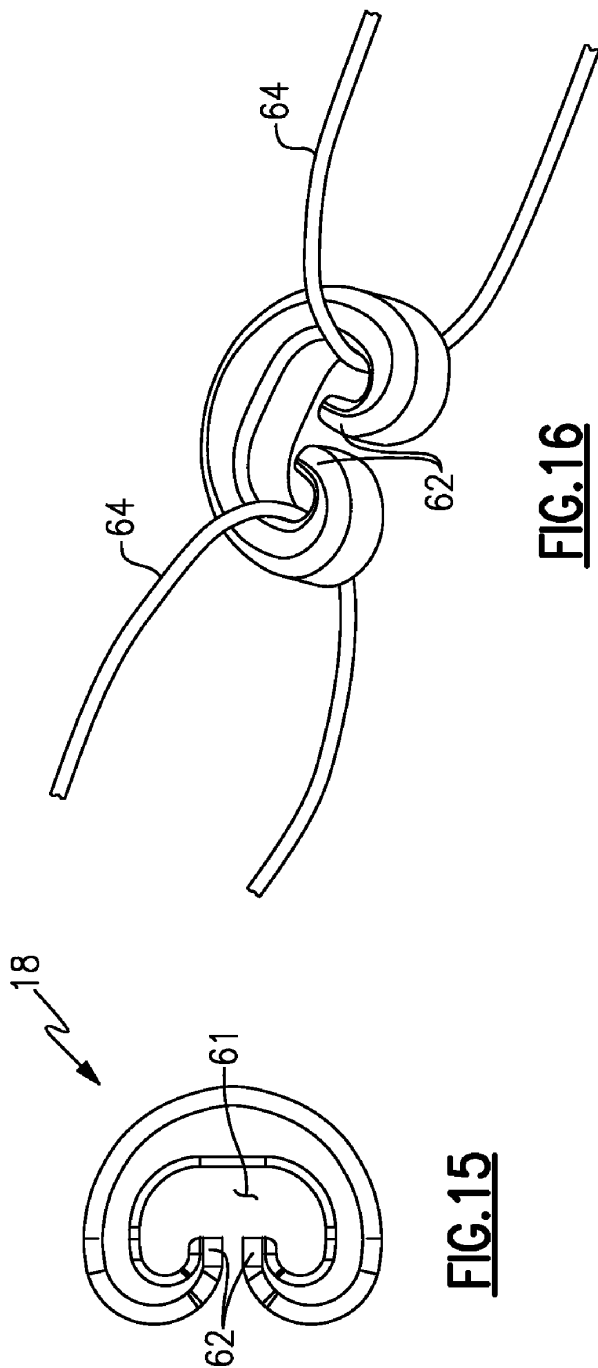


FIG. 14A



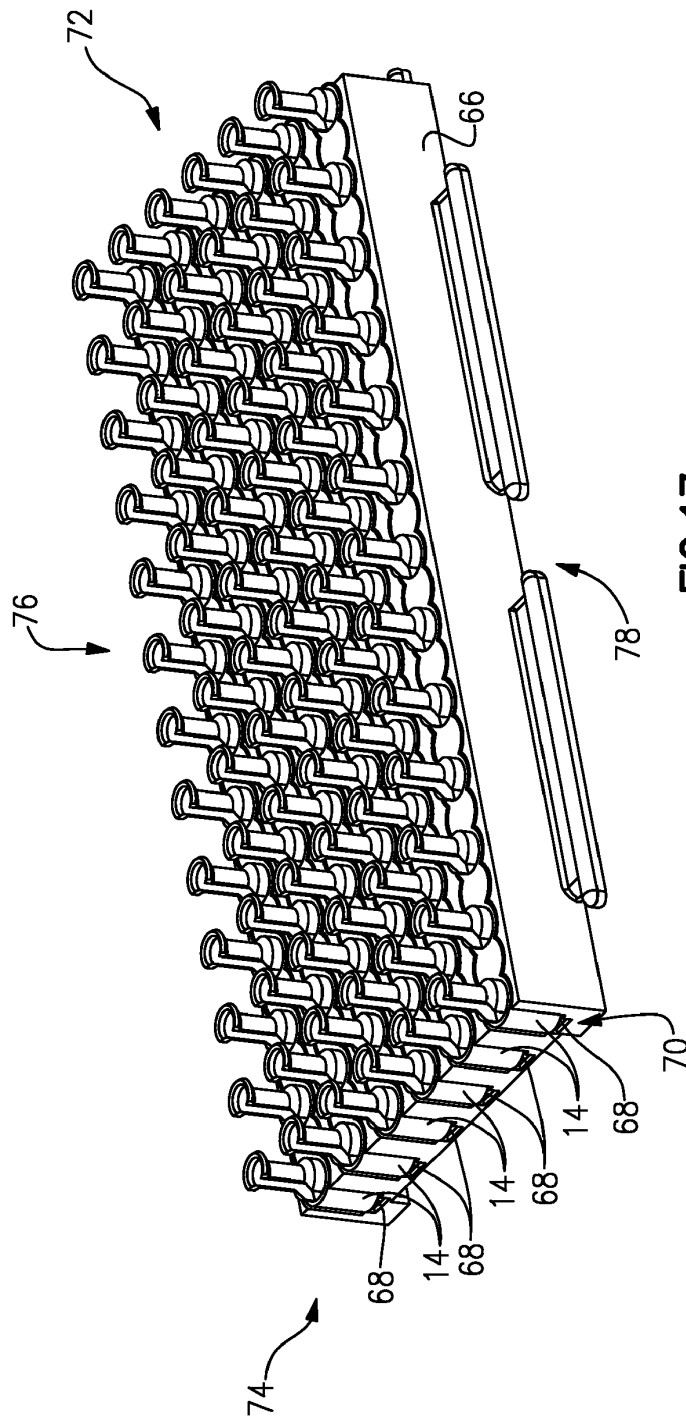
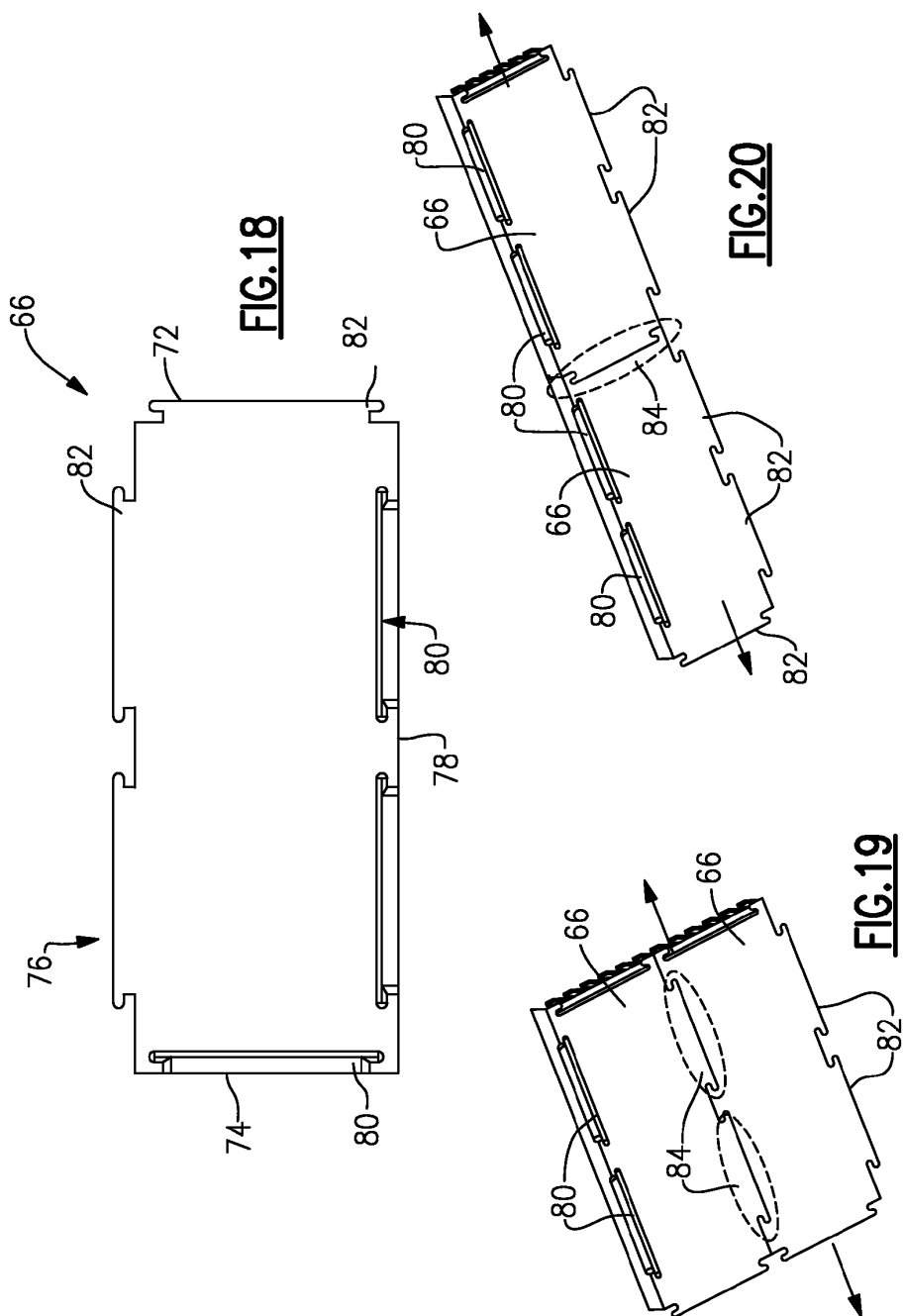


FIG. 17



BRUNNIAN LINK MAKING DEVICE AND KIT

REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. 61/410,399 filed on Nov. 5, 2010.

BACKGROUND

[0002] This disclosure generally relates to method and device for creating a linked item. More particularly, this disclosure relates to a method and device for creating a linked wearable item from elastic bands.

[0003] Kits that include materials for making a uniquely colored bracelet or necklace have always enjoyed some popularity. However such kits usually just include the raw materials such as different colored threads and beads and rely on the individual's skill and talent to construct a usable and desirable item. Accordingly there is a need and desire for a kit that provides not only the materials for creating a unique wearable item, but also that simplifies construction to make it easy for people of many skill and artistic levels to successfully create a desirable and durable wearable item.

SUMMARY

[0004] A Brunnian link is a link formed from a closed loop doubled over itself to capture another closed loop to form a chain. Elastic bands can be utilized to form such links in a desired manner. The example kit and device provides for creation of Brunnian link articles of complex configurations. Moreover, the example kit provides for the successful creation of unique wearable articles using Brunnian link assembly techniques.

[0005] The example kit includes several pin bars that are supported in a desired spatial orientation by at least one base. The desired spatial orientation is dependent on the desired link configuration of the completed article. The base and pin bars may be assembled in various combination and orientations to provide endless variation of completed link orientations. Moreover, additional bases and pin bars can be added to further expand possible completed article creation.

[0006] Each of the pin bars includes a flanged top portion for holding elastic bands in place and a front access groove. The front access groove provides for a hook to be inserted below a top most elastic band such that a lower band can be grasped and pulled over an adjacent band to form the Brunnian link. The disclosed kit provides for many possible orientations of adjacent pins, and therefore different orientations of and designs for a completed linked article.

[0007] These and other features disclosed herein can be best understood from the following specification and drawings, the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of an example kit for creating a Brunnian link article.

[0009] FIG. 2 is schematic view of Brunnian link articles.

[0010] FIG. 3 is a schematic view of a series of Brunnian links.

[0011] FIG. 4 is a perspective view of an example pin bar.

[0012] FIG. 5A is a perspective view of interfacing surfaces of an example base and the example pin bar.

[0013] FIG. 5B is a perspective view of a pin bar mounted to an example base.

[0014] FIG. 6 is a perspective view of one pin of the example pin bar.

[0015] FIG. 7 is front view of one example pin.

[0016] FIG. 8 is side view of an example pin.

[0017] FIG. 9 is a top view of an example pin.

[0018] FIG. 10A is a perspective view of an example base.

[0019] FIG. 10B is a perspective view of another example base.

[0020] FIG. 11A is a bottom view of the example base.

[0021] FIG. 11B is a bottom view of another example base.

[0022] FIG. 12 is an assembly view of several bases assembled to several pin bars.

[0023] FIG. 13 is an assembly view of several pin bars mounted relative to each other in one desired special orientation.

[0024] FIGS. 14A-C are perspective views of assembly steps for creating a Brunnian linked article.

[0025] FIG. 15 is a plan view of an example clip for securing loose ends of a Brunnian linked article.

[0026] FIG. 16 is perspective view illustrating elastic bands secured with the example clip.

[0027] FIG. 17 is a perspective view of an example base template for holding pin bars in a desired special orientation.

[0028] FIG. 18 is a bottom view of the example base template.

[0029] FIG. 19 is a perspective view of side by side attachment of two base templates.

[0030] FIG. 20 is a perspective view of an end to end attachment of two base templates.

DETAILED DESCRIPTION

[0031] Referring to FIGS. 1, an example kit is indicated at 10 for creating Brunnian link items such as bracelets, necklaces and other wearable or decorative items shown in FIG. 2.

[0032] Referring to FIG. 3, a Brunnian link 20 is formed from a continuous looped structure without forming an actual knot. Several links are formed in a chain to form a circular structure. The ends are then secured and a durable wearable item is created. In this example three closed looped elastic items 20 such as rubber bands are shown forming a single chain. Each link is formed by capturing ends 22 of one loop structure with a mid portion 24 of another loop structure in series. Each link depends on the previous and subsequent links to maintain the desired shape and integrity. Removing one link 20 results in all of the links becoming loose from each other.

[0033] Referring to FIG. 1, the example kit 10 includes a base 12 that supports pin bars 14 that each includes a plurality of pins 26. A hook tool 16 is included for grasping and moving bands from one pin 26 to another. A clip 18 receives ends of the completed links to complete and secure the linked item. One or several pin bars 14 are mounted to several bases 12 as is shown to support the pin bars 14 and the corresponding pins 26 in a desired alignment. In this example, a center pin bar 14 is incremented one up from the two outermost pin bars 14. This alignment provides for creation of a desired linked item. In this example three bases 12 are utilized to support the pin bars 14 in a desired relative orientation.

[0034] Referring to FIGS. 4, 5A-B, with continued reference to FIG. 1, the base 12 includes a plurality of upward extending cylinders 28 that are received within a corresponding opening 30 defined at the bottom of each pin 26 of the pin bar 14. The cylinders 28 of the base 12 and the openings 30 receiving the cylinders 28 are mating features that define a

slight interference fit to hold the pin bar 14 in place. Although three bases 12 are shown in this example, more or less could be utilized to support additional numbers of pin bars 14.

[0035] The base 12 includes tabs 32 disposed between the cylinders 28 that fit within corresponding slots 34 defined on the pin bar 14. The interface between the tabs 32 and slots 34 provide alignment and maintain the upright orientation of the pin bars 14. Each of the pins 26 includes a front slot 36 that receives a boss 38 defined between cylinders 28 of the base 12. The front slot 34 and boss 38 interface further aligns and supports the pin bar 14 on the base 12.

[0036] The pin bar 14 is an integral structure having the plurality of pins 28 defined in a single row. Each of the pins 28 are spaced an equal distance A apart. Each of the pins 28 includes a flanged top 38 and a front access groove 40.

[0037] Referring to FIGS. 6, 7, 8 and 9, each pin 26 extends upward from a bar portion 42 and include features for holding and spacing rubber bands. Each pin 26 includes the flanged top 38 that is flared outward to prevent errant release of a rubber band during creation of a link. The access groove 40 is a longitudinal groove that extends inward toward a center of the pin 26. The access groove 40 extends from the bar portion 42 to an open end with the flanged top 38. The groove 40 provides a clearance for insertion of the hook tool 16 (FIG. 1) utilized for moving ends of a rubber band between pins 32.

[0038] Each of the pins 26 includes a bottom portion 44 that is flared outward from a diameter of a mid portion 46. The mid portion 46 of the pin 26 is where a rubber band is secured during assembly. The bottom portion 44 is flared outward to prevent the rubber band from slipping downward against the bar portion 42. The top and bottom flared portions 38, 44 centers the rubber bands in the mid portion 46 to provide a desired alignment during assembly. The edges of the flange 38 are rounded over to eliminate sharp edges or surfaces.

[0039] Referring to FIGS. 10A and 11A, the example base 12 includes three rows of three cylinders 28 that are spaced equal distance from each other. The tabs 32 and bosses 37 are received within corresponding slots 34 and 36 formed on the pin bar 14. A stabilizer 50 is disposed between each row of cylinders 28 to provide further lateral support for the pin bars 14.

[0040] Referring to FIGS. 10B and 11B, another example base 12' includes a three row of six cylinders 28 that are spaced an equal distance from each other. The additional cylinders 28 provided by the larger example base 12' provide for mounting of additional pin bars 14 with the same number of bases 12'. As appreciated, it is within the contemplation of this disclosure to provide a base with any number of rows of and columns of cylinders 28 that provide varying mounting configurations for the pin bars 14.

[0041] Referring to FIGS. 12 and 14, the base 12 is utilized to set a desired pattern and uniform spacing between several pin bars 14. Accordingly, each of the bases 12 can engage one or several pin bars 14. The base 12 can engage and be receive three pin bars 14 longitudinally, and/or may be added to a side of a group of pin bars to add additional pin bars beyond the three provided for by one base 12. FIG. 12 illustrates a configuration where three bases are supporting three pin bars 14 and two additional bases 12 are engaged to the current pin bars 14 with only one row such that two rows of cylinders 28 extend laterally to receive additional pin bars 14. FIG. 13 illustrates a configuration where five pin bars 14 are aligned side by side as provided by the additional bases 12 extending laterally as shown in FIG. 12. As is appreciated, the extent to

which additional bases and pin bars 14 can be added and the configurations possible are limited only by the desire of the user of the disclosed kit. The addition of pin bars 14 provides for more unique and intricate designs limited only by the imagination of the user of the kit.

[0042] Referring to FIGS. 14A-C, a method of forming a Brunnian link as provided by the example kit includes the initial step of loading elastic bands onto adjacent pins 26. In this example, beginning at the right most ends each rubber band are stretched over adjacent pins and held at the mid portion. A first elastic band 52 is placed between a first pair of adjacent pins 26. A second elastic band 54 is then placed over one end of the previously assembled first elastic band 52, and then a third elastic band 56 and so on until the desired number of rubber bands have been placed on corresponding pin bars 14. Note that in these example only three elastic bands 52, 54, and 56 are shown for explanation purposes, however, in practice, many elastic bands would be utilized to provide the desired length of a completed article.

[0043] Once the elastic bands 52, 54, and 58 are placed on each of the pins 26, the hook 16 is inserted into the access groove 40 and moved downward past the top most elastic bands 56. The hook 16 is then moved outward from the groove in a direction indicated by arrow 58 a sufficient distance to allow for one end of the elastic band 54 to be caught in the hook end. Further lifting pulls the captured end of the second elastic band 54 in the direction indicated by 60 up through the end of the third elastic band 56 for assembly on to another adjacent pin 26 as is shown in FIG. 14B. The captured end is pulled up and over the flanged top 38 and pulled back onto the adjacent pin to form a single link. The captured end of the elastic band 54 is then released to engage the adjacent pin 26. This process is repeated until a chain of links a desired length is obtained.

[0044] The example illustrated in FIGS. 14A, 14B and 14C illustrate a chain formed from a single row of links. The example base template 12 can be arranged to support many pin bars 14 and therefore links can be formed longitudinally and laterally across adjacent pin bar 14 to form a wide variety of link configurations and combinations.

[0045] Referring to FIGS. 15 and 16, once the link is created, the clip 18 is used to secure the ends such that the fabricated chain of links does not come undone. The clip 18 is substantially C-shaped with an inward facing ends 62 that trap ends of the elastic bands 64 within the inner area 61.

[0046] Referring to FIGS. 17-20, an example base template 66 is shown for holding six pin bars 14 in a desired orientation. Each of the example pin bars 14 includes the opening 30 of a defined size and the base template 66 includes a plurality of circular bosses 68 that are sized to provide a desired tight interference fit with the openings 30 in the pin bar 14 such that the pin bar 14 is retained in place within grooves 70 of the base template 66. The interference fit between the pin bar 14 and the bosses of the base template 66 assure a positive mounting and securing of to the base to prevent separation during use and construction of a desired wearable item.

[0047] Referring to FIGS. 18, 19 and 20, the base template 66 includes first and second ends 72, 74 and first and second sides 76, 78 between the first and second ends 72, 74. The first end 72 includes a male joint 80 and the second end 74 includes a corresponding female joint 80. The first side 76 includes a male joint 82 and the second side 78 includes a

female joint **80**. The alternating sides provide for attachment of several base templates **66** to each other to provide extended capability.

[0048] FIG. **19** illustrates two base templates **66** connected to each other in a side-to-side configuration by way of joints **84**. FIG. **20** illustrates two base templates **66** connected to each other in an end-to-end configuration by way of joint **84**. As appreciated, any number of base templates **66** can be secured to each other to form many different desired configurations. The different configurations provide for many options for creating different shapes and configurations of wearable items.

[0049] Accordingly, the example kit and method provide for the creation of many different combinations and configurations of Brunnian links for the creation of bracelets, necklaces, and other wearable items. Moreover, the example kit is expandable to further create and expand the capabilities of potential Brunnian link creations. Further, the example kit provides for the creation of such links and items in an easy manner allowing persons of varying skill levels to be successful in creating unique wearable items.

[0050] Although an example embodiment has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this disclosure. For that reason, the following claims should be studied to determine the scope and content of this invention.

What is claimed is:

1. A kit for creating an item consisting of a series of links, the device comprising:

a base; and

at least one pin bar supported on the base, the pin bar including a plurality of pins each including a top flared portion for holding a link in a desired orientation and an opening on a front side of each of the plurality of pins.

2. The kit as recited in claim **1**, wherein the pin bar and the base including corresponding mating features for securing the pin bar to the base.

3. The kit as recited in claim **2**, wherein the base includes a plurality of mating structures receivable within a mounting opening defined within each of the plurality of pins with an interface between each of the mating structures and mounting openings defining an interference fit.

4. The kit as recited in claim **3**, wherein each of the mating structures comprises upright extending cylinders and the mounting openings are round to receive a corresponding one of the cylinders.

5. The kit as recited in claim **1**, wherein each of the plurality of pins includes a bottom flared portion spaced apart from the top flared portion and a mid portion for holding a link.

6. The kit as recited in claim **1**, wherein the base comprises a plurality of bases for securing a plurality of pin bars in a desired relative special orientation for forming the series of links in a desired pattern.

7. The kit as recited in claim **6**, wherein the base comprises a key and each of the plurality of pin bars includes a corresponding slot for aligning each of the plurality of pin bars relative to the base and to others of the plurality of pin bars.

8. The kit as recited in claim **1**, including a hook adapted to extend into the access groove for capturing one end of a link.

9. The kit as recited in claim **1**, including a clip for securing ends of the series of links together.

10. The kit as recited in claim **1**, wherein the series of links comprises a series of elastic bands.

11. The kit as recited in claim **1**, wherein the series of links comprise a series of Brunnian links.

12. A method of creating a linked item comprising the steps of:

supporting at least one pin bar including a plurality of pins to a base to define a desired relative special relationship between at least two adjacent pins;

assembling at least two elastic bands across adjacent pins;

capturing one end of an elastic band and pulling the end over and onto an adjacent pin while engaged with another elastic band; and

capturing and pulling subsequent ends over until a desired link length and configuration is obtained.

13. The method as recited in claim **12**, wherein a second of the at least two elastic bands is placed atop one end of the first of the at least two elastic bands on a common pin.

14. The method as recited in claim **13**, wherein capturing one end of the elastic band includes using a hook tool reaching into an access groove of the pin to extend below the top most elastic band and grasp a bottom elastic band with the hook tool.

15. The method as recited in claim **12**, including assembling a plurality of pin bars to a base to provide parallel rows of pins.

16. The method as recited in claim **15**, including the step of assembling the plurality of pin bars to a corresponding plurality of bases to define a desired pattern of pins.

17. The method as recited in claim **15**, including assembling a plurality elastic bands in a desired pattern to the plurality of pin bars including at least one elastic band that extends between pins of another pin bar.

18. The method as recited in claim **15**, including the step of inserting ends of the elastic bands into a clip to form the linked item.

* * * * *



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Gustin

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(45) **Date of Patent:** **Mar. 24, 2009**

(54) **HAND KNITTING LOOM AND METHOD OF USE**

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(73) Assignee: **Provo Craft and Novelty, Inc.**, Spanish Fork, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**
D04B 3/00 (2006.01)

(52) **U.S. Cl.** **66/1 A**

(58) **Field of Classification Search** 66/3, 66/4, 1 R; 139/29, 34; 28/16.5, 17
See application file for complete search history.

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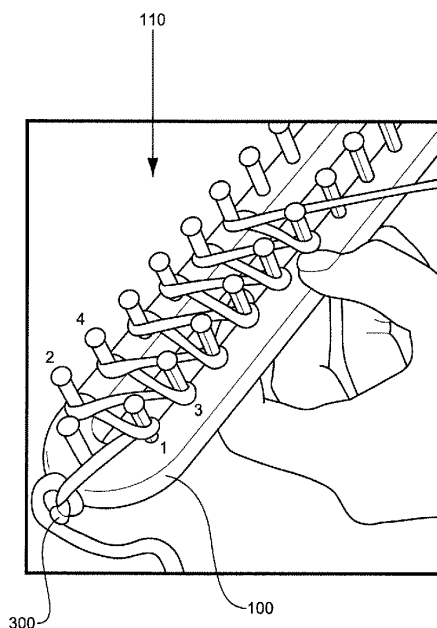
Primary Examiner—Danny Worrell

(74) *Attorney, Agent, or Firm*—Honigman Miller Schwartz and Cohn LLP

(57) **ABSTRACT**

A loom includes a plurality of knitting pegs. The loom further includes a substantially non-circular base structure configured to hold the plurality of knitting pegs substantially perpendicular to the plane of the substantially non-circular base structure. The substantially non-circular base structure also includes an elongated orifice having a long axis and a short axis. The plurality of knitting pegs form two substantially parallel rows of knitting pegs separated by the short axis of the elongated orifice. The loom also includes at least one knitting peg near the apex of the long axis of the elongated orifice and between the two substantially parallel rows of knitting pegs.

22 Claims, 5 Drawing Sheets



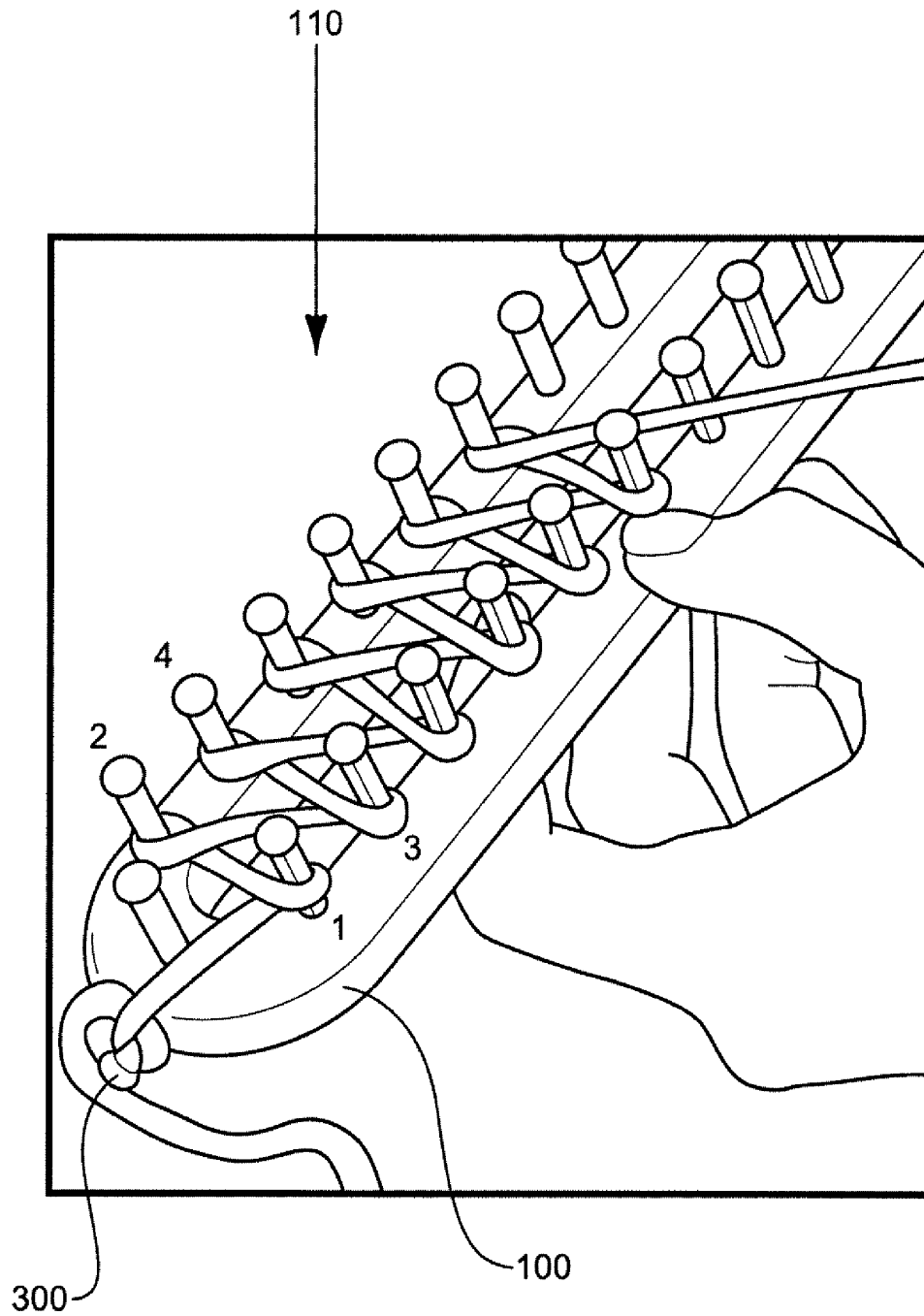


FIG. 1

FIG. 2A

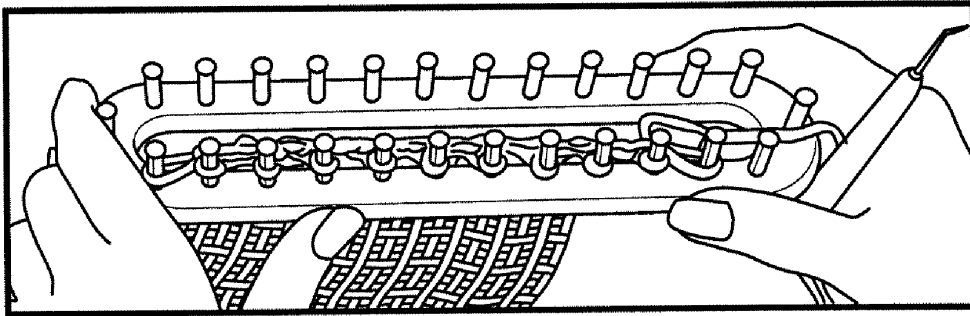


FIG. 2B

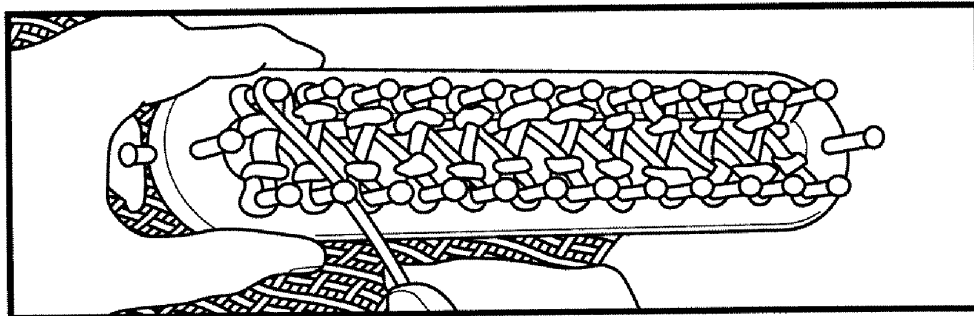


FIG. 2C

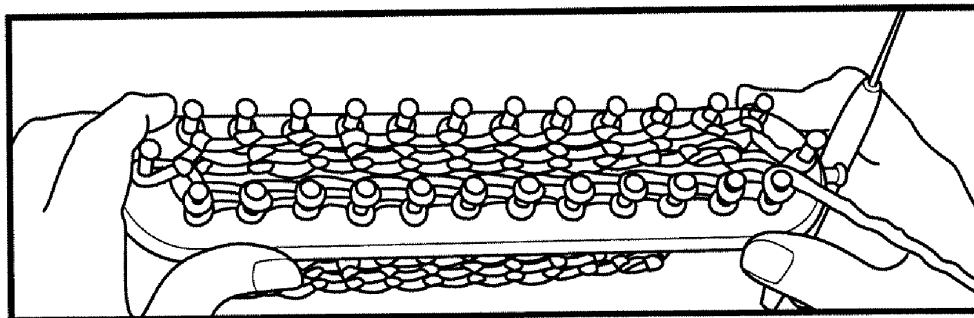


FIG. 3

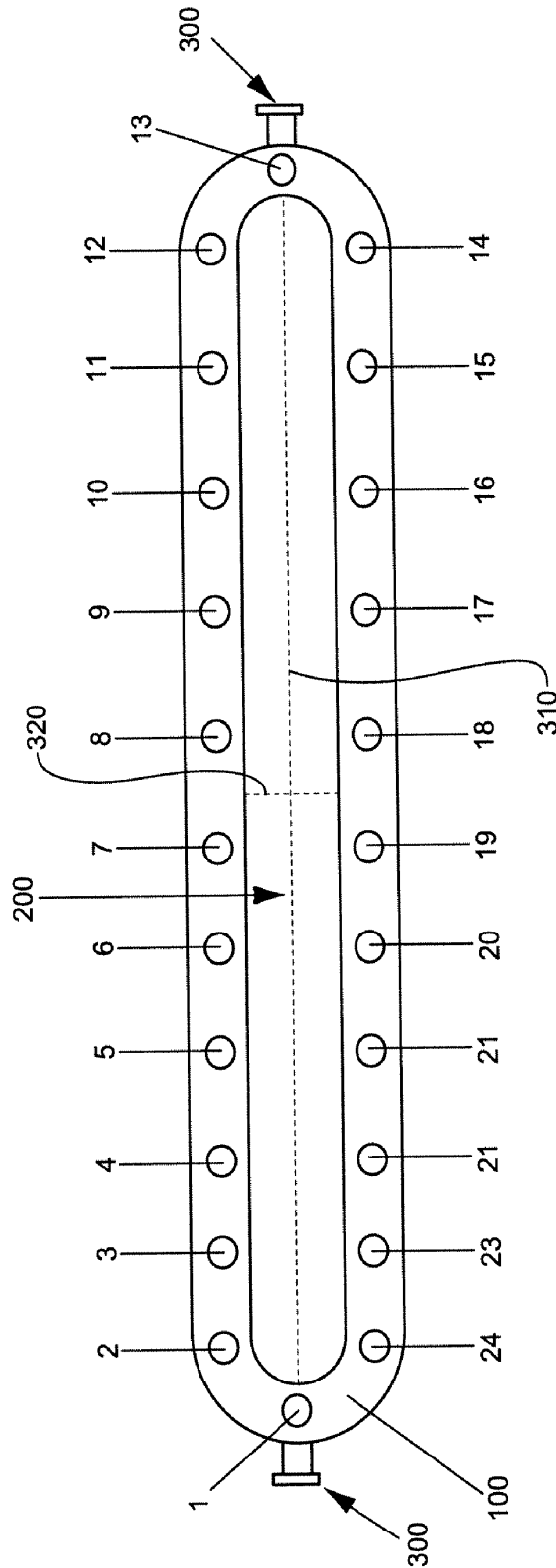
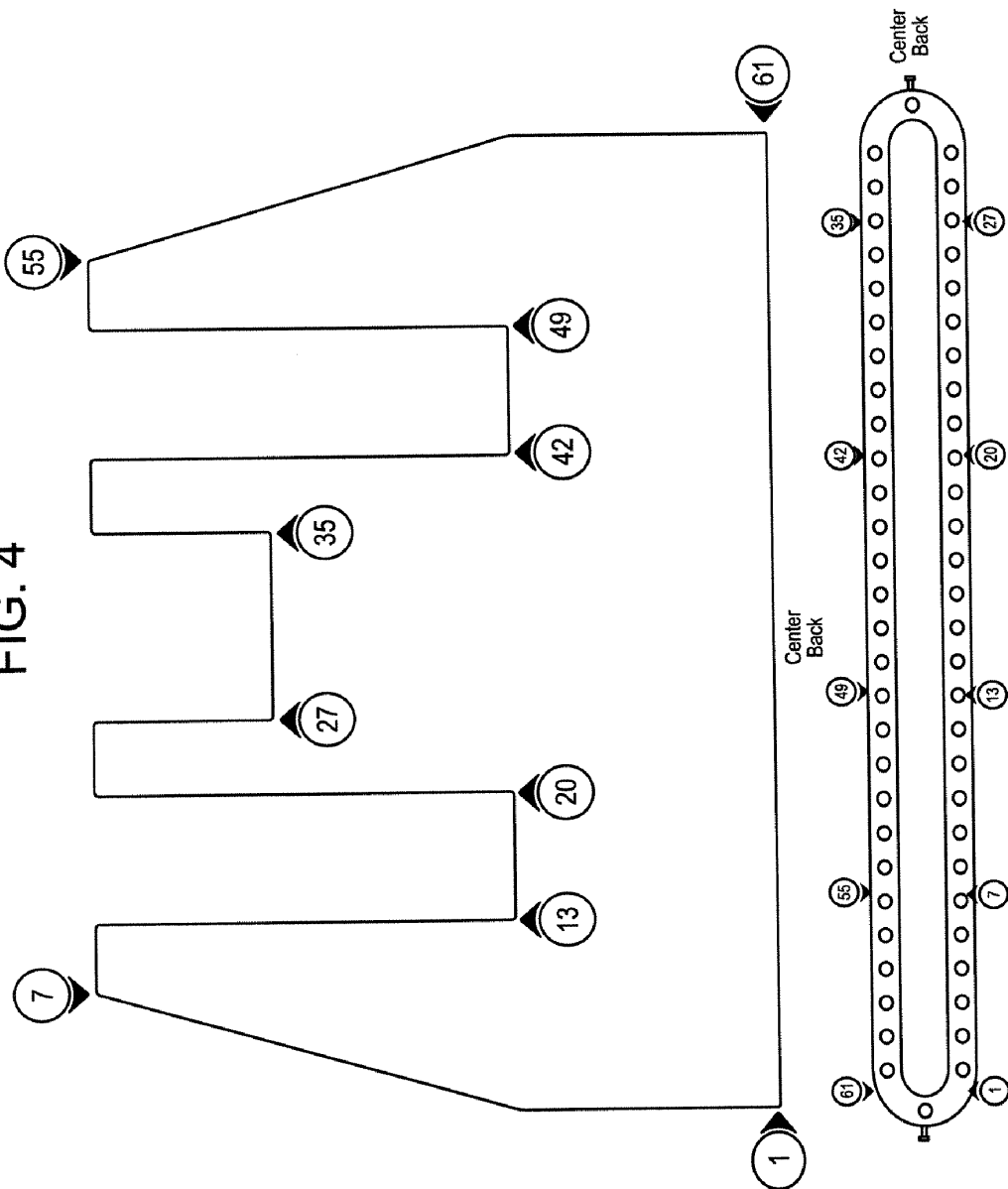


FIG. 4



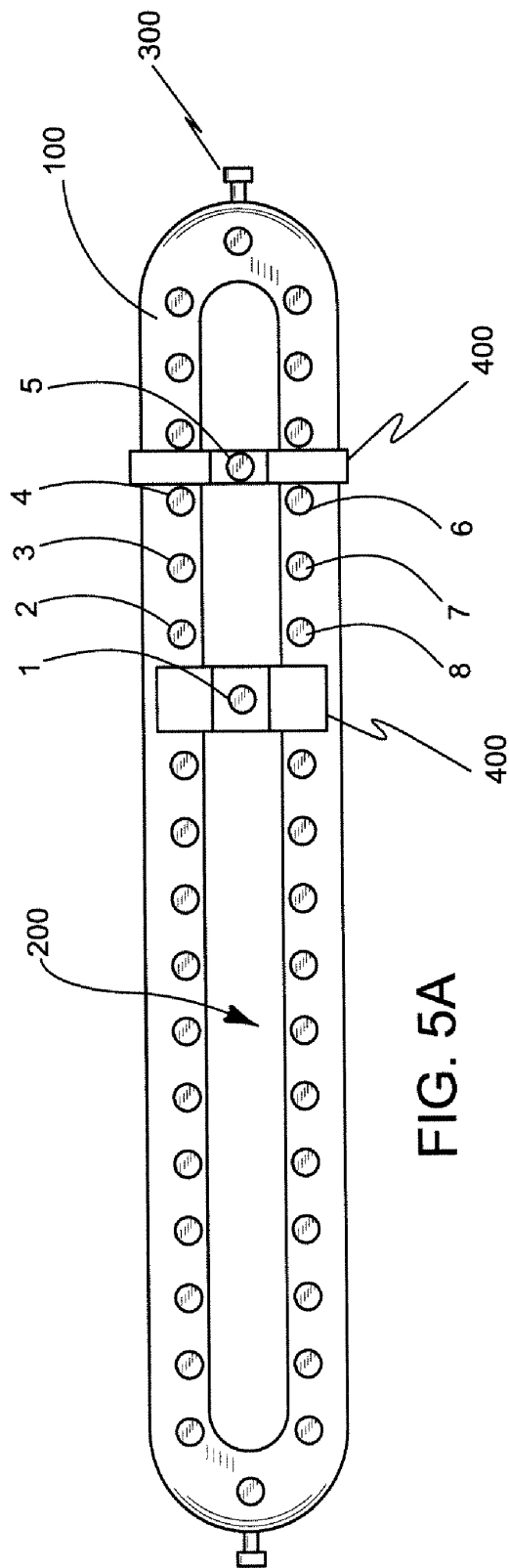


FIG. 5A

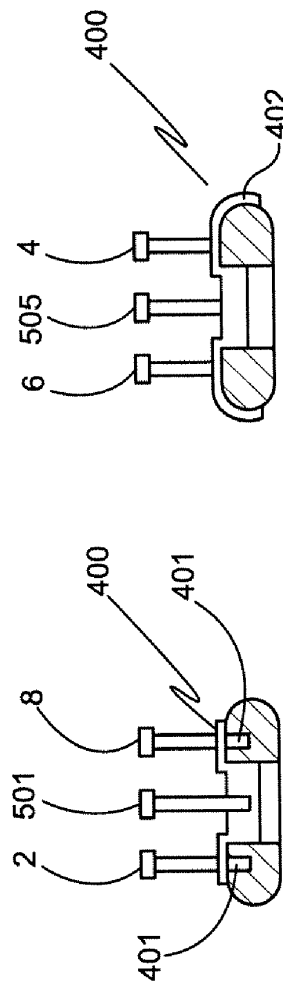


FIG. 5B

FIG. 5C

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HAND KNITTING LOOM AND METHOD OF USE

CROSS-REFERENCE TO RELATED APPLICATION

The present application claims priority to and hereby incorporates by reference U.S. Provisional Patent Application Ser. No. 60/877,587 filed on Dec. 28, 2006.

TECHNICAL FIELD

This invention relates to a knitting loom and a method of using a knitting loom.

BACKGROUND

Weaving may utilize any number of different kinds of looms, ranging from simple hand held structures to complex machines. Looms commonly used today for non-commercial knitting include handlooms that may be rectangular, circular or oblong and have projecting pegs configured to hold the warp loops and the woven weft loops. An example of a rectangular loom includes the Knifty Knitter™ rectangle loom available from PROVO CRAFT®.

At least one advantage of handlooms is the ease of use and the ability of the user to utilize techniques that are more sophisticated as their skill with the loom increases. However, each type of handloom (e.g., circular, rectangular, oblong) does not provide for multiple uses. For example, a circular handloom is useful for circular knitting. However, the circular handloom does not provide for double knitting of straight pieces and may be difficult to use for single knit.

Therefore, users desiring to knit different styles of knits (e.g., single, double, circular knits) are required to purchase and carry both a circular handloom and a rectangular or elliptical loom. Moreover, the looms take up significant space and may be difficult to use in cramped quarters such as a car or an airplane.

Thus, there is a need for a handloom that is capable of producing single, double, and circular knits. Moreover, it is desirable to provide a loom having a reduced size that may make transporting and using the loom in a restricted space, e.g., a car or airplane, easier.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and inventive aspects will become more apparent upon reading the following detailed description, claims, and drawings, of which the following is a brief description:

FIG. 1 is a perspective view of an example where the loom is a rounded rectangle.

FIG. 2A shows a single knit for use with the loom of FIG. 1.

FIG. 2B shows a double knit for use with the loom of FIG. 1.

FIG. 2C shows a circular knit for use with the loom of FIG. 1.

FIG. 3 is a top plane view of an example of the loom.

FIG. 4 shows an example of peg numbering for knitting a vest.

FIG. 5A is a top plane view of a knitting loom that includes two examples of a movable bridge.

FIG. 5B is a partial cross-sectional side view of the knitting loom and a first embodiment of the moveable bridge.

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FIG. 5C is a partial cross-sectional side view of the knitting loom and a second embodiment of the moveable bridge.

DETAILED DESCRIPTION

Referring now to the drawings, illustrative embodiments are shown in detail. Although the drawings represent the embodiments, the drawings are not necessarily to scale and certain features may be exaggerated to better illustrate and explain novel aspects of an embodiment. Further, the embodiments described herein are not intended to be exhaustive or otherwise limit or restrict the claims to the precise form and configuration shown in the drawings and disclosed in the following detailed description.

The examples discussed herein provide that a single handloom may perform single knit, double knit and circular knit. These looms are typically narrow and compact. They may be shaped, but not exclusively, as oblong, elliptical, and/or rectangular. The looms discussed herein may also be associated with a method of knitting that may include producing a closed circular knitting using a non-circular knitting loom.

The examples discussed herein relate to a non-circular knitting loom. The loom includes a plurality of knitting pegs spaced generally equidistant relative to one another around the perimeter of the loom. The loom may provide for at least one knitting peg at one or more ends of the loom. Alternatively, the knitting peg may be located at the apex of the rectangle, ellipse, oval, rounded rectangle and/or oblong between two substantially parallel rows of knitting pegs.

In general, examples of the looms discussed herein may include a non-circular knitting loom having an orifice between two substantially parallel rows of knitting pegs and at least one knitting peg at an end of the loom between the two substantially parallel rows of knitting pegs. In another example, the plurality of knitting pegs may be spaced equidistant relative to one another around the loom. The loom may be configured as, but not limited to, having a rectangular, elliptical, oblong, oval, or rounded rectangle shape. The loom may also have a knitting peg at one or more ends between the two substantially parallel rows of knitting pegs.

As used herein, "yarn" means any conventional flexible material suitable for weaving, such as commercially available twines and yarn. Also, as used herein, "substantially equidistant" means that any two adjacent knitting pegs are spaced apart by a substantially equal distance. "Substantially equidistant" also refers to the position of a knitting peg at one or more ends of the base structure relative to either of the two substantially parallel rows of knitting pegs, wherein the deviation from equal distance is less than twice the spacing of any two adjacent knitting pegs.

The substantially non-circular base structure of the loom may include, but is not limited to, the following shapes: an ellipse, an oblong, a rectangle, a rounded rectangle or an oval. In addition, the substantially non-circular base structure of the invention includes an orifice having a long axis and a short axis.

In an example, the knitting pegs are detachably connected to the loom. For example, the knitting pegs may be generally cylindrical in shape, having a top end and a bottom end, wherein the bottom end is configured to connect to a hole in the base structure. Optionally, the knitting pegs may have a groove or channel starting at or near the top end of the knitting peg and running to the bottom end or near the bottom end of the knitting peg.

In another example, with reference to FIG. 1, a knitting loom **110** is shown having a substantially non-circular base structure **100** having a top, a bottom, an inside and an outside

surface defining an orifice within the base structure **100** and having a plurality of knitting pegs (**1** to **17**) connected to a top surface of the base structure **100**, wherein the plurality of knitting pegs form two substantially parallel rows (pegs **2**, **4**, **6**, **8**, **10**, **12**, **14**, and **16**, illustrating a first row, and pegs **1**, **3**, **5**, **7**, **9**, **11**, **13**, **15**, and **17** illustrating the second parallel row) substantially perpendicular to the plane of the base structure **100**. Preferably, the knitting pegs are spaced substantially equidistant from one another. Preferably, the base structure **100** includes at least one yarn attachment point, e.g., an end peg **300** (e.g., a yarn attachment point), located on at least one end of the base structure **100**, where the yarn attachment point **300** is useful for holding the yarn in place when initiating knitting.

A typical rectangular or elliptical handloom is useful for knitting straight pieces using a single knit (FIG. 2A) or a double knit (FIG. 2B), but lacks the ability to knit tubes (FIG. 2C). In contrast, circular handlooms are useful for circular knitting, but do not allow double knitting of straight pieces and may be difficult to use for single knit. Therefore, a user wishing to knit single, double and circular knits was required to purchase and carry both a circular handloom and a rectangular or elliptical loom. In contrast, the present invention provides a handloom that is capable of producing all three knits (single, double, and circular knit). In addition to providing a single knitting loom capable of use with single, double and circular knit, the present invention provides a significant size reduction relative to circular looms that makes transporting and using the loom in a restricted space, e.g., a car or airplane, easier.

Referring to the example illustrated in FIG. 3, the non-circular base structure **100** is a rounded rectangle, having an orifice **200** with a long axis **310** and a short axis **320**. It is configured with a plurality of knitting pegs **1** to **24** spaced substantially equidistant from one another and substantially perpendicular to the base structure **100**. Knitting pegs **1** and **13** may be positioned at the apex of long axis **310** of orifice **200** between parallel rows of knitting pegs **2-12** and **14-24**. In addition, the base structure **100** includes at least one attachment point **300** located substantially parallel to the plane of the base at each end of the non-circular base structure. End peg **300** is typically used for holding the yarn in place when initiating knitting.

Pegs **1-18** may be made as part of base structure **100** or they may be made separately or any variation thereof. If any of pegs **1-18** are made separately from base structure **100**, they may be received by base structure **100** by holes. The holes are then configured to receive the peg and hold it tightly in place. In any event, any of pegs **1-18** may be held by base structure **100** permanently or removably.

Referring to FIG. 4, a user may weave a vest by initially tying pieces of yarn around knitting pegs **13**, **20**, **27**, **35**, **42**, and **49**, as an example of a method of knitting an item (e.g., a circular item) using a rectangular or elliptical handloom as described herein. In this example, pegs **13** and **20** correspond to the left armhole. Knitting pegs **41** and **49** correspond to the right armhole. Knitting pegs **27** and **36** represent the initiation of the neck hole. Starting on peg **1**, the user wraps the loom with yarn without utilizing peg **62**. The user then knits for approximately seven inches (approximately 27 rows) using knitting pegs **1** to **61**. On the 28th row of weaving, the user should be knitting from the right to the left. Knit to peg **49**, which has the marker yarn attached to it. Wrap the next eight knitting pegs very loosely. Take the loops from knitting pegs **49** and **48**, and pull the loop from peg **48** through the loop from peg **49**. Then take the loop from peg **47** through the loop from peg **48**. Continue in this manner until the user has

decreased the stitches between the markers, including the loops on the marked knitting pegs (knitting pegs **49** and **42**). Knit across the back part of the vest to the marker on peg **20** and decrease the stitches between the markers on peg **20** and peg **13**. Knit to the end of the row. Any remaining yarn may remain attached and be used for the left front of the vest. Next, the user may attach another piece of yarn as a marker on peg **20**, and knit the back section until the user has knit approximately nine and a half inches, or approximately 38 rows. Knit six stitches to the marker on knitting peg **36** and decrease the stitches between knitting pegs **35** and **27** (they have markers on them). Knit the left side until the user has knitted approximately four inches. Take the weaving off the loom. Attach a piece of yarn as a marker on peg **35** and knit approximately four inches, or approximately sixteen rows. Take the knitting off the loom. Using the attached yarn, knit approximately eight inches. Start decreasing on the front side of the vest, one stitch every inch, or every four rows; repeat six times. Take the knitting from the loom and attach yarn as a marker on peg **49** and knit approximately eight inches. Starting on the front side of the vest, decrease one stitch every inch, or every four rows; repeat six times. Sew the shoulder seams together. The user may add some fringe pieces where desirable.

Referring to FIG. 5, one or more knitting pegs may be located between the substantially parallel rows of knitting pegs by means of a cross-bridge **400** configured to connect to base structure **100**. For example, at least one knitting peg at the apex of long axis **310** (see FIG. 3) of the orifice **200** may be positioned within the orifice **200** (see FIGS. 3 and 5A) by any suitable means. Such means may include cross-bridge **400** configured to attach to the base structure **100** by way of replacing at least one detachable knitting peg with cross-bridge **400** having appendages **401** (e.g., pins) adapted to connect to the base structure **100**, as illustrated in FIG. 5B corresponding to cross-bridge **400** on the left of FIG. 5A. Alternatively, the example shown in FIG. 5C illustrates a cross-bridge **400** adapted to clasp, or be clasped by, the base structure as shown by the cross bridge on the right of FIG. 5A. These examples allow the user to carry a single knitting loom and one or more cross-bridges **400**. Cross-bridges **400** may be configured to produce a circular knit having a diameter smaller than the effective diameter of the knitting loom.

Cross-bridges **400** may connect to base structure **100** in a number of ways including clip attachments (such as wings **402**) or appendages **401** (e.g., pins) that interfere with receiving holes in base structure **100**. Moreover, the clip attachments may also be precisely aligned (e.g., located) with base structure **100** using pins protruding from the under side of each clip attachment. Such alignment provides proper substantially equidistant spacing for movable pin **501** between pins **2** and **8** and matches the pin spacing between, e.g., pins **8** and **7**. Similarly, movable pin **505** is spaced equidistant between pins **4** and **6** and matches the pin spacing between, e.g., pins **6** and **7**.

Alternatively, mounting may use the width of cross-bridges **400** to be configured to fit snugly between pins (on the same side) so that the alignment is provided. Alternative examples may include pins that are attached to only one side of base structure **100**. For example, pin **501** may be attached in an L-shape manner to only one side, received by a hole in base structure **100**. However, cross-bridges **400** provide additional stability for pins **501**, **505** by virtue of providing support on both sides of base structure **100**.

As will be recognized by a person of ordinary skill in the art, the base structure may be of any desirable size and may contain any number of knitting pegs spaced equidistant

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around the base structure. In addition, the looms of the invention may be made of any suitable material, such as wood, plastic, rubber, or metal.

The present invention has been particularly shown and described with reference to the foregoing embodiments, which are merely illustrative of the best modes for carrying out the invention. It should be understood by those skilled in the art that various alternatives to the embodiments of the invention described herein may be employed in practicing the invention without departing from the spirit and scope of the invention as defined in the following claims. The embodiments should be understood to include all novel and non-obvious combinations of elements described herein, and claims may be presented in this or a later application to any novel and non-obvious combination of these elements. Moreover, the foregoing embodiments are illustrative, and no single feature or element is essential to all possible combinations that may be claimed in this or a later application.

With regard to the processes, methods, heuristics, etc. described herein, it should be understood that although the steps of such processes, etc. have been described as occurring according to a certain ordered sequence, such processes could be practiced with the described steps performed in an order other than the order described herein. It further should be understood that certain steps could be performed simultaneously, that other steps could be added, or that certain steps described herein could be omitted. In other words, the descriptions of processes described herein are provided for illustrating certain embodiments and should in no way be construed to limit the claimed invention.

Accordingly, it is to be understood that the above description is intended to be illustrative and not restrictive. Many embodiments and applications other than the examples provided would be apparent to those of skill in the art upon reading the above description. The scope of the invention should be determined, not with reference to the above description, but should instead be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. It is anticipated and intended that future developments will occur in the arts discussed herein, and that the disclosed systems and methods will be incorporated into such future embodiments. In sum, it should be understood that the invention is capable of modification and variation and is limited only by the following claims.

All terms used in the claims are intended to be given their broadest reasonable constructions and their ordinary meanings as understood by those skilled in the art unless an explicit indication to the contrary is made herein. In particular, use of the singular articles such as "a," "the," "said," etc. should be read to recite one or more of the indicated elements unless a claim recites an explicit limitation to the contrary.

What is claimed is:

1. A loom comprising:

a plurality of knitting pegs; and

a substantially non-circular base structure connected to said plurality of knitting pegs, wherein the plurality of knitting pegs are arranged substantially perpendicular to said substantially non-circular base structure, wherein said substantially non-circular base structure comprises an elongated orifice having a long axis and a short axis, wherein said plurality of knitting pegs are arranged to form two substantially parallel rows of knitting pegs that are substantially perpendicular to said short axis of said elongated orifice;

at least one knitting peg of the plurality of knitting pegs defining one or more intermediate pegs and being

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aligned along the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs; and

at least one end peg arranged on the substantially non-circular base structure, wherein the at least one end peg arranged substantially perpendicularly to the plurality of knitting pegs and the at the one or more intermediate pegs.

2. The loom of claim 1, wherein said at least one end peg is arranged near the one or more intermediate pegs.

3. The loom of claim 1, wherein said substantially non-circular base structure is an oval.

4. The loom of claim 1, wherein said substantially non-circular base structure is a rounded rectangle.

5. The loom of claim 1, wherein the at least one end peg defines means for attaching yarn to said non-circular base structure.

6. The loom of claim 1, wherein said plurality of knitting pegs are detachably connected to said substantially non-circular base structure.

7. The loom of claim 1, wherein said plurality of knitting pegs and intermediate pegs are spaced substantially equidistant relative to one another.

8. A loom comprising:

an elongate base having two beams, said two beams connected at their first ends by a first connecting member, said two beams connected at their second ends by a second connecting member, whereby the connection of the two beams by the first and second connecting members form an elongate orifice;

a plurality of pegs extending from said each of said two beams;

at least one peg extending from one or more of the first and second connecting members, said at least one peg being spaced substantially equidistant to the nearest of said plurality of pegs extending from each of said two beams; and

at least one end peg extending front one of said first connecting member and said second connecting members, wherein the at least one end peg is arranged substantially perpendicularly to the plurality of pegs and the at least one peg.

9. The loom of claim 8, wherein said plurality of pegs and at least one peg are spaced substantially equidistant relative to one another.

10. The loom of claim 8, wherein said elongate base is configured as substantially oval.

11. The loom of claim 8, wherein said elongate base is configured as a rounded rectangle.

12. The loom of claim 8, wherein said plurality of pegs are detachable.

13. The loom of claim 8, wherein said plurality of pegs are unitary with said elongate base.

14. The loom of claim 8, wherein said two beams are detachable.

15. The loom of claim 8, wherein the at least one end peg defines means for attaching yarn to said elongate base.

16. A method of knitting a tube shaped knit material, the method comprising:

providing a substantially non-circular loom having two beams that are connected at their first ends by a first connecting member, said two beams connected at their second ends by a second connecting member, whereby the connection of the two beams by the first and second connecting members form an elongate orifice;

providing a plurality of pegs upon the substantially non-circular loom by arranging a plurality of knitting pegs

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around the elongated orifice, and arranging at least one end peg substantially perpendicularly the plurality of pegs;

utilizing the substantially non-circular loom for attaching a first end of a length of material to the at least one end peg, and wrapping the material about said plurality of knitting pegs for forming a tube shaped body from the length of material.

17. The method of claim 16, further comprising defining the elongate orifice to include a long axis and a short axis, wherein said plurality of knitting pegs define two substantially parallel rows of knitting pegs that are substantially perpendicular to said short axis of said elongated orifice, wherein said plurality of knitting pegs further define one or more intermediate pegs that is/are aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

18. The method of claim 17, comprising providing a substantially non-circular loom having a rounded rectangle shape.

19. The method of claim 17, wherein said rounded rectangle shape has one knitting peg at each apex of said long axis of the elongated orifice.

20. The loom of claim 1 further comprising a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first elongated base member of the substantially non-circular base structure;

8

wherein the second lateral portion is removably-connected to a second elongated base member of the substantially non-circular base structure; and

wherein the central portion includes at least one second intermediate peg that is aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

21. The loom of claim 1 further comprising a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first beam of the two beams; wherein the second lateral portion is removably-connected to a second beam of the two beams; and wherein the central portion includes at least one second peg.

22. The method of claim 17 further comprising providing a cross-bridge structure including a central portion flanked by a first lateral portion and a second lateral portion; wherein the first lateral portion is removably-connected to a first beam of the two beams; wherein the second lateral portion is removably-connected to a second beam of the two beams; wherein the central portion includes at least one second intermediate peg; and wherein the at least one second intermediate peg is aligned with the long axis of said elongated orifice and arranged between said two substantially parallel rows of knitting pegs.

* * * * *

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(54) Knitting apparatus

(57) Apparatus for hand knitting comprises hooked pins 5 arranged in two spaced parallel rows on a frame 1 with a slot 3 between the rows for the passage of knitted material. The pins 5 are formed with grooves 7 to receive a knitting hook and to facilitate the entry of the latter into the grooves sloping surfaces 11 of the frame are formed with lead-in grooves 3. In an alternative embodiment the pins which comprise base members forming the lead-in grooves are independently and detachably clipped onto longitudinal bars of the frame. The frame may have selectable detent positions round pivots 15.

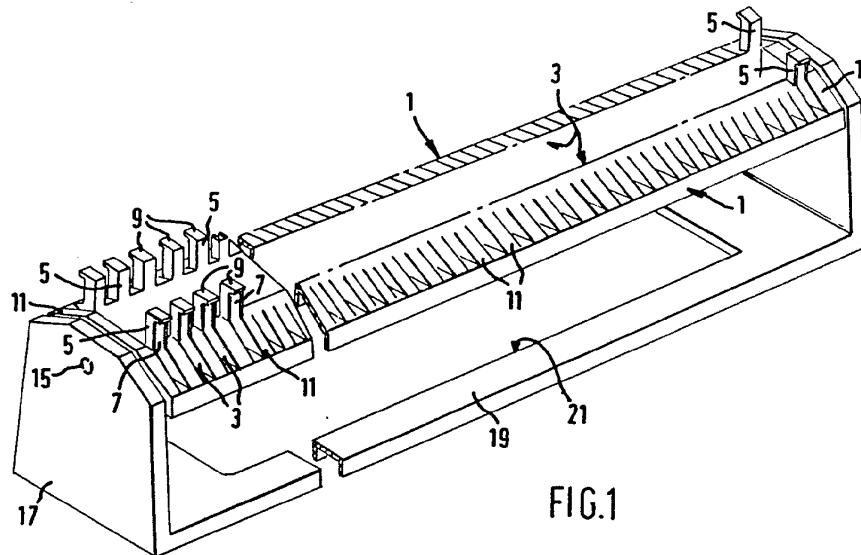


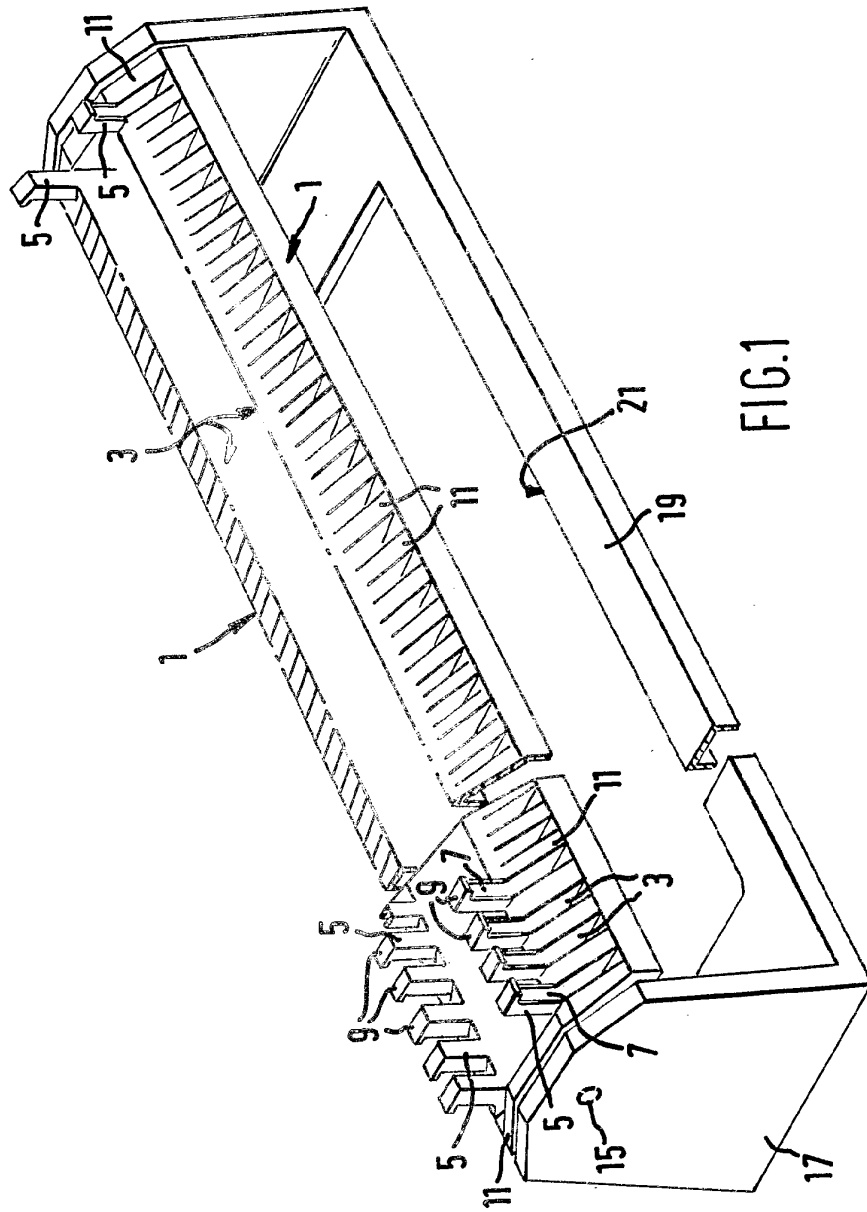
FIG.1

GB 2 147 918 A

The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

LaRose Ex. 1018, p. 1

Tristar Ex. 1004, pg. 229



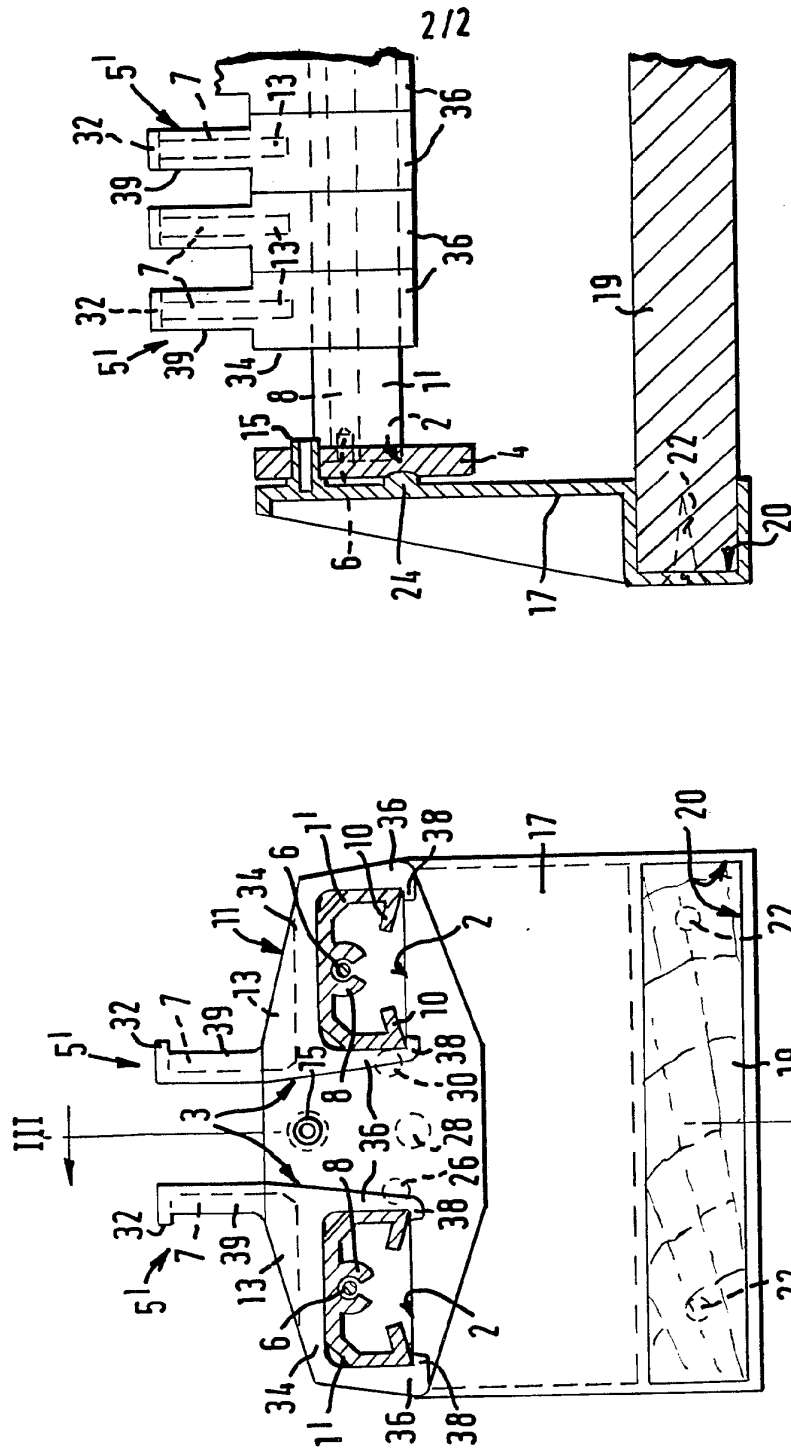


FIG. 3

FIG. 2

SPECIFICATION

Knitting apparatus

5 This invention is concerned with knitting apparatus particularly apparatus for knitting by hand.

10 It is known to provide a knitting apparatus (particularly for use by children) comprising an elongate frame member, conveniently made of plastics material, having a slot extending lengthwise of the frame member (the slot extending completely through the frame member) and the latter being provided with two

15 rows of pins arranged to extend upwardly from the frame member at evenly spaced localities along the opposite sides of the slot. The pins each have a groove extending along the pin at a locality opposite to the slot and the pins have a hooked formation, each hook being formed by a small plate-like member which caps the grooved portion of each pin. In using the known apparatus the wool (or other cord-like material) to be used in the

20 knitting operation is first passed around the required number of upstanding pins in the two rows thereof twice (the free end of the wool being anchored eg. to one of the pins) and, by means of a suitable hand-held hook, the second strand is raised over the hooked portion of each pin in turn to form a stitch loop around each pin. The wool is then laid around the pins again and the loops are lifted over the newly laid strand and the process is

25 repeated to form a knitted fabric which passes downwardly through the slot as the operation proceeds. Conveniently the upstanding pins are spaced from each other by spaces approximately equal to the width of the pins.

30 Attempts have been made to utilise apparatus as just described as an aid to enable handicapped people to knit. However, the known apparatus is flimsy and the frame is likely to bend when gripped. Furthermore,

35 particularly with certain types of disability, the knitter finds it difficult to locate the hook correctly in the groove of each pin in order to engage the stitch loop surrounding that pin. For example a person having poor co-ordination of hand movement is likely to insert the hook through the gap between the adjacent pins instead of into the groove in the pin, so that, when the hook is raised, the stitch loops are pulled off the pins and the stitches are

40 'dropped'.

45 With a view to overcoming or minimising the above-mentioned difficulties, it is proposed to provide a substantially rigid frame member, preferably of die-cast aluminium,

50 with sloping upper faces so formed that the thickness (depth) of the frame member increases from the outside edge to the slot which is surrounded by the upstanding pins. The sloping faces are provided with grooves

55 which lead into the grooves in the correspond-

ing pins thus providing lead-in guides to help the user locate the hook in the grooves in the pins and thus facilitate the formation of the stitches.

70 With a view to providing further improvements in the aforesaid knitting apparatus it is proposed to provide an apparatus in which what are described previously as upstanding (hooked) pins (which pins are integrally

75 formed with a slotted frame-member) are replaced by a plurality of separately formed hooked teeth, which are conveniently manufactured, by an injection moulding technique, from a plastics material, preferably Nylon 6.

80 The teeth are assembled in the apparatus by being clipped over a pair of tooth supporting bars which are arranged to lie parallel to each other and provide, between them, a slot through which the knitting passes. The tooth

85 supporting bars are conveniently made from an extruded aluminium hollow profile of generally rectangular cross-section cut to appropriate length, opposite end portions of the bars being secured in rectangular housings in

90 the form of depressions formed in a pair of end plates, thus providing a rigid tooth-supporting structure of good torsional rigidity and which is unlikely to distort under hand pressure during the knitting operation. The end

95 plates just referred to may conveniently be formed by zinc die-castings.

100 The tooth-supporting structure is conveniently pivotally supported in a support frame in a manner generally similar to that described above. However, with a view to providing for ease of assembly, cheapness of manufacture, and robustness, the support frame preferably comprises a pair of support end plates, again

105 made by a zinc die-casting process and shaped to receive opposite end portions of a wooden base-plate to which the end plates are secured. The end plates are also provided, during the die-casting process, with pivot pins for the tooth-supporting structure and with a locating member for locating the same in one of three different positions of tilt relatively to the support frame.

110 Thus an apparatus in accordance with the present invention may be assembled from a very few cheaply produced, but strong and light, components. Sets of teeth of different pitch may be provided to provide for different sized stitches in knitted articles made on the apparatus. The teeth may be clipped on to the two supporting bars either in staggered or

115 opposed relationship. Gaps may be left between adjacent teeth if required to provide readily for different stitch patterns.

120 There will now be given, with reference to the accompanying drawings, a more detailed description of an apparatus, illustrative of the invention. It is to be clearly understood that this apparatus is selected for description by way of exemplification, and not by way of

125 limitation, of the invention.

In the accompanying drawings:

Figure 1 is a perspective view of a first embodiment of apparatus according to the invention having a die-cast aluminium frame:

5 Figure 2 is a cross-sectional view of a second embodiment of the apparatus having replaceable knitting teeth; and

10 Figure 3 is a view, chiefly in longitudinal cross section on the line III-III in Figure 2, of one end portion of the illustrative apparatus.

15 As will be seen in Figure 1, the apparatus comprises an elongate frame member 1, preferably of die-cast aluminium, having a slot 3 extending lengthwise of the frame member, the groove extending completely through the frame member. Upstanding from the frame member, at opposite sides of the slot 3, are two rows of spaced pins 5 having grooves 7 extending lengthwise of the pins (ie. 20 heightwise) at outwardly facing sides thereof. The pins are hooked as shown in the drawing, the hooked formation being provided by small plate-like portions 9 which cap the upper ends of the grooves 7. The frame member 1 is 25 provided with sloping upper surfaces 11 (ie. the depth, or thickness, of the frame member increases from its outside edges to the slot 3) in which are formed grooves 13 leading into the corresponding grooves 7 in the pins 5.

30 The frame member 1 is pivotally supported on pins 15 extending inwardly from upstanding end portions 17 of a support frame having a slot 21 in its base through which the knitted material can pass, and may be locked in one 35 of three positions (either a central position as shown, or inclined somewhat towards one side or the other) for convenience in handling. The locking means comprises a fixed pin (not shown) which extends from one of the up- 40 standing end portions 17 with one of the three locating holes formed in the frame member 1. To release the frame member from the locating pin, the frame member can be displaced lengthwise of its pivot pins 15 against 45 the action of a spring (not shown).

50 It will be appreciated that the grooves 13 leading into the grooves 7 in the pins are likely to facilitate the correct engagement of the knitting hook with the grooves in the pins and the sloping surfaces 11 tend to act as barriers barring unwanted entry of the hook into the spaces between the pins.

55 The apparatus shown in Figures 2 and 3 comprises a plurality of upstanding pins (in the form teeth 5' hereinafter described) which correspond to the pins 5 referred to previously and are arranged in two spaced parallel rows to provide a slot 3 between the rows through which slot the knitted material passes during a 60 knitting operation.

65 In the illustrative apparatus the teeth 5' are detachably supported on a pair of spaced bars 1'. The bars 1' are cut from an extruded aluminium hollow profile having a generally rectangular cross-section as shown in Figure 2

70 to provide a rigid but light construction. Opposite end portions of the bars 1' are received in rectangular recesses or housings 2 (commensurate with the cross-sectional dimensions of the bar so as to provide a tight fit therefor) formed in end plates 4, to which the bars are firmly secured by self-tapping screws 6 extending through bores in the end plates into a split-cylindrical bead 8 provided within each 75 bar 1'. Inwardly directed flanges 10 provide strength to the bar profile. The arrangement described provides a light but strong structure for supporting the teeth 5' which is unlikely to twist or distort during use of the apparatus.

80 The end-plates 4 are pivotally supported on pivots 15 extending from a pair of support end plates 17, these plates being secured to opposite end portions of a wooden base-plate 19 which end portions are received within 85 housings 20 formed in the support end plates 17 and secured by screws 22.

90 The tooth-supporting frame, comprising the bars 1' and the end-plates 4, may be located in a selected one of three possible positions of tilt about the pivots 15, by means of a poppet 24 (Figure 3) extending from one support end plate 17 into one of three detents 26, 28, 30 95 formed in the adjacent end plate 4 (Figure 2). The spacing between the support end plates 17 and the end plates 4 of the tooth-supporting frame is arranged to be such as to allow slight endwise movement of the frame relatively to the pivots 15 to allow disengagement 100 of the poppet 24 for the detents 26, 28, 30, a compression spring (not shown) being provided around the pivot 15 between the end plates 4 and 17 at the opposite end of the apparatus to that shown in Figure 3 to hold 105 the poppet 24 and selected detent in engagement.

110 The support end plates 17 are also conveniently formed by a zinc die-casting process whereby the pivot 15 and detent 24 may be formed integrally with the plates 17 (only 50% of which will be provided with the poppets 24, since they are not required on the plate 17 at the opposite end of the apparatus).

115 As will be clear from Figures 2 and 3 each hook 5' comprises an upwardly extending portion 39 terminating in an upper plate-like overhanging portion 32 providing the hook proper for retaining the wool on the hooks until lifted thereof during the knitting operation by manipulation of a hand-held knitting hook (not shown). For guiding the latter each hook 5' is provided with a groove 7 extending 120 along the upstanding portion 39, while a base portion 34 of each hook has a lead-in guide groove 13 which leads into the groove 7 for the purpose described above in relation to 125 Figure 1. Each base portion 34 is provided with two depending legs 36 having inturned portions 38 arranged to clip around the support bars 1' as shown in Figure 2, and to hold 130

the teeth firmly in place thereon. By springing apart the legs 36 slightly a tooth may be easily detached from its bar, either for repositioning to provide gaps as above-mentioned, or when it is desired to replace the teeth with teeth of a different pitch. Each groove 13 is formed between wall portions of the base portion 34 of each tooth 5' provided with sloping upper surfaces 11 providing barriers between the grooves 13 in adjacent teeth tending to bar unwanted entry of the knitting hook into spaces between the hooks 5' for the purpose described previously.

15 CLAIMS

1. Knitting apparatus comprising an elongate frame member having a slot extending lengthwise of the frame member and completely through the frame member and knitting pins disposed on the frame member at evenly spaced locations in two rows along opposite sides of the slot, the pins extending upwardly from the frame member and being of hooked formation and grooves extending along the pins at locations opposite to the slot for guiding a knitting hook, wherein the frame member is substantially rigid and is formed with sloping upper faces so formed that the depth of the frame member increases from the outside edge to the slot which is surrounded by the upstanding pins, the sloping faces being provided with grooves that lead into grooves in the corresponding pins thus providing lead-in guides that help the user locate the knitting hook in the grooves in the pins and thus facilitate the formation of stitches.
2. Apparatus according to claim 1 wherein the frame comprises longitudinal members and end plates and the end plates are pivoted in a stand, releaseable locking means holding the frame in one of a number of predetermined attitudes relative to the stand.
3. Apparatus according to claim 2, wherein the longitudinal members are defined by bars of non-circular section on which clip removable knitting pins.
4. Apparatus according to claim 3 wherein each knitting pin is moulded in a plastics material and comprises a body, legs depending from ends of the body to clip onto a longitudinal bar and an upstanding hook portion.
5. Apparatus according to claim 4 wherein there are also mounted on the bars dummy pins devoid of hooks.
6. Apparatus according to claim 3, 4 or 5, wherein the releaseable locking means comprises a poppet and detents.
7. Knitting apparatus substantially as hereinbefore described with reference to and as illustrated in Figure 1 or Figures 2 and 3 of the accompanying drawings.

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United States Patent [19]
Macbain

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[45] **Date of Patent:** **Aug. 3, 1993**

- [54] **HAND TWINING LOOMS**
- [76] **Inventor:** **Kathleen E. Macbain**, 9125 Copper NE, Apt. 320, Albuquerque, N. Mex.
- [21] **Appl. No.:** **895,521**
- [22] **Filed:** **Jun. 8, 1992**
- [51] **Int. Cl.⁵** **D03D 29/00**
- [52] **U.S. Cl.** **28/151; 139/34**
- [58] **Field of Search** **289/16.5, 17; 139/383 AA, 29, 34; 66/1 A, 1 S, 2, 3, 193, 169 R, 1 R, 117, 118; 28/144, 145, 147, 149, 152, 151, 150; 223/6, 120; 87/10-13, 53, 62**

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Primary Examiner—Andrew M. Falik
Attorney, Agent, or Firm—DeWitt M. Morgan

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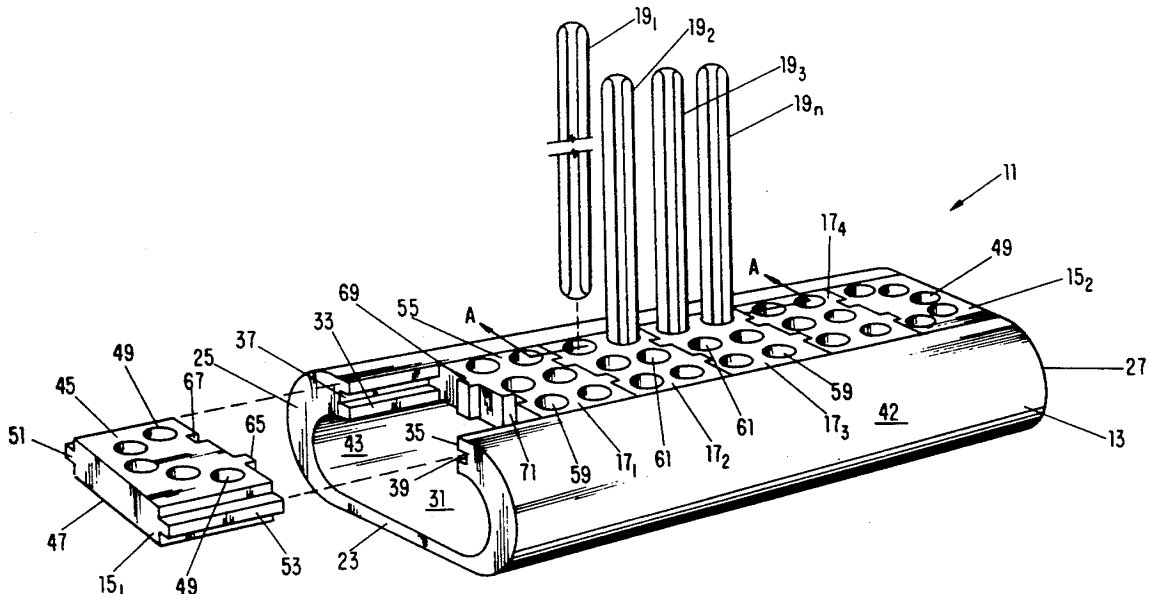
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- 1,975,924 10/1934 Collingborn .
- 2,065,498 12/1936 Bacheller .
- 2,166,668 7/1939 Webster et al. .
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[57] **ABSTRACT**

An apparatus and method for twining or weaving. The apparatus includes a plurality of elongated loom fingers and a loom. Each of the loom fingers is elongated, has first and second symmetrical tapered ends, and has an elongated groove running the entire length thereof. The loom includes: a first support that includes at least one plate-like member having a plurality of through holes therein which loosely support the loom fingers in a substantially parallel manner; a second support that has a finger engagement surface which, in the assembled form, is adopted to engage one of the ends of each loom finger being used; and structure for detachably supporting the plate-like member altitudinally with respect to the second support. In operation, to disengage the loom fingers, the plate-like member is moved relative to the second support and, then, the plate-like member is moved toward the end of the loom fingers which had previously been in contact with the finger engagement surface.

25 Claims, 10 Drawing Sheets



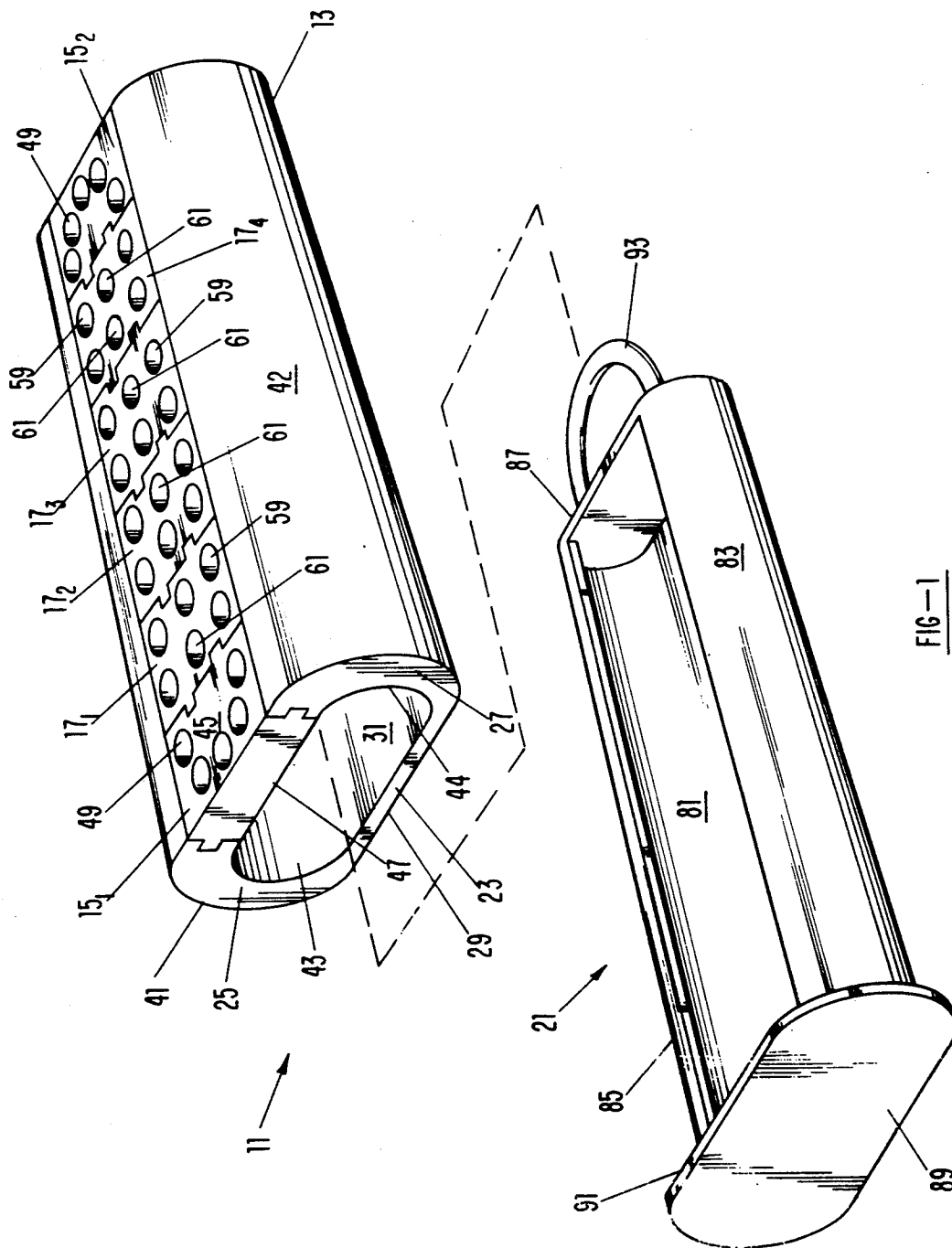


FIG-1

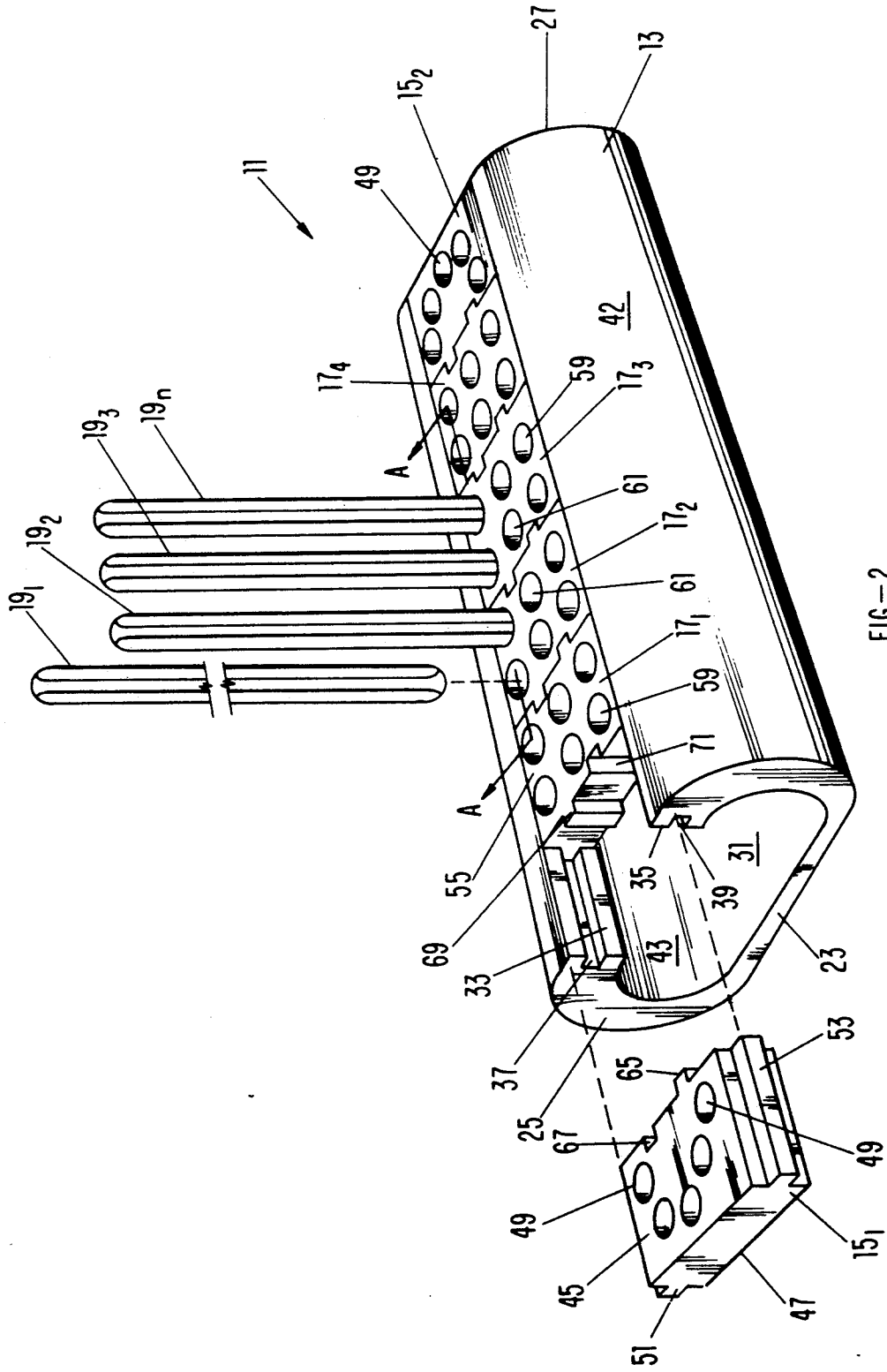


FIG-2

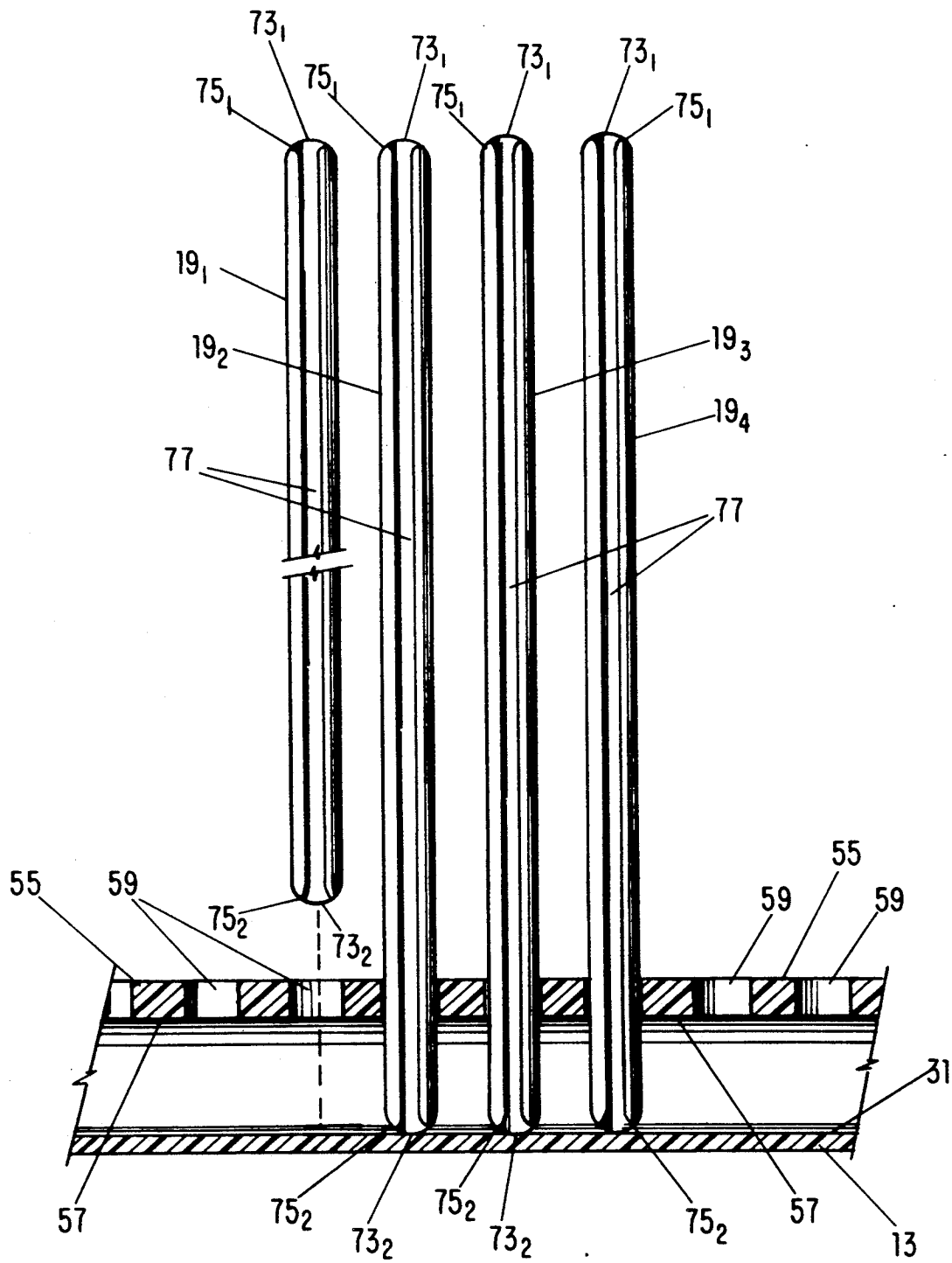


FIG-3

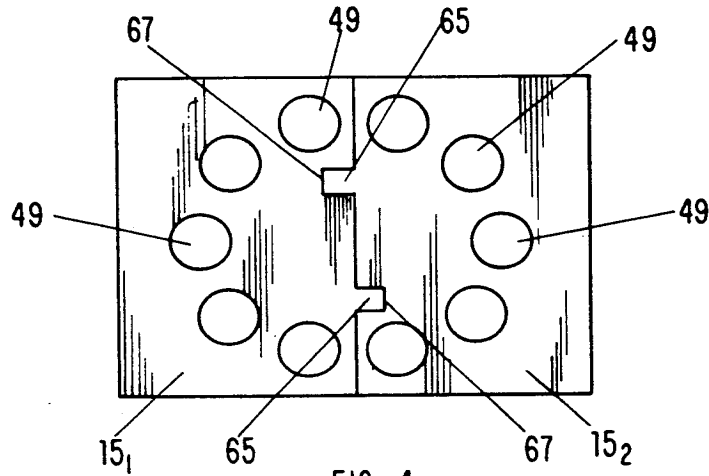


FIG-4

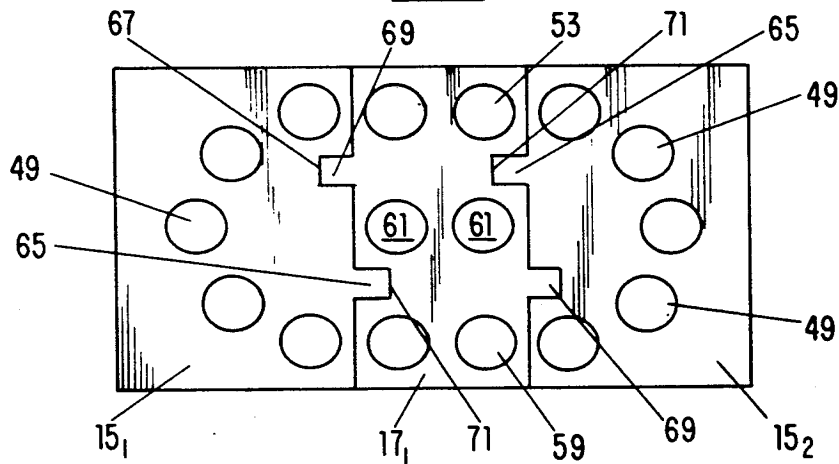


FIG-5

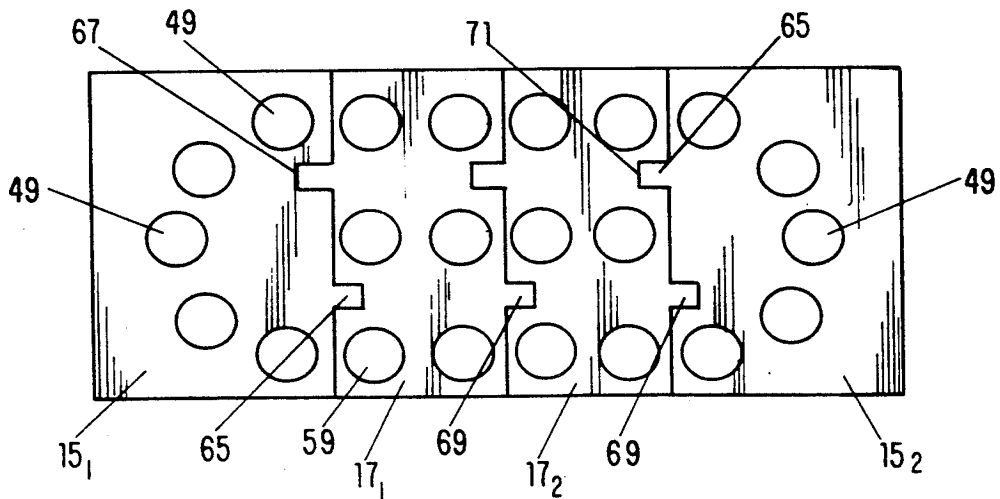


FIG-6

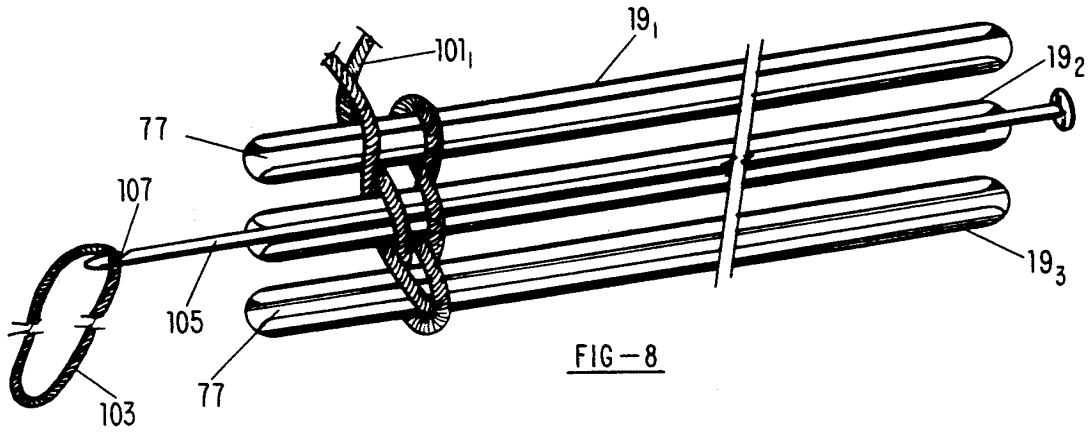


FIG-8

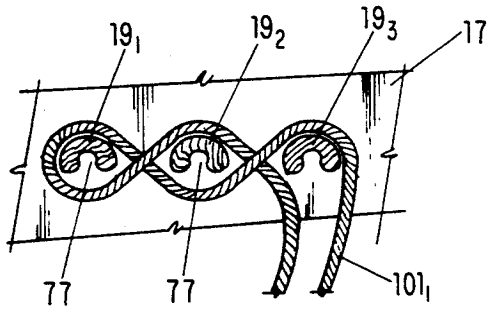


FIG-7A

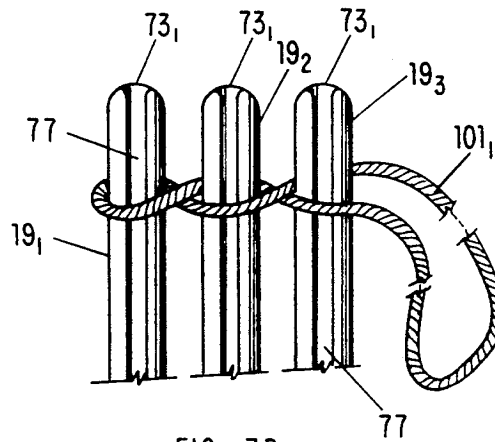


FIG-7B

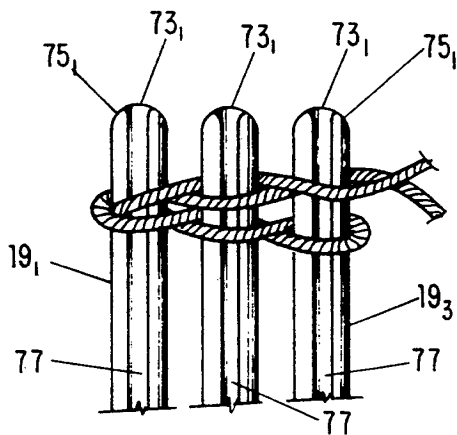


FIG-7C

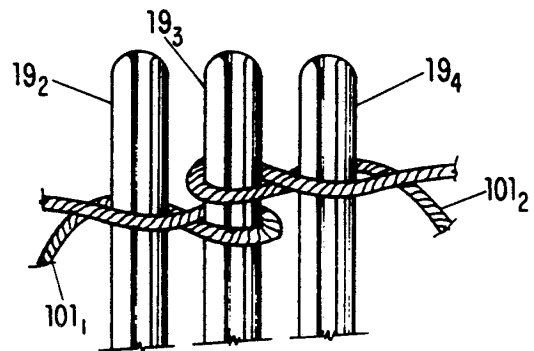


FIG-7D

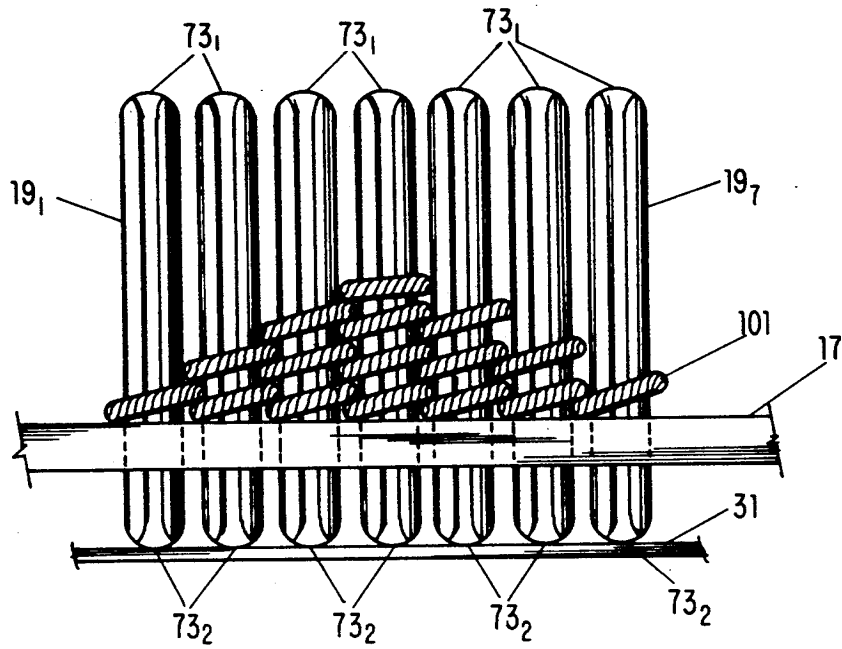


FIG-9A

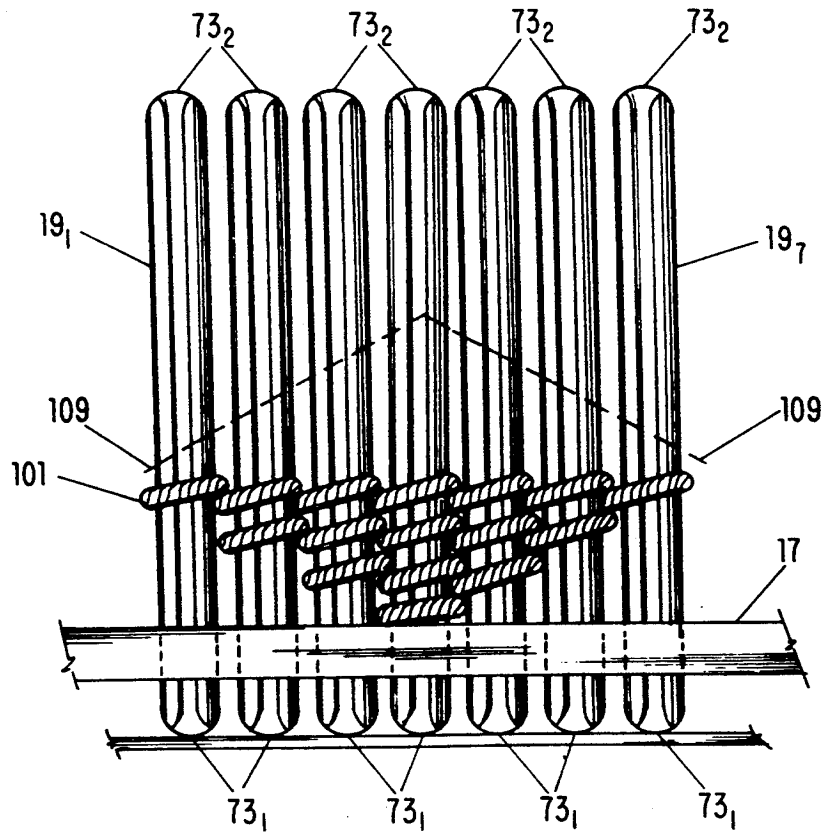


FIG-9B

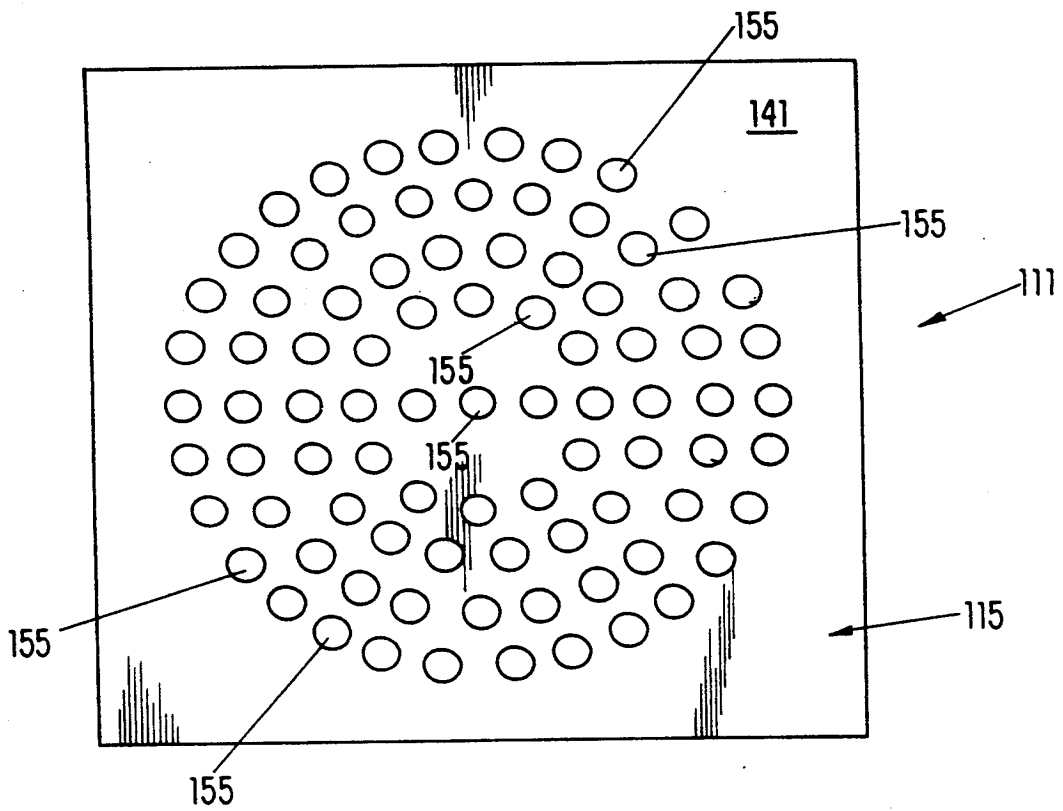


FIG-10

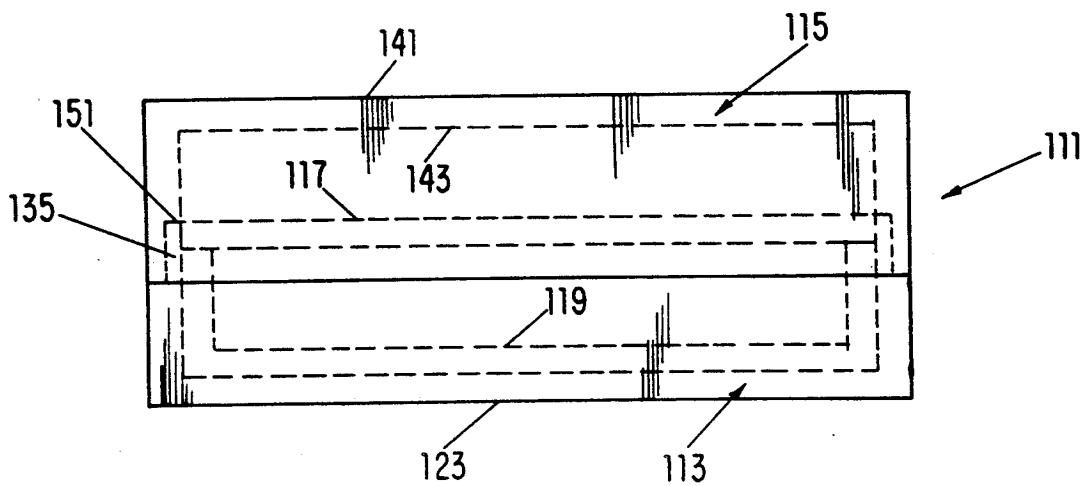


FIG-11

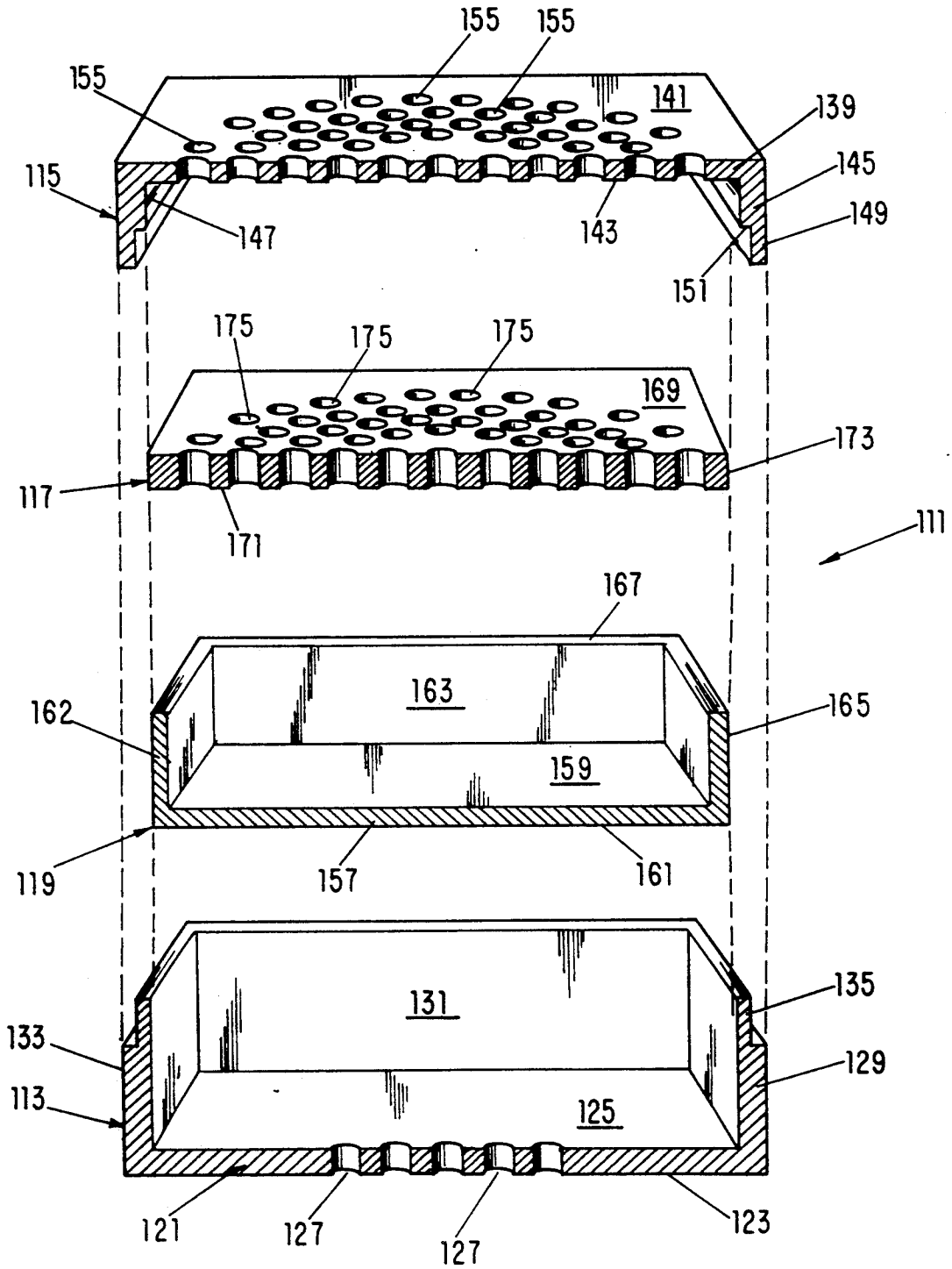


FIG - 12

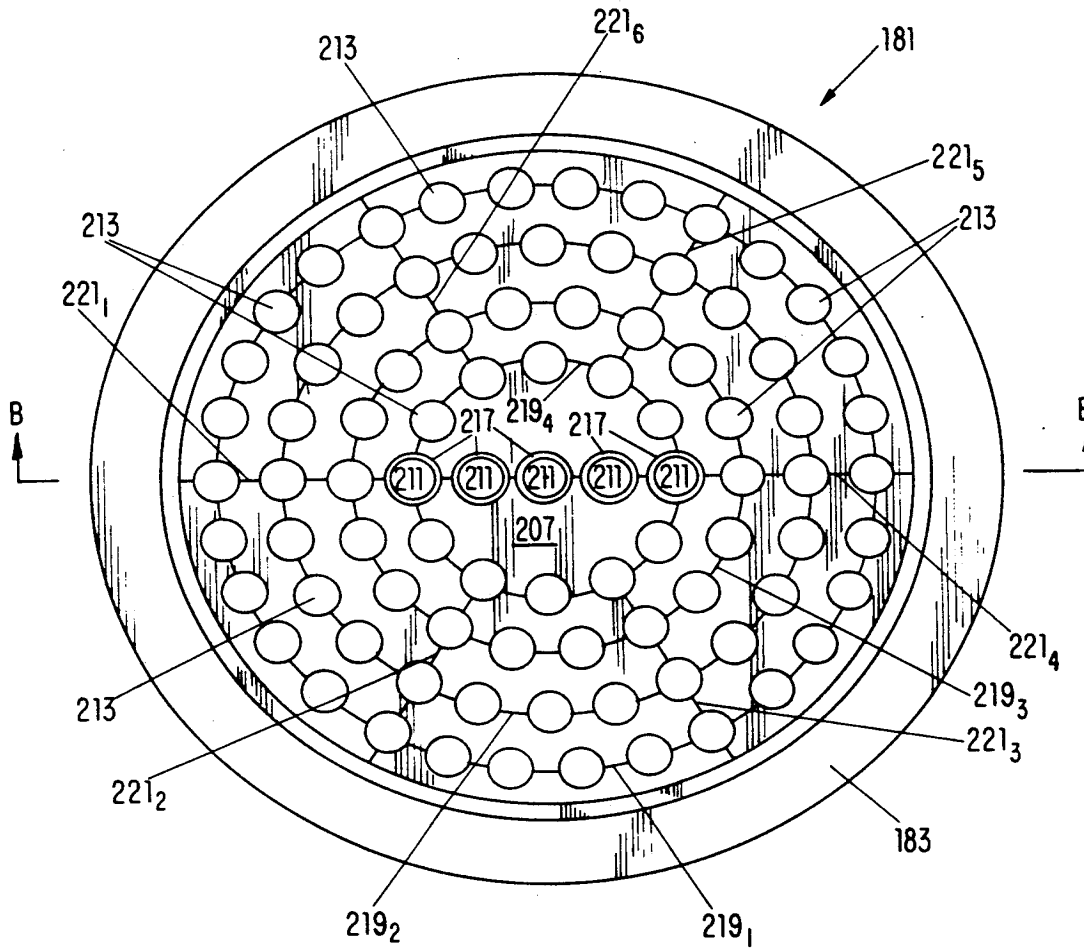


FIG -13

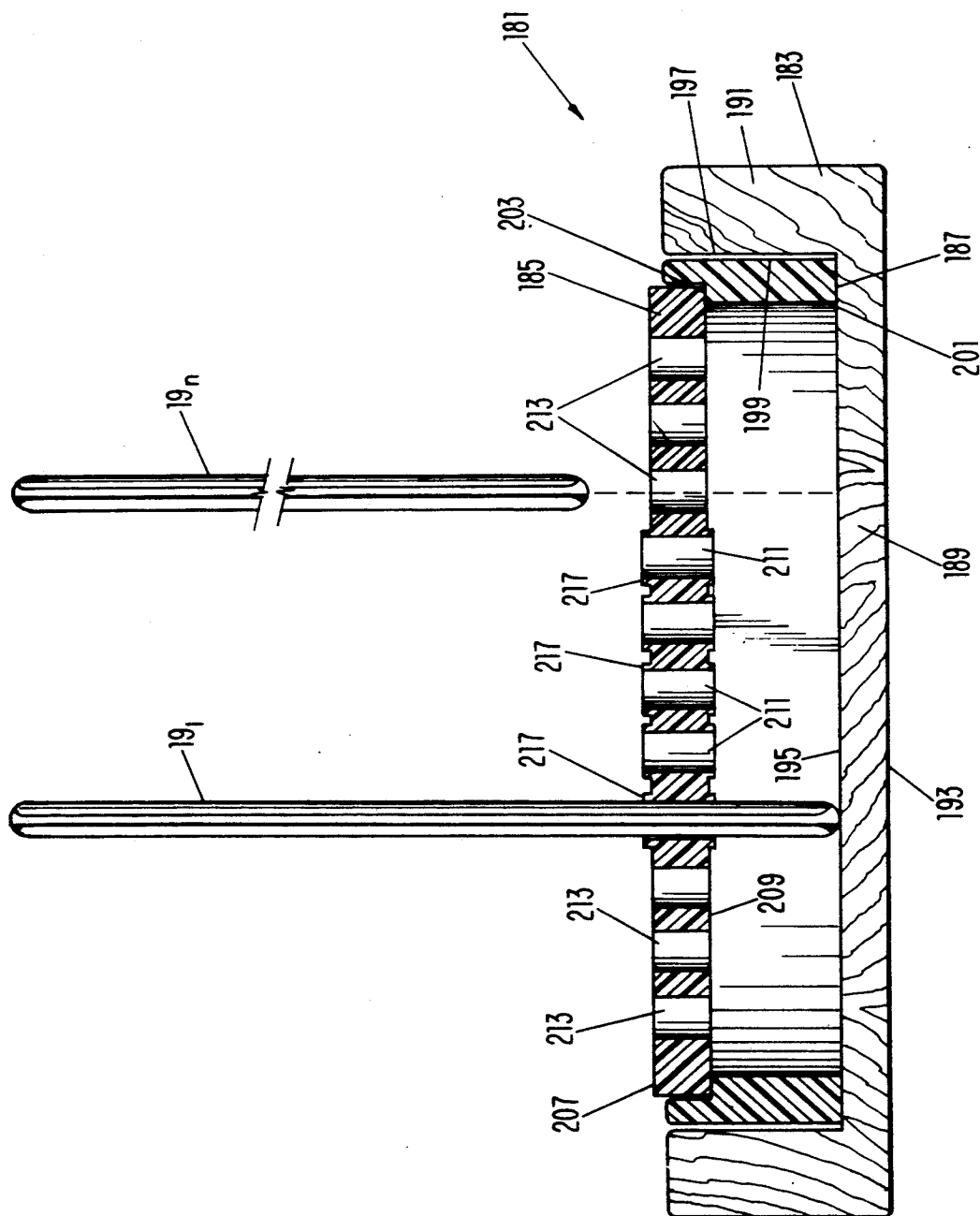


FIG-14

HAND TWINING LOOMS

TECHNICAL FIELD

The present invention relates generally to devices for performing handicraft activities, and more particularly to hand weaving looms.

BACKGROUND OF THE INVENTION

Handicraft activities have always enjoyed popularity for both educational and recreational purposes. Activities such as knitting, needlepoint, crocheting, and the like enhance manual dexterity and coordination, provide relaxation, and provide the satisfaction of creating a handmade article.

A number of hand weaving looms are disclosed in the prior art including: U.S. Pat. Nos. Re. 30,656, 4,192,046, 3,971,417, 2,739,437, 3,530,558, 2,803,051, 2,726,434, 2,563,510, 2,224,563, 2,166,668, 2,065,498, 1,975,924, 1,675,881, and 1,317,367; Canadian patents Nos. 1,044,573 and 1,003,305; and Swiss patents Nos. 258,565 and 164,808.

U.S. Pat. No. Re. 30,656 to Davitian discloses a weaving apparatus that includes a base portion 4, formed of resinous material, wood or metal. Mounted in and extending from base 4 are a plurality of elongated rods 8, which may be permanently or removably mounted in base 4 to form a comb-like frame assembly. The free end 22 of each rod 8 is notched. Notches 24 and lug posts 6 formed on base portion 4 cooperate to support the weft.

In the apparatus disclosed in van der Bosch-Meeves et al., U.S. Pat. No. 4,192,046, a locking apparatus, including lower block 1 and upper block 2, is used to hold a plurality of wooden weaving bars 11. At one end thereof, bars 11 have hooks 15 to which warp threads 18 are attached. In operation, those portions of bars 11 upon which the weft threads have already been drawn are locked between blocks 1 and 2 and the weaving proceeds on the ends opposite to hooks 15.

Gentil, U.S. Pat. No. 3,971,417 discloses a hand loom formed of a first set of needles 2_{1,3,5...13} held by holder 3 and a second set of parallel and alternating needles 2_{2,4,6...14} held by a second holder 5. All of these needles have at one end, a semicircular hook. At the opposite end each needle has a flattened region having an eye therein through which a warp filament is threaded. Holder 3 and the needles secured to it are movable laterally relatively to holder 5, to permit the odd numbered hooks to move relatively to the even number of hooks as the weft filament 17 is laid.

U.S. Pat. No. 3,739,437 discloses a weaving device in the form of a comb with a first set of fingers 36 being somewhat longer than a second set of fingers 38. This permits fingers 36 to be easily deflected relative to fingers 38 during the weaving process. U.S. Pat. No. 2,166,688 discloses a similar device.

Bacheller, U.S. Pat. No. 2,065,498 discloses what is described as a comb loom including a base 13 having a plurality of evenly spaced grooves 14. Fixed in the grooves are a like plurality of channel members 15. In addition to a straight base, a circular block 34 may be used to support the channel members. The open channel in each of members 15 permits a bodkin 20, to which is attached the warp thread, to pass through the weft. The bodkin has to be flexible to work and the channel members have to face in the same direction and align with the grooves 14. After the desired piece has been woven

on the loom it is, presumably, worked off members 15 with great difficulty. Denney, U.S. Pat. No. 1,675,881 also discloses a comb-like weaving structure in which a plurality of bars 19 are locked in a parallel arrangement by a timber 12 and a mating clamping bar or plate 13. Similarly, U.S. Pat. No. 1,317,367 to Hansen discloses a plurality of needles 10 firmly held by a holder of sheet metal. Swiss patents Nos. 258,565 and 164,808 appear to disclose similar structures.

The benefits associated with handicraft activities can be particularly important when working with children, including handicapped children, or with persons having learning and physical disabilities. For children, these activities can be stimulating and entertaining, and help instill the motivation required for initiating a project and following it through to completion. For persons having learning or physical disabilities, handicraft activities also provide rehabilitation and therapy, and can provide feelings of accomplishment and pride that come with creating an attractive craft item from simple starting materials. Even the set up of the loom provides a beneficial fine motor activity.

While activities such as knitting and needlepoint can be performed to make both useful and decorative items, these activities may be too complex and time-consuming for children and the learning or physically disabled. Handicrafts for these people can be most rewarding if they can be easily learned, and readily performed to create a finished article in a relatively short time. A handicraft activity which can be easily learned in a simple form, and can be further practiced employing more sophisticated techniques, is particularly desirable.

To this end, the present invention concerns a hand weaving device which: (1) is straightforward in construction for economical manufacture; (2) is easy to use; and (3) lends itself to use in various ways to permit practice of more sophisticated techniques as proficiency with the device is gained.

SUMMARY OF THE INVENTION

A method and apparatus for twining or weaving. The apparatus includes a plurality of elongated loom fingers and a loom. Each of the loom fingers is elongated, has first and second symmetrical tapered ends, and has an elongated groove running the entire length thereof. The loom includes: a first support that includes at least one plate-like member having a plurality of through holes therein which loosely support the loom fingers in a substantially parallel manner; a second support that has a finger engagement surface which, in the assembled form is adopted to engage one of the ends of each loom finger being used; and structure for detachably supporting the plate-like member altitudinally with respect to the second support.

The number of through openings in the plate-like member depends upon its size and shape. The through openings are arranged in one or more patterns, including straight lines, circles and/or ovals, or portions thereof. The pattern selected and the number of loom fingers used is at the discretion of the user.

In one embodiment, the second support is an elongated channel, with the structure for detachably supporting including a tongue and groove arrangement. In another embodiment, the second support includes a raised annular ring which has a lip thereon. The plate-like member is disc shaped and has an edge which cooperates with the lip for relative rotation thereto. In a

third embodiment the loom is in the form of a box like structure, with both the top and bottom have a hole pattern therein. In this case, the first support includes an intermediate master plate; the second support includes a tray for supporting this plate.

The method includes: positioning the plate-like member relative to the finger engagement surface; positioning the desired plurality of loom fingers in the through holes; wrapping or twining weft on the loom fingers; disengaging the plate-like member from the second support; moving the plate-like member relative to the finger ends which were in contact with the finger engaging surface; removing the fingers and the weft, as a unit, from the plate-like member; inserting the warp (from either end); and removing the loom fingers (without distorting the weaving). The loom fingers and weft can be repositioned relative to the second support with the opposite ends of the loom fingers in contact with the engaging surface, to reverse the direction of the weaving/twining of the weft.

The invention also contemplates the use of closed loop material as the weft, wherein the finger on which one loop ends is the same finger for starting the next loop.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the first preferred embodiment of the present invention, showing the loom finger storage tray;

FIG. 2 is an additional perspective view of the embodiment of FIG. 1;

FIG. 3 is a sectional view of the first embodiment taken along lines A—A of FIG. 2;

FIGS. 4, 5 and 6 are top plane schematics showing alternate tile and hole arrangements obtainable with the embodiment of FIG. 1;

FIGS. 7A, 7B, 7C and 7D are partial views illustrating the preferred method of weaving or twining the weft;

FIG. 8 is a perspective view illustrating the use of a hook and how it is used to pull the warp through the weft;

FIGS. 9A and 9B are schematics illustrating the method of weaving by reversing the direction of the loom fingers;

FIG. 10 is a top plane view of an alternate embodiment of the present invention;

FIG. 11 is an end view of the embodiment of FIG. 10;

FIG. 12 is an exploded perspective view of the embodiment of FIG. 10;

FIG. 13 is a top plane view of a third preferred embodiment of the present invention; and

FIG. 14 is a sectional view of the embodiment of FIG. 13, taken along lines B—B, with the addition of loom fingers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIGS. 1-3, loom 11 includes a base 13, two loom finger positioning end plates 15₁₋₂, intermediate loom finger positioning plates 17₁₋₄, and a plurality of loom fingers 19_{1,2,3...n}. Loom 11 also includes loom finger and hook storage tray 21.

Base 13 includes a bottom portion 23, and integral curved side portions 25 and 27. Bottom portion 23 has a flat exterior surface 29 and an interior loom finger support surface 31. Side portions 25 and 27 terminate in opposing parallel faces 33 and 35 which have, respec-

tively, facing longitudinal, parallel grooves 37 and 39. The exterior curved surfaces 41 and 42 are continuous with bottom surface 29; the interior surfaces 15 43 and 44, with surface 31.

Each plate 15 has a top surface 45, a bottom surface 47, and a plurality of loom finger receiving through openings 49. Each plate 15 also includes opposite and parallel tongues 51 and 53 which are designed to be slidably received in grooves 37 and 39 of base 13, as illustrated. Similarly, each plate 17 has a top surface 55, a bottom surface 57, a plurality of loom finger receiving perimeter through openings 59, and a plurality of loom finger receiving center through openings 61. Each plate 17 also has a pair of opposite and parallel tongues (not illustrated) which are also slidably received in grooves 37 and 39. When assembled with base 13, surfaces 45 and 55 lie in substantially the same plane which is continuous with curved surfaces 41 and 42. The distance between surfaces 45, 55 and 47, 57 and the diameter of openings 49, 59 and 61 are chosen such that plates 15 and 17 support a plurality of loom fingers 19 in substantially parallel fashion, without binding such loom fingers in their respective openings.

With reference to FIGS. 1, 2 and 4-6, it will also be seen that each plate 15₁₋₂ has a tongue 65, and a notch 67. Similarly, each plate 17₁₋₄ has a pair of tongues 69 and a pair of notches 71. Each tongue 65, 69 may have one or more dimples (not shown) for, in the assembled position, mating with depressions (also not shown) in the mating notches 67, 71, to form a unitary plate structure. However, as those skilled in the art will appreciate, the tongue and notch locking arrangement is optional and may be replaced with an alternate mechanism for holding plates 15 and 17 together, or dispensed with altogether.

Also with reference to FIGS. 1, 5 and 6 it can be seen that the pattern of openings 49 and openings 59 is a closed loop. The pattern formed by openings 61 is a straight line. As is also evident with reference to FIGS. 4, 5, and 6, the number of plates held by base 13 can be varied to form the desired hole pattern (e.g. circle, oval, partial oval, semi-circle, or straight line) and the desired size. As should also be apparent to those skilled in the art, a single unitary plate having the desired hole pattern or patterns could be used instead of a plurality of plates 15₁₋₂ and 17₁₋₄. Further, long plates could be used to link two or more base members 13.

As is evident from FIGS. 2 and 3, each loom finger 19 has symmetrical ends 73₁ and 73₂, symmetrical tapered portions 75₁, 75₂ and an elongated groove 77 running the entire length thereof, which results in a C-shaped cross-section. As is also evident from FIGS. 2 and 3, each loom finger is slidably received in a through opening (49, 59 or 61, as the case may be) in plates 15 and/or 17, with one of its ends 73₂ in contact with surface 31. Each loom finger 19 is formed of wood, plastic or metal.

As an optional feature, loom 11 may also be provided with a storage tray 21 for loom fingers 19 and one or more hooks (such as illustrated in FIG. 8). Tray 21 includes an elongated channel portion 81, having curved exterior sides 83 and 85, a top end portion 87 and a bottom end portion 89. Exterior surfaces 83 and 85 and the bottom surface (not shown) are shaped and dimensioned to be slidable received within the channel formed by interior support surface 31 and surfaces 43 and 44. Bottom end portion 89 includes a continuous lip 91 which, when tray 79 is received within base 13, abuts

one of the end faces of base 13. Channel portion 81 has the same length as base 13 so when tray 79 is received in base 13, the exposed face (not shown) of top end portion 87 is flush with other of the end faces of base 13. Top end portion 87 also includes a handle 93 which can be used for carrying or hanging up loom 11.

Base 13, tray 79 and plates 15₁₋₂ and 17₁₋₄ are, preferably, made of plastic. However, other materials such as wood or aluminum, or combinations thereof, could also be used.

In operation, with plates 15 and 17 assembled with base 13 as illustrated in FIGS. 2 and 3, the desired plurality of loom fingers 19_{1,2,3,4...} are slidably received in openings 49, 59 and/or 61. For each loom finger 19, one of its symmetrical ends 73₂ touches and is supported by surface 31. While only four loom fingers 19 are illustrated, it will be appreciated that, for instance, an elongated straight line of loom fingers can be formed utilizing all of openings 61. Alternately, a closed oval can be formed utilizing all of openings 49 and 59. With the loom fingers 19_{1,2,3,4} positioned as illustrated in FIG. 3, the weft can be applied with any conventional soft weaving material such as knits, bias fabrics, twines and yarns, in any conventional manner. However, it is preferred to use closed loop material made from fabric which has some elasticity, such as closed loops made from T-shirt type material.

With reference to FIGS. 7A, 7B, 7C and 7D, the preferred and what is believed to be a unique weaving technique is illustrated. As illustrated in FIGS. 7A and 7B the closed loop weft 101₁ is simultaneously wrapped around opposite sides of each loom finger 19_{1,2}. When the user reaches the end of a row, weft 101₁ is double turned around loom finger 19₃, as illustrated in FIG. 7C. Weaving or twining of weft 101₁ can proceed from left-to-right and then back (i.e., from right-to-left), which encourages the user to use opposite hands. Alternately, the position of loom 11 can be rotated 180°, as illustrated in FIG. 7C. The ending of weft 101₁ is illustrated in FIG. 7D, as is the starting of a second weft 101₂. The first loop of the second weft 101₂ always goes on the same loom finger 19₃ as the previous weft 101₁ ended on. This procedure eliminates two of the major chores of conventional weaving: knotting and burying ends.

After the weft weaving or twining has been completed, it and loom fingers 19_{1-n} can easily be removed from loom 11. Removal of a completed weft from apparatus such as disclosed in Bacheller, U.S. Pat. No. 2,065,498, is likely to be slow as the weaving has to be carefully worked off the fixed loom fingers of the comb loom. Even if carefully worked off, this causes distortion of the weaving. In contrast, with loom 11 of the present invention, plates 15 and/or 17 are slidably removed from base 13 and then quickly pushed off loom fingers 19 by placing the ends 73₂, which were in contact with surface 31, onto a flat surface and then pushing plates 15 and/or 17 toward such flat surface, whereby the tapered end portions 75₂ of loom fingers 19 are only loosely received in openings 49, 59 and/or 61 and can be easily removed from plates 15 and/or 17.

With reference to FIG. 8, after removal of loom fingers 19_{1-n} from plates 15 and/or 17, warp thread 103 or other suitable material is inserted in the weft formation by attaching such warp to a conventional hook 105 which is passed through channels 77 of loom fingers 19. Preferably the hook portion 107 of hook 105 faces the inside of channel 77. After the warp has been added,

each loom finger 19 can quickly and easily be removed on an individual basis, rather than trying to remove all loom fingers simultaneously, as required by Bacheller, U.S. Pat. No. 2,065,498.

The ability to quickly and easily remove loom fingers 19 (together with the weft formation thereon) from plates 15 and/or 17 provides an additional unique advantage of permitting weaving from the center out. For instance, as schematically illustrated in FIGS. 9A and 9B, a diamond pattern is easily created, by first weaving a triangle as illustrated in FIG. 9A. Loom fingers 19_{1,2,3,4,5,6,7} are then separated from plates 17 in the manner set forth above, plates 17 reassembled with base 13 and loom fingers 19_{1,2,3,4,5,6,7} reinserted such that opposite ends 73₁ now engage surface 31 of base 13. Weaving or twining of the other half of the diamond, such as illustrated by phantom lines 109 may now proceed with, for instance, the same type and color material. The foregoing is in contrast with conventional weaving techniques where, to weave a diamond or other shape, one has to weave the background first. For many people, particularly novice weavers, this is conceptually difficult.

With reference to FIGS. 10, 11 and 12, alternate loom embodiment 111 is illustrated. Loom 111 includes a base 113, a top 115, a master plate 117, and an intermediate and reversible tray 119. For purpose of illustration the width and breadth of loom 111 are reduced in scale. Wall thickness is also not to scale.

Base 113 includes a bottom 121, having an exterior surface 123 and a parallel interior surface 125, and a plurality of through loom finger receiving openings 127. Openings 127 are evenly spaced along a line which bisects bottom 121. Base 113 also includes a continuous side having an interior surface 131, an exterior surface 133 and a continuous lip 135.

Top portion 115 includes: a top 139, having exterior surface 141 and interior surface 143; and a continuous side 145, which includes interior surface 147, exterior surface 149, and continuous shoulder 151. As illustrated in FIG. 11, when assembled with base 113, lip 135 seals against shoulder 151; surfaces 133 and 149 form a continuous exterior side surface; and surfaces 131 and 147 form a smooth continuous interior side surface. As best illustrated in FIG. 10, top 139 includes a plurality of loom finger receiving through openings 155, with three in the middle and the rest evenly distributed around four concentric circles. The three middle openings, together with opposing pairs on each of the concentric circles form a straight line of eleven openings.

Reversible tray 119 includes a bottom 157, having interior surface 159 and exterior surface 161; and a continuous side 162, having interior surface 163, exterior surface 165 and continuous top edge 167. Tray 119 is dimensioned such that it fits, without too much lateral play, within both the interior of base 113 (as illustrated in FIGS. 11 and 12) or, alternatively, within the interior of top portion 115. When received in top portion 115, exterior surface 161 is in contact with interior surface 143.

Master plate 117 includes a top surface 169, a bottom surface 171, a continuous edge 173, and a plurality of loom finger receiving openings 175. The pattern of openings 175 matches that of openings 155; eleven in a straight line in the middle, the rest evenly distributed around four concentric circles.

In operation, with loom 111 assembled as illustrated in FIGS. 11 and 12, with plate 117 resting on top edge

167. A plurality of loom fingers 19_{1-n} is then placed in openings 155 and matching openings 175 in the desired pattern, with the loom finger ends 73₂ resting on surface 159 of tray 119. A straight line of up to eleven loom fingers is one pattern option; a continuous circle using the openings in the outermost concentric circle is another. After the weft is twined on loom fingers 19_{1-n}, top portion 115 of loom 111 is separated from base 113. Because of the lateral forces placed on loom fingers 19_{1-n} by the weft, loom fingers 19_{1-n}, top 115 and plate 117 are held together. Tray 119 is then removed from base 113 and placed on a flat surface with edge 167 in contact with such flat surface. The ends 73₂ of loom fingers 19_{1-n} are then placed in contact with surface 161 and plate 117 and top 115 pushed in a downward direction to move such loom fingers 19_{1-n} upward to the point where the tapered portions 75₂ are loosely received in openings 155 and 175 and can easily be removed therefrom.

If the user is a beginner, loom 111 can be flipped over so that the five hole pattern of openings 127 is exposed. Internally, the positions of tray 119 and plate 117 are reversed. Tray 119 is also flipped over, such that interior surface 159 faces one of surfaces 169, 171 of plate 117. The center five openings 175 of plate 117 match the straight line pattern of holes 127 in base 113. The operation of twining, removing the loom fingers from the loom, inserting the warp and then removing the loom fingers 19₁₋₅ is the same as described above.

A third embodiment of the invention is illustrated in FIGS. 13 and 14. Loom 181 includes a base 183, a loom finger positioning plate 185, a ring member 187 and a plurality of loom fingers 19_{1-n}. Base 183 includes a bottom portion 189 and a donut shaped side portion 191. Bottom portion has a flat exterior support surface 193 and a flat interior support surface 195. Side portion 191 includes an interior cylindrical surface 197. Ring 187 has an exterior cylindrical surface 199, a bottom surface 201 and an annular notch 203. Ring 187 and base 183 are made of suitable materials, such as plastic and wood, with cylindrical surface 199 dimensioned to be slidably and rotatably received within cylindrical surface 197, without either binding or undue slop.

Plate 185, which serves the same function as plates 15 and/or 17, includes a top surface 207, a parallel bottom surface 209 and a plurality of loom finger receiving through holes 211₁₋₅ and 213_{1-n}. Plate 185 also includes a cylindrical edge 215 which is dimensioned to slidably fit within notch 203 in ring 187. Openings 211 and 213 all have the same diameter. Openings 211 are, however, each provided with a raised cylindrical collar 217 to make the line defined by these openings more visible to the user, particularly the visually impaired user. As with the embodiment of FIGS. 1-3, the distance between surfaces 207 and 209 and the diameter of openings 211 and 213 is such that, when assembled, loom fingers 19 are held in substantially parallel fashion. Top surface 207 is also inscribed with a pattern of circular lines 219₁₋₄ and straight lines 221₁₋₆ to identify potential loom finger patterns for the user.

In operation, the embodiment of FIGS. 13 and 14 is the same as that of the embodiment of FIGS. 1-3. The pattern of openings 211 and 213 permits the formation of both rectangular and cylindrical woven articles. The use of ring 187 permits plate 185 to be rotated relative to base 183 for the convenience of the user, without undue wobbling of plate 185 relative to base 183.

Whereas the drawings and accompanying description have shown and described the preferred embodiment of the present invention, it should be apparent to those skilled in the art that various changes may be made in the form of the invention without affecting the scope thereof.

What I claim is:

1. A loom comprising:

- (a) a plurality of elongated loom finger elements, each of said elements having a first and a second end and an elongated groove therein, each said groove running the length of each said element;
- (b) a first loom finger support means including first and second surfaces interconnected by a plurality of openings, each of said openings adapted to slidably receive one of said loom finger elements, said surfaces being spaced from each other a distance which, in conjunction with the diameter of said openings is sufficient to position said plurality of said loom finger elements in substantially parallel fashion;
- (c) a second loom finger support means, said second support mean including a third surface for supporting one of said first or second ends of each of said loom finger elements when said first loom finger support means is assembled with said second loom finger support means and when said loom finger elements are received in said openings of said first loom finger support means; and
- (d) means provided on said first and second loom finger support means for detachably assembling said first loom finger support means relative to said second loom finger support means, whereby said first and second surfaces are spaced altitudinally with respect to said third surface, and whereby each of said loom finger elements passes through one of said openings in said first loom finger support means has its said first or second end in contact with said third surface, and whereby, when said means for detachably assembling are not positioning said first loom finger support means relative to said second loom finger support means, said loom finger elements can be moved relative to said openings by moving said first loom finger support means toward said ends which contacted said third surface.

2. The loom as set forth in claim 1, wherein said first loom finger support means comprises at least one plate-like member, and said second loom finger support means includes at least one side portion, said means for detachably assembling being provided on said first loom finger support means and said side portion.

3. The loom as set forth in claim 2, wherein said second finger support means includes two side portions which define a generally U-shaped channel member, said means for detachably assembling being provided on said, first loom finger support means and said side portions.

4. The loom as set forth in claim 3, wherein said side portions have a pair of elongated grooves therein and said plate-like member has a pair of tongues which are slidably received in said grooves, whereby said plate-like member may be detached from said second loom finger support means by a sliding motion to expose each of said one of said first or second ends which had been in contact with said third surface.

5. The loom as set forth in claim 3, wherein said first loom finger support member comprises a plurality of

plate-like members, each of said members having a pair of tongues and at least one said openings, which plate-like members can be selectively added and/or interchanged to vary the number of said openings available for said loom finger elements.

6. The loom as set forth in claim 5, wherein each of said plate-like members includes means for interlocking with an adjacent said plate-like member.

7. The loom as set forth in claim 3, further including an elongated tray for the storage of said loom finger elements which is slidably received within said second loom finger support means.

8. The loom as set forth in claim 2, wherein said side portion is a continuous closed perimeter which, in conjunction with said third surface, defines a cavity, said third surface defining the bottom of said cavity.

9. The loom as set forth in claim 8, wherein said plate-like member has said plurality of openings therein, which openings are arranged in circular, linear and semi-circular patterns which permit a multitude of choices for positioning said loom finger elements.

10. The loom as set forth in claim 8, wherein said plate-like member is disc shaped, said continuous side portion includes an annular ring, said means for detachably assembling including a lip on said ring, said disc shaped plate being rotatably received in said annular ring.

11. The loom as set forth in claim 10, wherein said ring is separate from said side portion and is received in said cavity for rotation relative to said side portion.

12. The loom as set forth in claim 1, wherein said first loom finger support means includes a first plate-like member having a plurality of said openings therein, said first loom finger support means also including a second plate-like member spaced from first plate-like member and having a plurality of said openings therein, said openings in said second plate-like member being in alignment with at least some of said openings in said first plate-like member.

13. The loom as set forth in claim 12, wherein said second loom finger support means includes a third plate-like member, and wherein said loom includes a fourth plate-like member having a plurality of openings therein which are in alignment with some of said openings in said second plate-like member.

14. The loom as set forth in claim 13, wherein said means for detachably assembling said finger support means and said second finger support means includes mating portions on said first and fourth plate-like members.

15. The loom as set forth in claim 14, wherein both said first plate-like member and said fourth plate-like member include projecting lips, said lips cooperating to, in the assembled loom, form a box-like structure.

16. The loom as set forth in claim 13, further including means on said third plate-like member for supporting said second plate-like member relative to both said first and fourth plate-like members.

17. The loom as set forth in claim 16, wherein said third plate-like member is a tray-like member having a flat bottom, said flat bottom forming said third surface.

18. The loom as set forth in claim 17, wherein said tray-like member can be placed on either side of second plate-like member for supporting said second plate-like member.

19. A method of twining or weaving comprising the steps of:

(a) positioning a plurality of elongated loom finger elements having first and second tapered ends and an elongated groove therein in a support which includes first and second movable member contacting said first tapered ends;

(b) wrapping weft on said loom finger elements;

(c) moving said loom finger elements substantially in unison relative to said first movable member whereby said first tapered ends are loosely received in said openings;

(d) removing said loom fingers and said weft, as a unit, from said first movable member;

(e) inserting warp to said weft; and
(f) removing said loom fingers from said warp and said weft.

20. The method as set forth in claim 19, wherein the warp can be inserted from either end of said loom finger elements.

21. The method as set forth in claim 19, wherein said loom finger elements are removed from said weft and warp without distorting said weft and warp.

22. The method as set forth in claim 19 wherein, after said loom fingers and said weft are removed from said first moveable member and before inserting said warp, said second ends of said loom fingers are inserted in said openings, and said loom fingers are moved relative to said first member until said second tapered ends contact said second moveable member, whereby the direction of wrapping said weft is reversed without removing said weft from said loom finger elements.

23. The method as set forth in claim 19, wherein said movement of said loom finger elements relative to said first moveable member includes the steps of moving said first member relative to said second member to expose said first ends, and further including the step of then contacting said first ends with a surface to move said loom finger elements relative to said first movable member whereby said first tapered ends are loosely received in said openings.

24. The method as set forth in claim 23, wherein said movement of said first member relative to said second member is a lateral sliding movement.

25. A method of twining comprising:

(a) positioning a plurality of loom finger elements in a spaced array;

(b) twining a piece of closed loop material on said fingers;

(c) ending said closed loop material on one of said fingers; and

(d) starting a second piece of closed loop material on said one of said fingers.

* * * * *

[54] COTTER PIN

[75] Inventor: Stephan C. Hobson, Buffalo Grove, Ill.

[73] Assignee: Portec, Inc., Oak Brook, Ill.

[21] Appl. No.: 720,401

[22] Filed: Sept. 3, 1976

[51] Int. Cl.² F16B 21/14

[52] U.S. Cl. 85/8.3; 24/201 LP; 24/213 B

[58] Field of Search 85/8.3, 8.1, 7, 5 R, 85/5 E, 5 M, 80; 24/73 SM, 213 B, 213 R, 214, 201 LP; 151/5, 6

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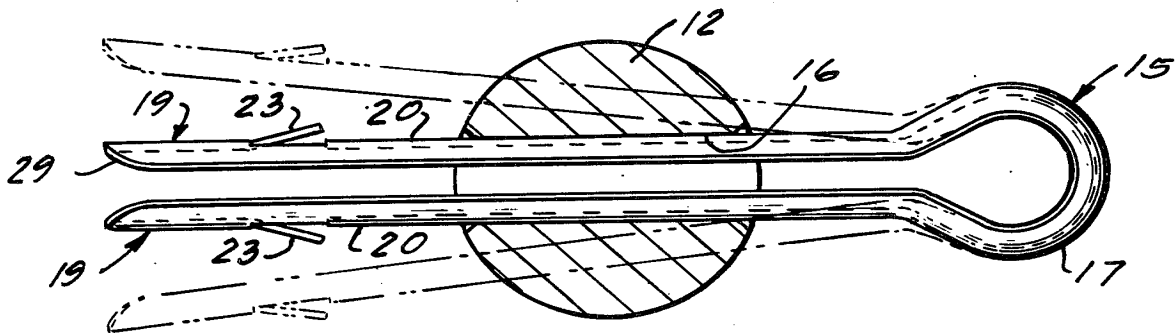
Primary Examiner—Ramon S. Britts

Attorney, Agent, or Firm—Hill, Gross, Simpson, Van Santen, Steadman, Chiara & Simpson

[57] ABSTRACT

Heavy-duty cotter pin for retaining retainer member in position. The legs of the cotter pin each have an integrally formed locking arm extending angularly outwardly therefrom, locking the cotter pin in position without forcefully spreading or deforming the legs. The legs of the cotter pin are biased outwardly relative to each other and extend from a bight portion of the pin at equal angles with respect to the longitudinal center line of the pin. The legs are moved toward and laterally of each other to enter the hole of a pin or other retainer member and clear the locking arms from the hole. The locking arms are maintained in their angular outwardly extending position, both during placing of the cotter pin in a hole and removing the cotter pin from the hole. The pin cannot be released except by flexing the legs toward each other against their spring bias and then moving them laterally in opposite directions to clear the locking arms from the internal periphery of the hole and to accommodate ready removal thereof, without deforming the legs.

4 Claims, 6 Drawing Figures



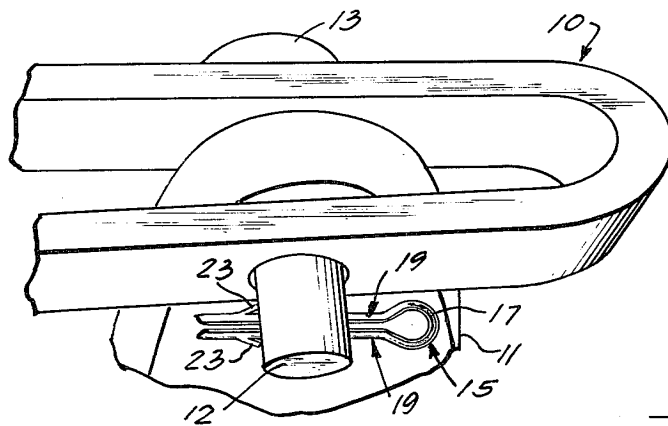


FIG. 1

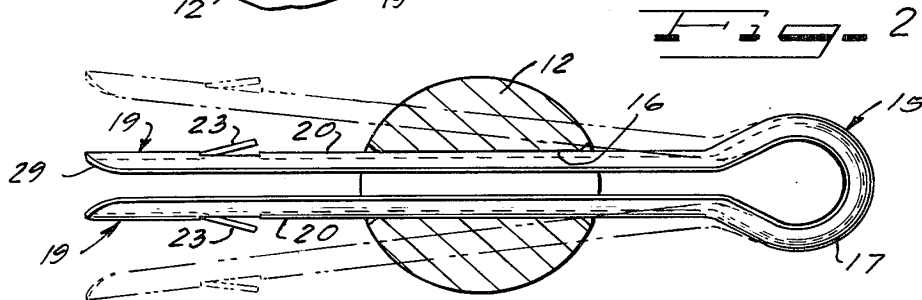


FIG. 2

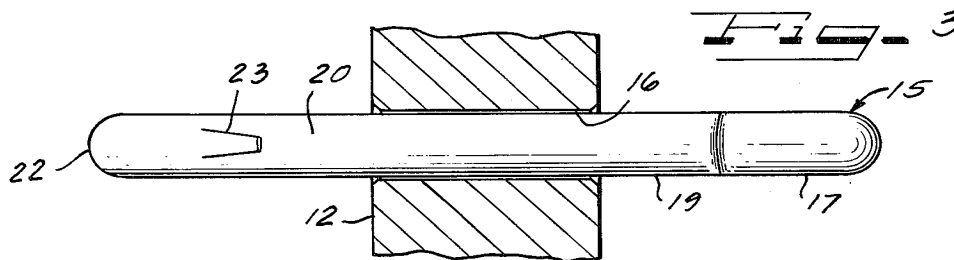


FIG. 3

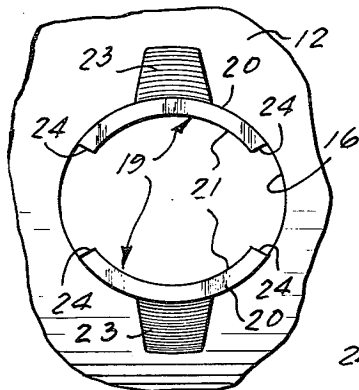


FIG. 4

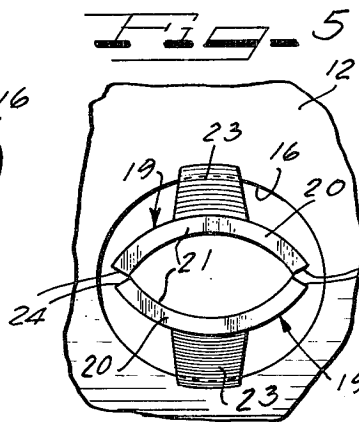


FIG. 5

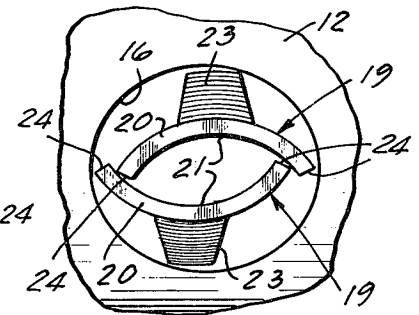


FIG. 6

COTTER PIN

FIELD OF THE INVENTION

Heavy-duty cotter pin for relatively large diameter holes in a pin or other retaining member, such as found in Class 85/5e, 8.1, and 8.3.

PRIOR ART, SUMMARY AND ADVANTAGES OF INVENTION

The U.S. Pat. No. 2,121,425 to Cooke shows a cotter pin of a type in which the legs of the pin are sprung apart by a wedge and the like and deformed by the wedge to retain the cotter pin in position in a stud or pin. This patent also shows a retainer for the pin which fits between the legs of the pin and has locking arms lanced out of its opposite sides to retain the retainer member to the cotter pin. These locking arms cooperate with a wedge-shaped spreading section spreading the legs of the cotter pin. The locking arms project outwardly of the retainer a greater extent than the diameter of the cotter pin hole and are resiliently pressed toward each other during their passage through the cotter pin hole and rely upon their resiliency to move outwardly and lock the cotter pin in position when the fingers are free of the hole.

The U.S. Pat. No. 1,172,813 to McCoy shows a cotter pin in which the legs of the pin abut each other when in a closed position and are tapered inwardly as they approach the end of the pin, to form inwardly inclined shoulders towards the ends of the legs bearing into engagement with a nut or other member, to be locked in position.

U.S. Pat. Nos. 1,913,555; 1,171,740; 937,402; 443,260; 270,410 and 140,715 also show various forms of locking means for locking a cotter pin or other type of pin to its hole.

The present invention improves upon the cotter pins of the prior art references just mentioned in that the legs of the cotter pin are not deformed beyond their normal state when locking the pin in position and locking fingers lanced from the legs of the cotter pin normally engage the member to be locked by the cotter pin even when the legs are pressed together in alignment with each other, but are readily released by pressing the legs of the cotter pin toward each other and then moving one leg laterally in one direction and the other leg in an opposite direction to accommodate removal of the cotter pin from its hole without deforming the legs of the pin or the locking means therefor. The cotter pin, therefore, cannot work loose even though the legs may inadvertently be moved towards each other by external pressures thereon.

An advantage of the invention, therefore, is in the provision of a heavy-duty cotter pin for relatively large diameter holes, which may be locked in position or removed from its hole, without bending the legs or the locking means for the cotter pin.

A further advantage of the invention is in the simplicity and positiveness of the cotter pin and locking means therefor in which the cotter pin is so arranged as to lock a pin or other device in position without deforming the cotter pin, and in which the pin cannot be removed without moving the legs of the cotter pin toward each other and laterally relative to each other.

A still further advantage and object of the invention is the provision of a new and improved cotter pin having

legs conformable with a round hole and yieldably biased outwardly relative to each other in which the cotter pin and legs may be made from a yieldable metal and the legs have concave inner surfaces formed concentrically with the outer surfaces of the legs, in which the locking means comprises locking fingers lanced from the legs and extending in diametrically opposed relation and outwardly of the outer concave surfaces of the legs, and accommodate insertion of the pin by compressing the legs toward each other and accommodating partial nesting of the legs relative to each other with no deformation of the locking fingers.

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a generally perspective view of a yoke and lever in which the lever is pivoted to the yoke by a pin, and the pin is held to the yoke by a cotter pin constructed in accordance with the principles of the present invention;

FIG. 2 is a sectional view taken through the fastening member or pin and showing the cotter pin in a locked position in an apertured portion of the fastening member;

FIG. 3 is a view somewhat similar to FIG. 2, but showing the cotter pin in plan view in order to more clearly show the locking fingers;

FIG. 4 is an end view of the cotter pin showing the legs of the cotter pin in their extended positions, with the pin locked to the hole in the fastening member;

FIG. 5 is a view somewhat similar to FIG. 4, but showing the legs compressed and illustrating how the locking fingers retain the pin in position in its fastening member when compressed; and

FIG. 6 is a view showing the legs of the cotter pin moved together and laterally relative to each other to partially nest the legs and clear the locking fingers from hole in the fastening member.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF INVENTION

In FIG. 1 of the drawings, I have shown for illustrative purposes, a member 10, which may be a yoke, pivoted to another member 11, which may be a lever, by a pivot member, shown as being a pin 12 having a head 13. The pivot or fastening member may perform various uses, and in the drawings is shown as held in position by a cotter pin 15 constructed in accordance with the principles of the present invention. The fastening member or pin 12 has a transversely extending round apertured portion or hole 16 formed therein through which the cotter pin 15 fits, as shown in FIGS. 2 and 3.

The cotter pin 15 includes a bight portion 17 having concave legs 19 extending therefrom. The legs 19, as shown in FIGS. 4, 5 and 6, have an outer periphery 20 formed on the arc of a circle and struck from a radius slightly smaller than the radius of the apertured portion 16, to accommodate insertion and removal of the cotter pin from apertured portions 16 of various diameters. Opposite sides 24 of said legs are spaced from each other when inserted in an apertured portion to accom-

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modate movement of said legs towards and from each other and laterally of each other, when compressed.

The legs 19 are biased outwardly when in an uncompressed free state, and are moved toward and laterally of each other when placing the cotter pin in the apertured portion 16 or removing the pin therefrom. While the outward bias of the legs may vary, it has been found that with the average heavy-duty cotter pin fitting through a relatively large diameter hole, where the legs maintain a 15° position, a convenient bias is obtained to enable the legs 19 to be readily compressed or moved toward each other and inserted into the apertured portion 16. The bias, of course, may depend upon the size of the cotter pin and the member to be held in position thereby. The legs 19 should be sufficiently resilient to enable ready compression of said legs for insertion of the cotter pin into its apertured portion. The leading ends of the legs 19 are herein shown as being curved, as indicated by reference number 22, to facilitate the insertion of a cotter pin in an apertured portion, as said legs are moved towards each other against their bias.

The locking means for the cotter pin locking the pin to its securing member and apertured portion are shown as being in the form of locking fingers and may be lanced out of the legs 19 in diametrically opposed relation with respect to each other, and are shown in FIG. 3 as being larger at their base than at their outer ends, although they may be of the same width at their base as at their outer ends for certain conditions, and in all cases, are formed integrally with the legs 19 and have a thickness equal to the distance between the internal and external arcuate surfaces of said legs.

The locking fingers 23 usually extend at the same angular relation with respect to their respective legs at angles accommodating insertion of the cotter pin in the apertured portion 16, as the concave legs are partially nested in each other, but preventing removal of the cotter pin when the legs 19 are pressed together in alignment with each other. The cotter pin, thus, will not come loose when the legs 19 are accidentally pressed toward each other, and may only be removed by intentionally moving the two legs 19 laterally of each other in opposite directions, to partially nest said legs to partially overlap at their ends, as shown in FIG. 6 and then easily sliding the cotter pin from the apertured portion 16.

As previously mentioned, the arcs of the outer peripheries of the legs 19 are struck from lesser diameters than the diameter of the apertured portion through which the pin fits to accommodate insertion of the pin by merely pressing the two legs together and partially nesting the legs relative to each other and then sliding the cotter pin through said apertured portion. Moreover, with the pin shown, the cotter pin is locked in position by the locking arms 23 with no deformation of the legs 19 or locking arms 23, except by the bias of said legs as they engage the inner periphery of the apertured portion 16.

The cotter pin of the present invention, therefore, avoids the necessity of spreading the legs to lock the cotter pin to its apertured portion and further avoids the necessity of straightening the legs when it is desired to remove the pin, which oftentimes destroys the efficiency of the cotter pin and makes it necessary to use a new pin each time it is desired to remove and replace the fastening member or pin 12. This is particularly

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advantageous when a cotter pin of 3/8 inch or larger is used and provides a locking connection preventing the cotter pin from working out of its apertured portion, even if the legs should be moved toward each other into a position like that shown in FIG. 5.

It will be apparent to those skilled in the art that many modifications and variations may be effected without departing from the spirit and scope of the novel concepts of the present invention.

I claim as my invention:

1. In a cotter pin and in combination with a fastening member having a transversely extending apertured portion having a circumferential inner periphery with said cotter pin being positioned within said apertured portion, said cotter pin having a bight portion at one end and opposed legs extending from said bight portion and biased outwardly relative to each other to normally extend at predetermined equal angles with respect to the longitudinal center of the cotter pin, said legs of said cotter pin being spaced apart throughout their length in said apertured portion and being adapted to fit through apertured portions of various diameters by compressing said legs toward each other, said legs having outer ends projecting beyond said fastening member and a locking arm extending outwardly of each of said legs adjacent the outer ends of said legs and formed integrally therewith and having free ends facing the fastening member and retaining said cotter pin in position in said fastening member by the bias of said legs, without deforming the free ends of said legs the dimension between the free ends of said locking arms when said legs are compressed into diametrically opposed engagement with each other being greater than the maximum transverse dimension of said apertured portion whereby said locking arms prevent accidental removal of the cotter pin should said legs be inadvertently pressed into engagement with each other, said outer surfaces of said legs having a shape corresponding to the shape of the apertured portion, and the inner surfaces of said legs being concave throughout the length thereof including the outer ends, said locking arms being formed integrally of said legs and said locking arms being released to accommodate removal of the cotter pin from said apertured portion by pressing said legs together and then moving said legs laterally of each other in opposite directions and partially nesting the ends of said legs relative to each other to clear the ends of said locking arms from the apertured portion and thereby permit ready removal of the cotter pin.

2. The cotter pin of claim 1 wherein said locking arms are lanced outwardly of said legs in diametrically opposed relation with respect to each other, and are of a greater width at their junctures with said legs than at their free ends.

3. The cotter pin of claim 1 wherein the apertured portion is of a circular cross section and the external peripheries of said legs are formed on the arcs of a circle, substantially equal to the diameter of the apertured portion, and said locking arms are diametrically opposed and lanced out of said legs in diametrically opposed relation with respect to each other.

4. The cotter pin of claim 3 wherein the unrestricted outward bias of said legs is in the order of 15° to enable said legs to compensate for holes of varying diameters.

* * * * *



US005426788A

United States Patent [19]
Meltzer

[11] **Patent Number:** **5,426,788**
[45] **Date of Patent:** **Jun. 27, 1995**

- [54] **RING-LIKE HEADWEAR ORNAMENT**
- [75] **Inventor:** Faith M. L. Meltzer, Ambler, Pa.
- [73] **Assignee:** U.S.A. Knitting Co., Inc., Philadelphia, Pa.
- [21] **Appl. No.:** 219,595
- [22] **Filed:** Mar. 29, 1994
- [51] **Int. Cl.⁶** A42C 5/00
- [52] **U.S. Cl.** 2/171; 2/207; 2/DIG. 11
- [58] **Field of Search** 2/1, 171, 174, 207, 2/311, DIG. 11; 59/78, 79.1, 80, 82, 83; 63/3, 4, 5.1, 11; 87/13; 132/273, 275; D2/894, 895; D11/3, 4, 5, 6, 93

- [56] **References Cited**
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- 568,531 9/1896 Harthan 59/83
- 2,840,983 7/1958 Keilbach 63/11
- 5,073,989 12/1991 Teague 2/DIG. 11

Primary Examiner—Clifford D. Crowder
Assistant Examiner—Diana L. Biefeld
Attorney, Agent, or Firm—Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd.

[57] **ABSTRACT**

An ornament, e.g., a hair band, headband, hat band, etc., and method of making it. The ornament comprises a plurality of looped links and a looped connecting member. Each of the looped links is formed of an flexible, somewhat elastic, e.g., knitted, material in the nominal shape of a toroidal loop, but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection. The looped connecting member is in the form of a loop of the same material and has a central opening. The looped links are interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends. One of the ends of the chain-linked strip comprising the looped connecting member and the other end comprises the looped link forming that end. The looped connecting member is extended through the open ends of the looped link forming the other end of the chain-linked strip and is folded back over itself and secured, e.g., glued, to a portion of it to convert the chain-link strip into a ring. The looped connecting member simulates the shape of the other looped links of the ring.

17 Claims, 3 Drawing Sheets

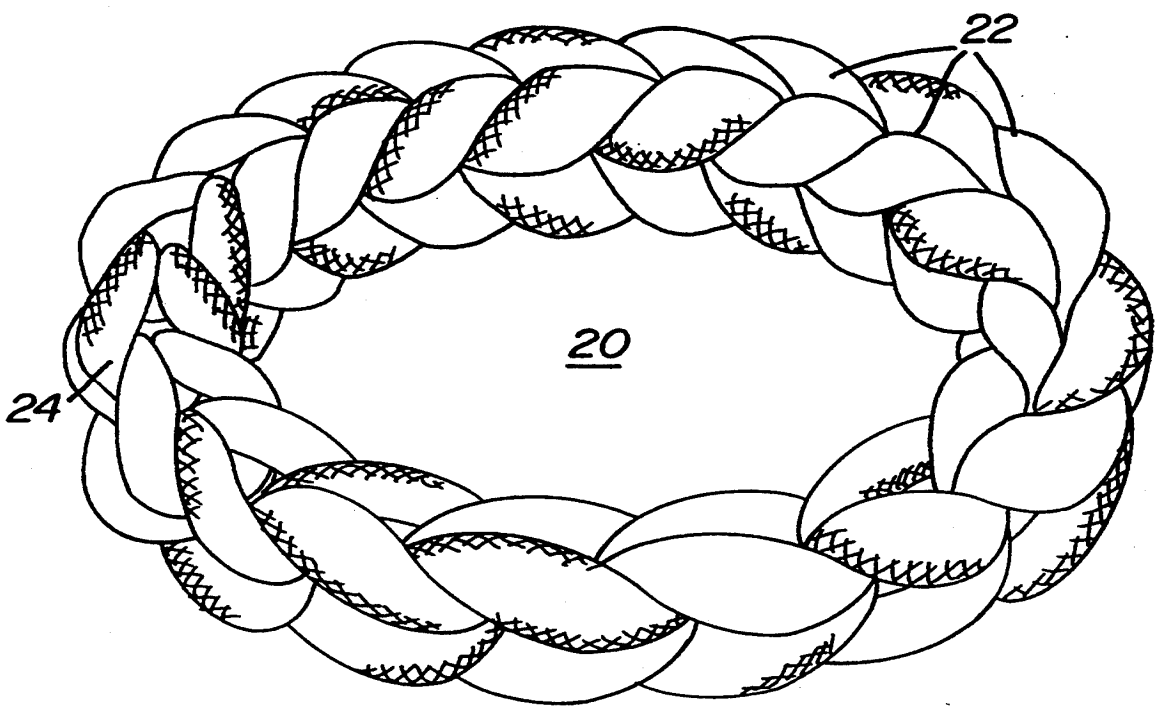
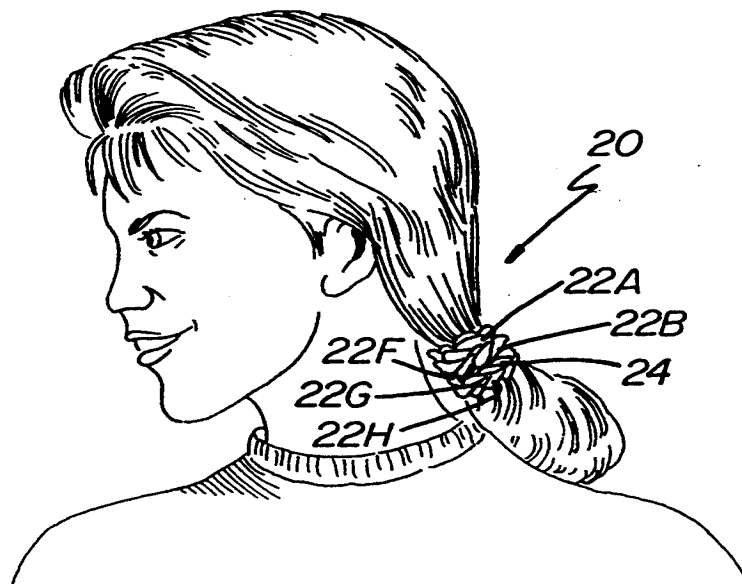




FIG. 2

FIG. 1



LaRose Ex. 1022, p. 2

Tristar Ex. 1004, pg. 256

FIG. 3

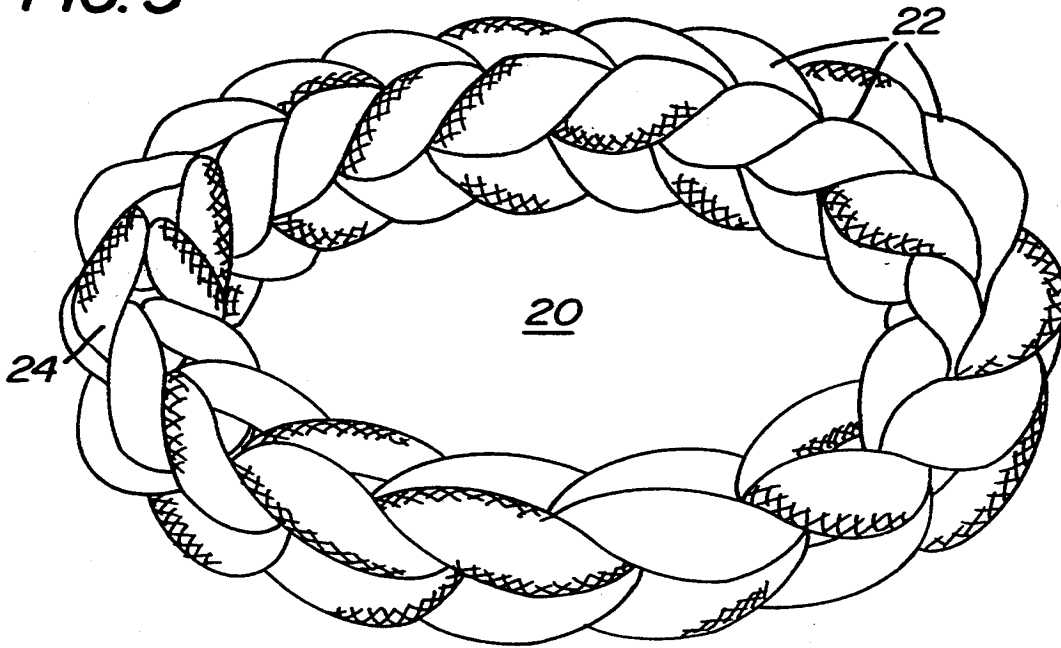
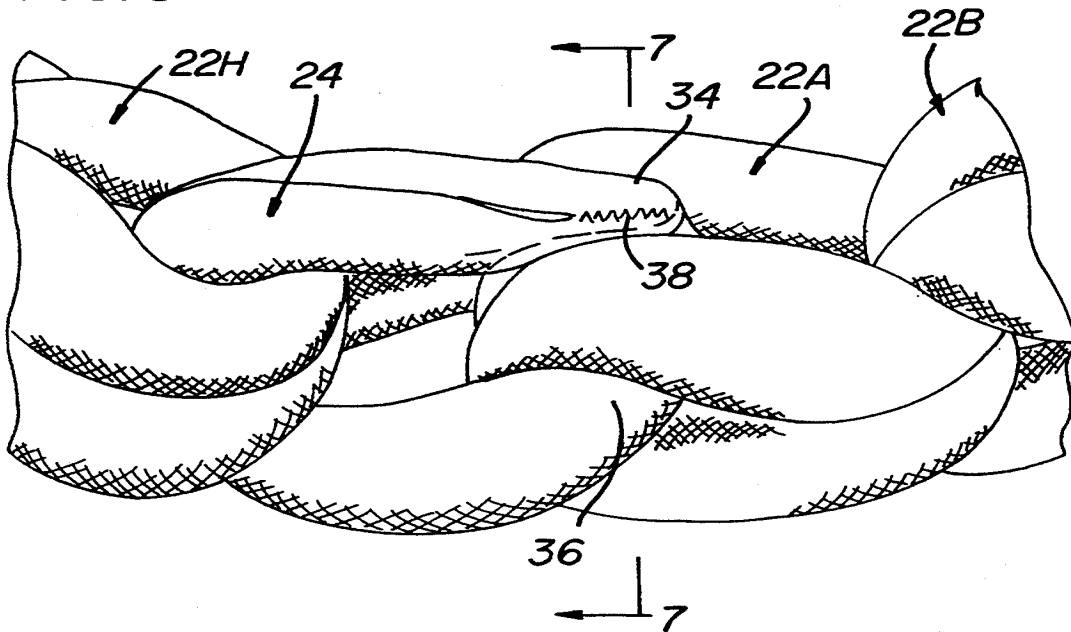
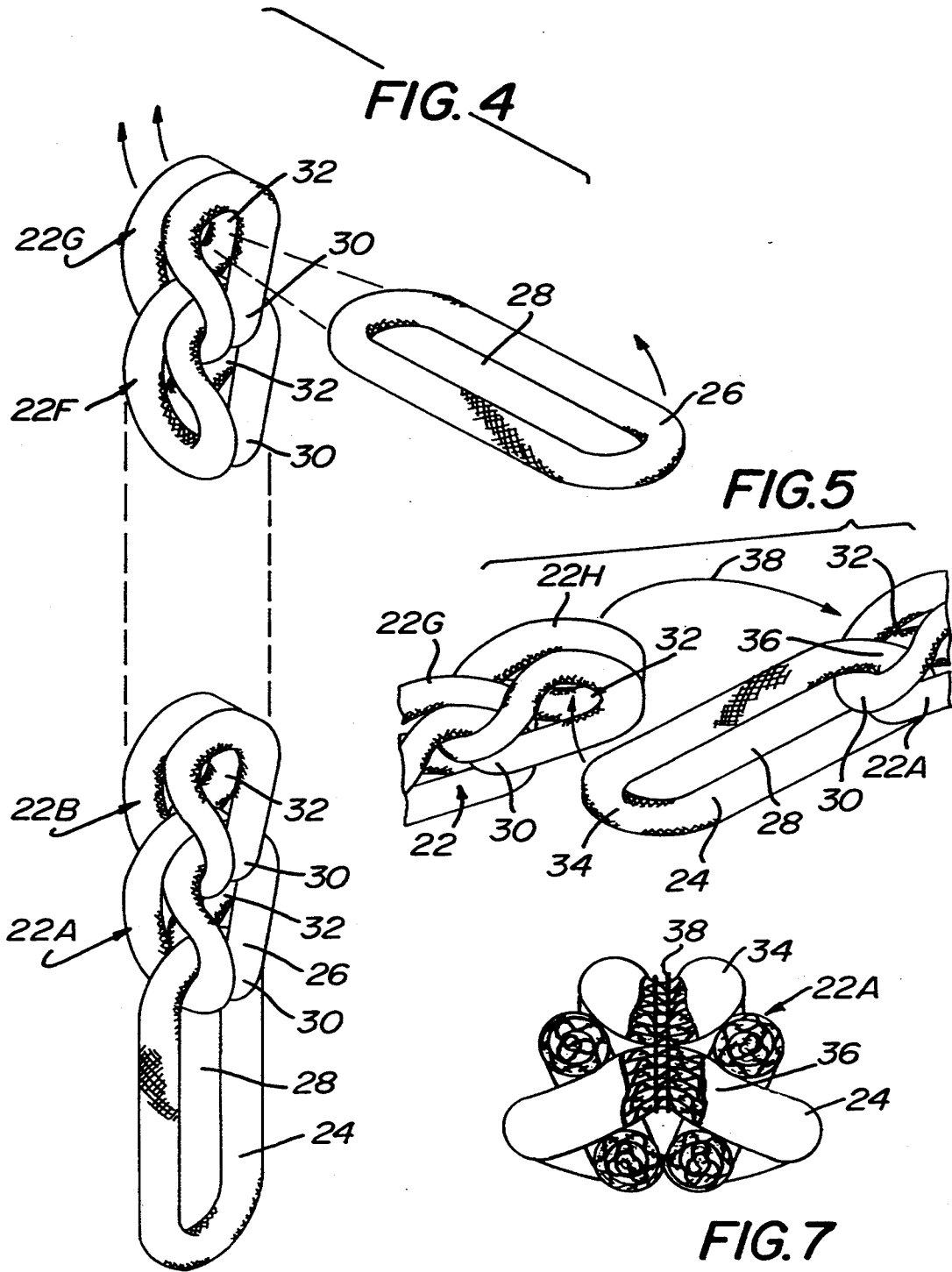


FIG. 6





RING-LIKE HEADWEAR ORNAMENT

BACKGROUND OF THE INVENTION

This invention relates generally to hair ornaments, and more particularly to devices for holding hair, e.g., a ponytail holder, or to be worn on the head as a headband or on a hat as a hat band.

Various elastic rings are commercially available for use as ponytail holders and some are the subject of United States Letters Patent. For example in U.S. Pat. No. 292,030 (Revson) there is shown a gathered fabric ring for holding a pony tail. Commercially available devices bearing that patent number are constructed utilizing a generously sized ring of a decorative fabric and having an elastic ring disposed therein to cause the fabric ring to gather into many folds. Resulting ring can then be used directly or twisted up into a "figure 8" configuration to hold strands of gathered hair, e.g., a ponytail.

In U.S. Pat. No. 5,156,171 (Goodman) there is disclosed a ponytail holder which is formed of a relatively wide fabric ring having a tubular annulus around a central hole, and an elastic ring having a portion that is readily grasped, as by having a knob, such as a bead, for pulling a loop of the elastic ring outside of the fabric ring. The fabric ring with its contained portion of the elastic ring, can encircle a pony tail once and grip the pony tail and the loop of the elastic ring outside the fabric ring can encircle the pony tail separately.

In U.S. Pat. No. 5,044,385 (Rhodes) there is disclosed a ponytail holder comprising an endless planar elastic band and at least one flattened hollow tube of a flexible material and having mutually interconnecting end edges. The flattened tube is interconnected to the elastic band along the axial length of the tube and the band while the band is in an expanded or stretched condition. The hollow tube includes radially inwardly directed cut edges extending through less than the width of the tube to form two ply radially outwardly extending members which simulate petals of a flower.

While the aforementioned patents appear generally suitable for their intended purposes, e.g., to hold the strands of hair forming a pony tail, the never the less leave something to be desired from one or more of the following standpoints, aesthetic appeal, effectiveness, ruggedness or resistance to damage from repeated usage, ease of manufacture, cost.

Hence, a need presently exists for a hair/head ornament which address those deficiencies of the prior art.

OBJECTS OF THE INVENTION

Accordingly, it is a general object of this invention to provide a hair/head ornament which overcomes the disadvantages of the prior art.

It is a further object of this invention to provide a hair/head ornament which is aesthetically pleasing.

It is still a further object of this invention to provide a hair/head ornament which is easy to make.

It is still a further object of this invention to provide a hair/head ornament which can be manufactured at a relatively low cost.

It is yet a further object of this invention to provide a hair/head ornament which is of rugged construction to be resistant to damage from repeated usage.

SUMMARY OF THE INVENTION

These and other objects of this invention are achieved by providing a ring-like ornament, e.g., a hair band, headband, hat band, etc., for wearing on a portion of a person and a method of making the ornament.

The ornament comprises a plurality of looped links and a looped connecting member. Each of the looped links is formed of an flexible, somewhat elastic material in the nominal shape of a loop but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection. The looped connecting member is in the form of a loop having a central opening.

The looped links are interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends. One of the ends of the chain-linked strip comprises the looped connecting member. The other of the ends of the strip comprises a pair of openings of the looped link forming that other end.

The looped connecting member is bent into a shape having a free end which is extended through the openings of the looped link forming the other of the ends of the chain-linked strip and is bent over itself and secured by securement means to another portion of it to connect the ends of the chain-link strip and thereby form a ring-like ornament and so that the looped connecting member is shaped to simulate the shape of the looped links.

The method of the making the ornament entails providing a looped connecting member and a plurality of looped links formed of an flexible, somewhat elastic material in the nominal shape of a loop. The looped connecting member has a central opening and is formed of the same material as the looped links. The looped links are connected together by supporting the looped connecting member, squeezing a first looped link together to flatten it somewhat and passing the flattened first looped link within the central opening of the looped connecting member. Then the first looped link is opened within the looped connecting member in a manner so that the first looped link includes a bridging midsection extending through the central opening in the looped connecting member and a pair of end openings extending outside of the looped connecting member. Then a second looped link is squeezed together to flatten it somewhat and the flattened second looped link is passed within the extending end openings of the first looped link. This procedure is continued until a predetermined number of looped links are connected together to form a chain-link strip.

The chain-linked strip has a first end defined by the looped connecting member and a second end defined by a looped link having a bridging midsection and a pair of end openings.

The looped connecting member is then grasped to flatten a portion of it and to extend the flattened portion of it through the end openings of the looped link forming the second end of the chain-linked strip. The flattened portion of the looped connecting member is bent over itself and secured to the portion thereof which extends through the end openings of the first looped link. This action thereby interconnects the linked loops and forms a closed ring while causing the looped connecting member to simulate the appearance of the looped links of the ring, so that the entire ring looks like it is formed of serially connected looped links.

DESCRIPTION OF THE DRAWINGS

Other objects and many attendant features of this invention will become readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is an isometric view of a person wearing a ponytail holder embodiment of an ornament constructed in accordance with this invention;

FIG. 2 is an isometric view of a person wearing a head band embodiment of an ornament constructed in accordance with this invention;

FIG. 3 is an enlarged isometric view of the embodiment of the ornament shown in FIG. 2;

FIG. 4 is an enlarged exploded isometric view showing a portion of the procedure entailed in the making of the ornaments of FIGS. 1 and 2;

FIG. 5 is an enlarged isometric view showing another portion of the procedure for making the ornaments of FIGS. 1 and 2;

FIG. 6 is an enlarged isometric view of a portion of the ornaments shown in FIGS. 1 and 2; and

FIG. 7 is a sectional view taken along line 7—7 of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to various figures of the drawing where like reference numerals refer to like parts there is shown at 20 in FIG. 1, a ring-like ornament for use on the head of a person constructed in accordance with the subject invention. Depending upon the size the ornament 20 can be used as a hair, e.g., pony tail holder (FIG. 1), a head band (FIG. 2), a hat band (not shown), or any other decorative object worn on the head or on a hat.

The ornament 20 basically comprises a plurality of identical looped links 22 (FIGS. 1 and 2) and a connecting loop 24 (FIGS. 1 and 7). In the pony tail holder embodiment of FIG. 1 the ornament comprises eight links 22A—22H and a connecting loop 24. The looped links 22A—22H are interconnected, as will be described later, to form a chain-linked strip, having a pair of ends which are connected together by the connecting loop 24 to close the ring. In the head band or hat band embodiment significantly more looped links 22. Thus, as can be seen in FIGS. 2 and 3 the head band embodiment includes 17 looped links and one connecting loop (although more or less looped links can be used, depending upon the size desired—as will be described later).

Each of the looped links 22 and the connecting loop 24 of each ornament is formed of a flexible, somewhat stretchable material. Moreover, all of the looped links and the connecting loop may be formed of the same material, having the same color and texture, or may be formed of different materials/colors/textures, depending upon the aesthetics desired. In some preferred embodiments the looped links and connecting loop are formed of identically sized loops of a knitted fabric, which may be of the same color or different colors etc. The loops are preferably formed by taking an elongated tube of knitted material of a predetermined inside diameter, e.g. 2 inches (5.08 cm), severing transverse sections of a predetermined width, e.g., 1 inch (2.54 cm), therefrom, and rolling each of the sections up to form plural toroidal shaped loops 26 (See FIG. 4) of approximately 2 inch (5.08 inside diameter).

A first of the toroidal shaped loops 26 makes up the heretofore identified connecting loop 24, while other toroidal shaped loops make up the looped links of the ornament. Thus, for the pony tail holder of FIG. 1 eight toroidal shaped loops are used to make up the looped links 22A—22H. It should be pointed out at this juncture that the ornament shown herein, with eight looped links 22A—22H, and one connecting loop 24 (which is bent into a shaped simulating a looped link—as will be described later) is only exemplary. Thus, the size and number of looped links which are used in an ornament 20 of this invention is a function of the desired diameter of the ornament. When an ornament is formed using eight looped links 22A—22H, and one connecting loop, each formed of toroidal loops of the exemplary size set forth above, the resulting "nine loop ornament" has an unstretched inside diameter of approximately 1.25 inches (3.18 cm).

Reference should now be made to FIGS. 4—7 to understand the manner in which the ornament is made. Thus, to make the ornament 20 the connecting loop 24 is supported by hand (or by some mechanical means) and a second toroidal loop 26 is connected to it to form the first looped link 22A. In particular, the second toroidal loop 26 is squeezed together to flatten it somewhat. This flattened loop is then passed through the central opening 28 of the looped connecting member 24. Then the ends of the flattened second toroidal loop 26 are opened while its mid-portion is within the opening 28 of the looped connecting member 24 so that the second toroidal loop 26 is in a configuration having a bridging midsection 30 and a pair of end openings 32, with the bridging midsection 30 extending through the opening 28 in the looped connecting member 24 and the end openings 32 being axially aligned with each other and located outside of the looped connecting member 24.

As should be appreciated by those skilled in the art this action forms the second toroidal loop into the first looped link 22A.

After the first looped link 22A is formed (and connected to the connecting loop 24) a third toroidal loop 26 is squeezed flat and inserted through the axially aligned extending end openings 32 of the first looped link 22A. The third toroidal shaped loop 26 is then opened so that it is in the same configuration as the first looped link 22A, to thereby form the third toroidal loop into the second looped link 22B. This procedure is then repeated to form and connect the remaining looped links 22C—22H of the ornament 20.

Once the last looped link, e.g., 22H, has been formed the resulting construction will be in the form of an elongated chain-linked strip having a first end defined by the connecting loop 24 and a second end defined by the last of the looped links, i.e., 22H, as shown in FIG. 5.

In order to complete the ornament the elongated strip is rolled into a ring, bringing its two ends in close proximity to each other as shown in FIG. 5. Then the looped connecting member 24 is grasped, either by hand or by machine, to flatten it so that it has a free end 34 disposed opposite to the end 36 to which the first looped link 22A is secured. The flattened free end portion 34 of the connecting member 24 is then extended through the axially aligned end openings 32 of the looped link 22H which forms the opposite end of the chain-linked strip. Then the flattened portion free end portion 34 of the looped connecting member 24 is bent back over itself in the direction of arrow 38 and into engagement with its

end portion 36 and is secured thereto by any suitable means. In the embodiment shown herein the securement is by one or more stitches 38 and/or an adhesive (not shown). As shown clearly in FIG. 7 this action forms the connecting loop 24 into a configuration which simulates the appearance of a looped link and closes ring, thereby completing the ornament. The resulting ring-like ornament will have the appearance of an unbroken chain-link since each of the members making it up will exhibit the same general appearance.

The ornament 20 can be used in any suitable manner. For example, a "nine looped ornament" like the exemplary one described above, can be doubled up, i.e., bent into the shape of a "figure 8" and flattened so that it forms a double ring of smaller diameter. This arrangement is shown in FIG. 1 and is particularly suitable for holding a small bunch of hair, e.g., a pony tail, together. For larger bunches of hair, the ornament 20 can be used directly without doubling it up. When the ornament is to be used as a headband or hat band it is can be used either singly, doubled, tripled, etc., depending upon the number and size of the looped members making it up.

In the interests of aesthetic appeal the ornament may be provided with decorative ornamentation on component members. Such ornamentation can take various forms, e.g., beads, jewels, pins, etc.

It should be pointed out at this juncture that other material than the disclosed knitted fabrics can be used for forming the looped links and connecting loop. In fact, the material forming those members need not be a fabric at all, so long as it is somewhat elastic so that when formed into a loop or band it is can be stretched and twisted or bent. Moreover, the members forming the looped links and the connecting loop need not be toroidal, nor need they be fabricated as described above.

It should also be pointed out the connector loop can be secured to itself in various other manners than adhesives or stitching 38 so that it closes the ring-like ornament and simulates a looped link.

Without further elaboration the foregoing will so fully illustrate my invention that others may, by applying current or future knowledge, adapt the same for use under various conditions of service.

I claim:

1. A ring-like ornament for wearing on a portion of a person comprising a plurality of looped links and a looped connecting member, said looped connecting member comprising a loop of a somewhat elastic material and having a central opening therein, each of said looped links being formed of an flexible, somewhat elastic material in the nominal shape of a loop but bent into a shape having a bridging midsection and a pair of openings on each side of the bridging midsection, said looped links being interconnected with one another so that the bridging midsection of one looped link extends through the openings in the immediately adjacent looped link to form an elongated chain-link strip having a pair of ends, one of said ends of said chain-linked strip comprising said looped connecting member, the other of said ends of said strip comprising a pair of openings of the looped link forming that other end, said looped connecting member being bent into a shape having a free end which is extended through the openings of the looped link forming the other of the ends of the chain-linked strip and is bent over itself and secured by securement means to another portion of the looped connecting member to connect the ends of the chain-link strip and

thereby form a ring-like ornament, and with the looped connecting member being shaped to simulate the shape of the looped links.

2. The head ornament of claim 1 wherein said looped links and said looped connecting member are each formed of an elastic fabric.

3. The head ornament of claim 2 wherein said elastic fabric is knitted.

4. The head ornament of claim 1 wherein said securement means comprises an adhesive.

5. The head ornament of claim 1 wherein said securement means comprises at least one stitch.

6. The head ornament of claim 1 wherein said looped links are all of the same color.

7. The head ornament of claim 1 wherein said looped links comprises plural colors.

8. The head ornament of claim 1 wherein said ring can be configured for holding strands of hair therein.

9. The method of claim 1 wherein said looped links are each formed of a loop of fabric and wherein said looped connecting member is formed of a loop of the same fabric.

10. The method of claim 9 wherein said loop of fabric is initially in the form of a tube which is severed to form plural loops of fabric.

11. The method of claim 10 wherein each of said plural loops of fabric is rolled up to form an toroidal shaped member.

12. The method of claim 9 wherein said fabric is knitted.

13. The method of claim 9 wherein said fabric is of the same color.

14. The method of claim 9 wherein said fabric is of different colors.

15. A method of forming a ring-like ornament for wearing on a portion of a person comprising a plurality of looped links and a looped connecting member shaped like said looped links, said method comprising providing a plurality of looped links formed of a flexible, somewhat elastic material in the nominal shape of a loop, providing a looped connecting member having a central opening and being formed of the same material as the looped links, interconnecting said looped links together by supporting said looped connecting member, squeezing a first looped link together to flatten it somewhat and passing the flattened first looped link within the central opening of the looped connecting member, opening the first looped link within said looped connecting member in a manner so that the first looped link includes a bridging midsection extending through the central opening in the looped connecting member and a pair of end openings extending outside of the looped connecting member, squeezing a second looped link together to flatten it somewhat and passing the flattened second looped link within the extending end openings of the first looped link, continuing said procedure until a predetermined number of looped links are connected together to form a chain-link strip, said chain-linked strip having a first end defined by said looped connecting member and a second end defined by a looped link having a bridging midsection and a pair of end openings, grasping said looped connecting member to flatten a portion of it and extending said flattened portion of the looped connecting member through the end openings of the looped link forming the second end of the chain-linked strip, and then bending said flattened portion of the looped connecting member over itself and securing said flattened portion of the looped connecting

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member to the portion thereof which is extending through the end opening of the first looped link to thereby interconnect the linked loops and form a closed ring and cause the looped connecting member to simulate the appearance of the looped links of the ring.

the portions of the looped connecting member together is effected by use of an adhesive.

17. The method of claim 15 wherein the securing of the portions of the looped connecting member together is effected by use of at least one stitch.

16. The method of claim 15 wherein the securing of

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US008418434B1

(12) **United States Patent**
Carruth et al.

(10) **Patent No.:** **US 8,418,434 B1**
(45) **Date of Patent:** **Apr. 16, 2013**

(54) **FASHION ACCESSORY OF INTEGRATED CONTINUOUS UNITS AND METHODS OF MAKING THEREOF**

(76) Inventors: **Jack Carruth**, Woodstock, GA (US);
Danielle Carruth, Woodstock, GA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 35 days.

(21) Appl. No.: **13/177,180**

(22) Filed: **Jul. 6, 2011**

Related U.S. Application Data

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F16G 13/16 (2006.01)
F16G 15/12 (2006.01)

(52) **U.S. Cl.**
USPC **59/83**; 59/80; 59/85; 59/90; D11/12; D11/13

(58) **Field of Classification Search** 59/78, 80, 59/82, 83, 84, 85, 90, 91, 92; D11/3, 12, D11/13

See application file for complete search history.

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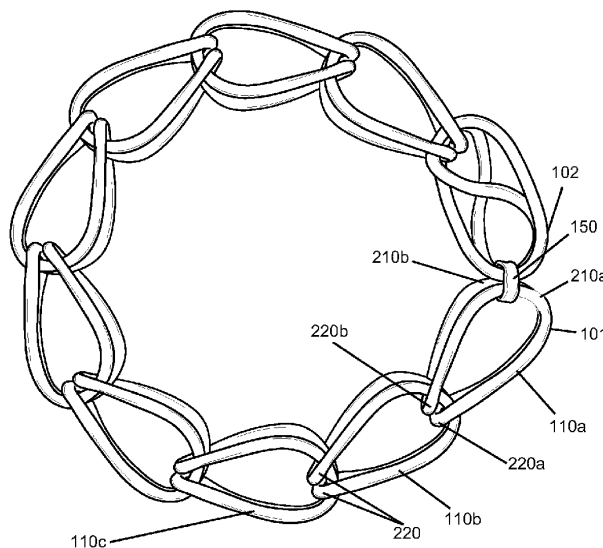
* cited by examiner

Primary Examiner — David B Jones

(57) **ABSTRACT**

A fashion accessory featuring a plurality of units connected together to form a continuous chain having a first end and a second end. The first end and second end are connected together via a locking means. Each unit is a loop. The units each occupy a folded configuration. In the folded configuration, the unit is folded in half to form a first top arc and a second top arc that are positioned next to each other, and a first bottom hook and a second bottom hook that are positioned across from each other. Adjacent units are fed through both bottom hooks and subsequently moved to occupy the folded configuration.

8 Claims, 2 Drawing Sheets



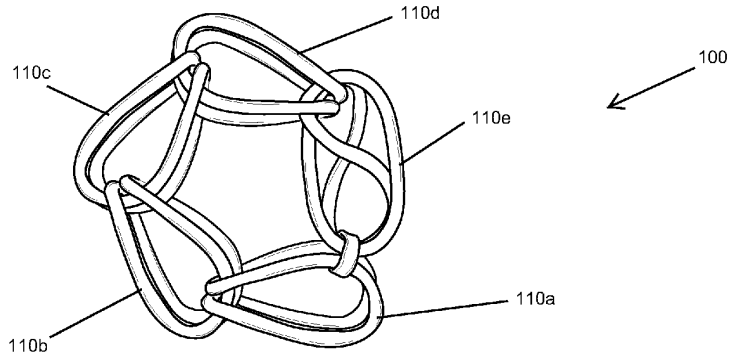


FIG. 1

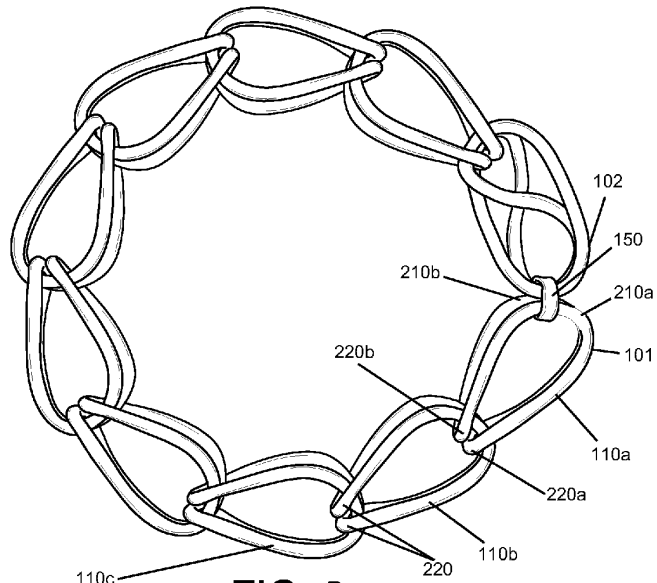


FIG. 2

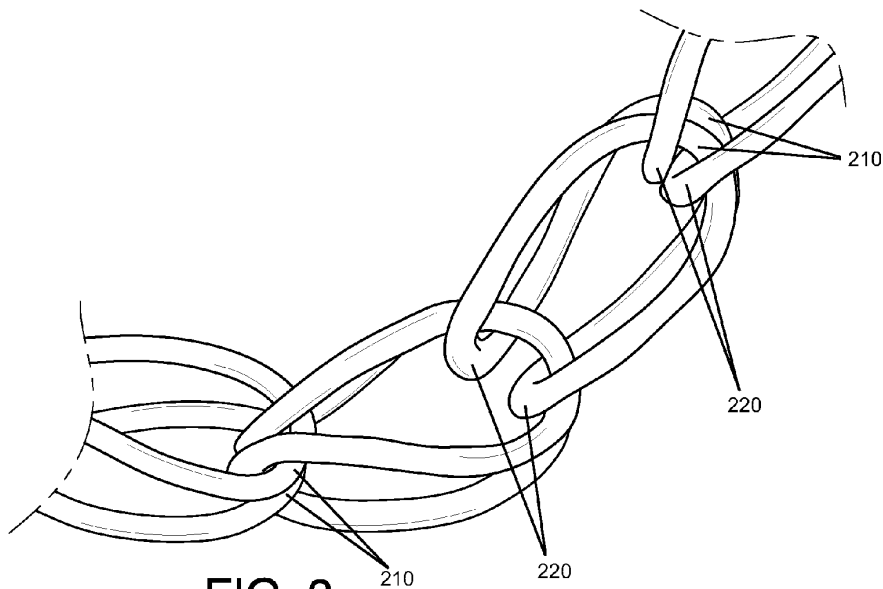


FIG. 3

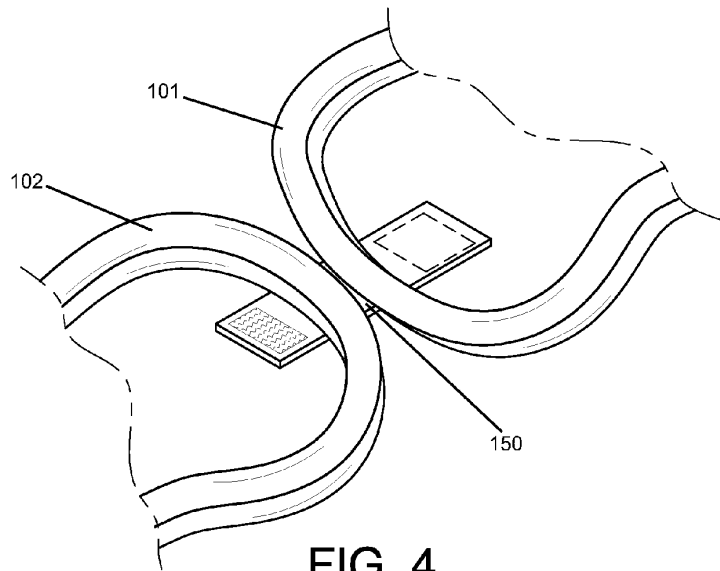


FIG. 4

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**FASHION ACCESSORY OF INTEGRATED
CONTINUOUS UNITS AND METHODS OF
MAKING THEREOF**

CROSS REFERENCE

This application claims priority to U.S. provisional application Ser. No. 61/361,990 filed Jul. 7, 2010, the specification of which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

The present invention is directed to a fashion accessory, more particularly to an accessory made from integrated continuous units.

BACKGROUND OF THE INVENTION

The present invention features a novel fashion accessory, which may be used for a variety of purposes and applications. For example, in some embodiments, the accessory of the present invention is used as a necklace, a bracelet, an anklet, a dog collar, a luggage tag holder, a headband, a hatband, an eyeglasses holder, a backpack accessory, a keychain, the like, or a combination thereof. The present invention is in no way limited to the aforementioned applications.

Any feature or combination of features described herein are included within the scope of the present invention provided that the features included in any such combination are not mutually inconsistent as will be apparent from the context, this specification, and the knowledge of one of ordinary skill in the art. Additional advantages and aspects of the present invention are apparent in the following detailed description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 2 is a top view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 3 is an exploded view of a fashion accessory of integrated continuous units and methods of making thereof.

FIG. 4 is an alternate embodiment of a fashion accessory of integrated continuous units and methods of making thereof.

DESCRIPTION OF PREFERRED
EMBODIMENTS

Referring now to FIGS. 1-4, the present invention features a novel fashion accessory **100**. The accessory **100** of the present invention features a plurality of integrated continuous units **110**, in some embodiments geometrically-shaped units. In some embodiments, the units are bands (e.g., similar to hair bands, which are well known to one of ordinary skill in the art).

As used herein, the term “connecting mechanism” refers to any appropriate linking, interlinking, looping, and interlooping of the units **110**.

The accessory **100** of the present invention comprises a plurality of units **110**, for example a first unit **110a**, a second unit **110b**, a third unit **110c**, a fourth unit **110d**, a fifth unit **110e**, etc. In some embodiments, the accessory **100** comprises three or more units **110**. In some embodiments, the accessory **100** comprises four or more units **110**. In some embodiments, the accessory **100** comprises five or more units **110**. In some embodiments, the accessory **100** comprises six

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or more units **110**. In some embodiments, the accessory **100** comprises seven or more units **110**. In some embodiments, the accessory **100** comprises eight or more units **110**. In some embodiments, the accessory **100** comprises nine or more units **110**. In some embodiments, the accessory **100** comprises ten or more units **110**.

The units **110** are loops. In some embodiments, the units **110** have a generally rounded shape (prior to integration into the accessory), similar to how a hair band has a generally rounded shape. In some embodiments, the units **110** have an alternate general shape, for example a triangular shape, a star shape, a rectangle shape, a pentagon shape, a hexagon shape, an irregular shape, etc. The present invention is not limited to the aforementioned shapes.

In some embodiments, the units **110** are flexible. In some embodiments, the units **110** are rigid. In some embodiments, the units **110** are constructed from a material comprising elastic, allowing for the units **110** to stretch.

In some embodiments, a decorative component is disposed on one or more of the unit **110**. Decorative components are well known to one of ordinary skill in the art. For example, in some embodiments, the decorative component is glitter, a bead, a sticker, a flower, a bow, a key ring, a luggage tag, a dog tag, a locket, a picture, a glow-in-the dark component, the like, or a combination thereof. The present invention is not limited to the aforementioned decorative components. The decorative components may be directly or indirectly attached to the units **110**.

The units **110** are interlocked to form a continuous chain (e.g., via a connecting mechanism). For example, as shown in FIG. 3, to form the chain, a first unit **110a** is folded (e.g., in half) in a folded configuration, wherein the folded configuration has a first top arc **210a** and a second top arc **210b** that are positioned next to each other, and a first bottom hook **220a** and a second bottom hook **220b**, wherein the bottom hooks **220** are positioned across from each other. A second unit **110b** is fed through both bottom hooks **220** of the first unit **110**, then the second unit **110b** is folded to the folded configuration (as described above). A third unit **110c** is fed through both bottom hooks **220** of the second unit **110**, then the third unit **110c** is folded to the folded configuration (as described above). Additional units **110** are added as described until a desired length or number of units **110** is achieved.

When the units **110** are interlocked to form a continuous chain, the accessory has a first end **101** and a second end **102**. The first end **101** and second end **102** can be connected together via a locking means **150**. The locking means **150** may be one or more of any securing or locking devices well known to one of ordinary skill in the art, for example a mating-type engagement, e.g., a clip mechanism, a snap mechanism, a hook mechanism, a latch mechanism, a magnet mechanism, a hook-and-loop fastener mechanism, the like, or a combination thereof. Other similar mechanisms are well known to one of ordinary skill in the art. In some embodiments, the ends **101**, **102** are temporarily connected together or permanently connected together.

As used herein, the term “about” refers to plus or minus 10% of the referenced number. For example, an embodiment wherein the accessory **100** is about 10 inches in length as measured from the first end **101** to the second end **102** includes an accessory **100** that is between 9 and 11 inches in length.

The disclosures of the following U.S. Patents are incorporated in their entirety by reference herein: U.S. Design Pat. No. D450614; U.S. Pat. No. 6,880,364; U.S. Pat. No. 7,040,120; U.S. Pat. No. 7,293,429; U.S. Design Pat. No. D592537;

U.S. Patent Application No. 2002/0043077; U.S. Patent Application No. 2008/0190137; U.S. Patent Application No. 2009/0255295.

EXAMPLE 1

Construction

Example 1 describes an example of constructing the accessory **100** of the present invention. In some embodiments, the accessory **100** of the present invention is constructed by linking the units **110** through a predetermined looping or linking guide; however, the present invention is not limited to this manufacturing or construction process or method. The guide may, for example, comprise a linear device continuous from a first end and a second end, wherein the first end and the second end are each open ends of the guide. The guide may be replaced with any other type device that services the same function as would be evident and obvious to those of ordinary skill in the art.

In some embodiments, a first unit **110a** is placed against the guide such that the first unit **110a** is folded substantially or in part back over on itself over a dominant axis of the guide, thereby creating a smaller area of overlapping enclosed space within the band when viewing from an axis perpendicular to the fold and where such enclosed space is also partially defined by the guide (e.g., or if not guide is used, defined partially by the axis of the fold). A second unit **110b** is then placed through such newly created smaller interior space of the first unit **110a** and the second band **110b** is similarly folded upon itself to create a smaller interior space while partially remaining within the smaller created interior space of the first unit **110a**, thereby linking the first unit **110a** and the second unit **110b** without compromising the continuity of the units **110**. A third unit **110c** is then placed within the newly created smaller interior space of the second unit **110b** along the same method as previously described. Similarly, the third unit **110c** is then folded upon itself while still remaining partially enclosed within the smaller created enclosed interior space of the second unit **110b**. More units **110** can be added depending on the desired length for the article.

When the desired length and/or desired number of units **110** has been achieved, the accessory **100** has a first end **101** and a second end **102**. The first end **101** and the second end **102** can be connected via a locking means **150**. The locking means **150** may be one or more of any securing or locking devices well known to one of ordinary skill in the art, for example a mating-type engagement, e.g., a clip mechanism, a snap mechanism, a hook mechanism, a latch mechanism, a magnet mechanism, a hook-and-loop fastener mechanism, the like, or a combination thereof. Other similar mechanisms are well known to one of ordinary skill in the art.

Various modifications of the invention, in addition to those described herein, will be apparent to those skilled in the art from the foregoing description. Such modifications are also intended to fall within the scope of the appended claims. Each reference cited in the present application is incorporated herein by reference in its entirety.

Although there has been shown and described the preferred embodiment of the present invention, it will be readily apparent to those skilled in the art that modifications may be made thereto which do not exceed the scope of the appended claims. Therefore, the scope of the invention is only to be limited by the following claims.

The reference numbers recited in the below claims are solely for ease of examination of this patent application, and are exemplary, and are not intended in any way to limit the

scope of the claims to the particular features having the corresponding reference numbers in the drawings.

What is claimed is:

1. A fashion accessory (**100**) comprising a plurality of units (**110**) connected together to form a continuous chain having a first end (**101**) and a second end (**102**), the first end (**101**) and second end (**102**) are connected together via a locking means (**150**), wherein a unit (**110**) is a generally round loop that is elastic and flexible, wherein the units (**110**) each occupy a folded configuration, in the folded configuration the unit (**110**) is folded in half to form a first top arc (**210a**) and a second top arc (**210b**) that are positioned next to each other, and a first bottom hook (**220a**) and a second bottom hook (**220b**) that are positioned across from each other, wherein adjacent units (**110**) are fed through both bottom hooks (**220**) and subsequently moved to occupy the folded configuration; wherein the unit (**110**) is a flexible, elastic hair band.

2. The accessory (**100**) of claim 1 comprising six or more units (**110**).

3. The accessory (**100**) of claim 1 comprising eight or more units (**110**).

4. The accessory (**100**) of claim 1 comprising ten or more units (**110**).

5. The accessory (**100**) of claim 1 comprising twelve or more units (**110**).

6. The accessory (**100**) of claim 1, wherein a decorative component is disposed on one or more of the units (**110**).

7. A fashion accessory (**100**) consisting of a plurality of units (**110**) connected together to form a continuous chain having a first end (**101**) and a second end (**102**), the first end (**101**) and second end (**102**) are connected together via a locking means (**150**), wherein a unit (**110**) is a generally round loop that is elastic, and flexible, wherein the units (**110**) each occupy a folded configuration, in the folded configuration the unit (**110**) is folded in half to form a first top arc (**210a**) and a second top arc (**210b**) that are positioned next to each other, and a first bottom hook (**220a**) and a second bottom hook (**220b**) that are positioned across from each other, wherein adjacent units (**110**) are fed through both bottom hooks (**220**) and subsequently moved to occupy the folded configuration;

wherein the unit (**110**) is a flexible, elastic hair band.

8. A method of forming a novel fashion accessory (**100**) from a plurality of flexible, elastic hair band units (**110**) comprises:

(a) obtaining a plurality of units (**110**);

(b) folding a first unit (**110a**) in half to a folded configuration, wherein the folded configuration has a first top arc (**210a**) and a second top arc (**210b**) that are positioned next to each other, and a first bottom hook (**220a**) and a second bottom hook (**220b**) that are positioned across from each other;

(c) feeding a second unit (**110b**) through the first bottom hook (**220a**) and the second bottom hook (**220b**) of the first unit **110**;

(d) folding the second unit (**110b**) to the folded configuration;

(e) feeding a third unit (**110c**) through the first bottom hook (**220a**) and the second bottom hook (**220b**) of the second unit (**110**);

(f) folding the third unit (**110c**) to the folded configuration;

(g) repeating the steps (c) through (f) of feeding, then folding, for additional unit (**110**) until a desired length or number of units (**110**) is achieved, wherein the units **110** are interlocked to form a continuous chain, wherein the accessory has a first end **101** and a second end **102**;

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(h) connecting the first end (101) and the second end (102) together via a locking means (150).

* * * * *

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US005377595A

United States Patent [19]

[11] Patent Number: **5,377,595**

Liu

[45] Date of Patent: **Jan. 3, 1995**

[54] **SPRING-SUPPORTED ELECTRIC CONTACT DEVICE FOR TOY VEHICLE AND TRACK ASSEMBLIES**

FOREIGN PATENT DOCUMENTS

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[76] Inventor: **Ting Liu, 1006 Chelsea Pl., Matthews, N.C. 28105**

Primary Examiner—Mickey Yu

[21] Appl. No.: **95,175**

[57] ABSTRACT

[22] Filed: **Jul. 21, 1993**

A spring-supported electric contact device including a track mounting space in a lower part of a vehicle body for a flexible track passing through, a seesaw plastic frame pivotably fastened in an open chamber in the vehicle body beneath the track mounting space and having one end supported on a conical spring, an electric contact assembly consisted of two spaced pairs of contact nails electrical connected to the motor drive by an electric wire and fastened to the seesaw plastic frame and constantly disposed in contact with respective metallic electrical conductor strips on the flexible track to connect DC electricity supplied by a DC adapted from city power to the motor drive.

[51] Int. Cl.⁶ **B61B 13/00; B60L 5/00**

[52] U.S. Cl. **104/118; 104/53; 238/10 R; 446/444; 191/59.1**

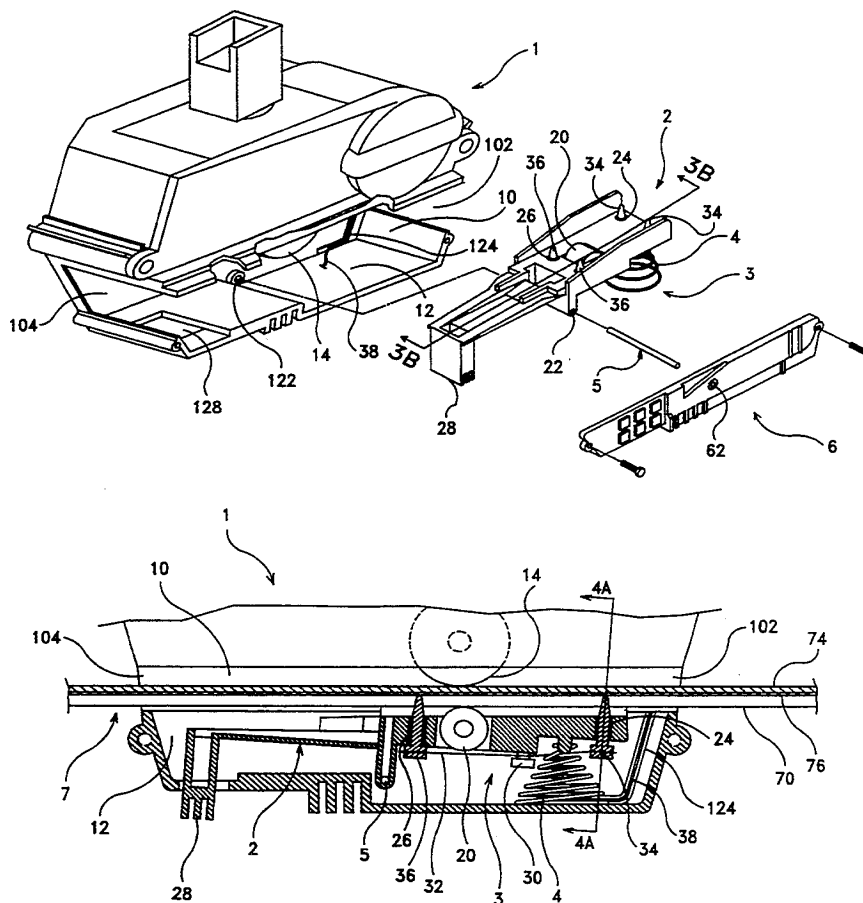
[58] Field of Search **446/444, 445, 230, 229, 446/231, 455; 191/57, 59.1; 104/93, 118, 119, 121, 53**

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5 Claims, 5 Drawing Sheets



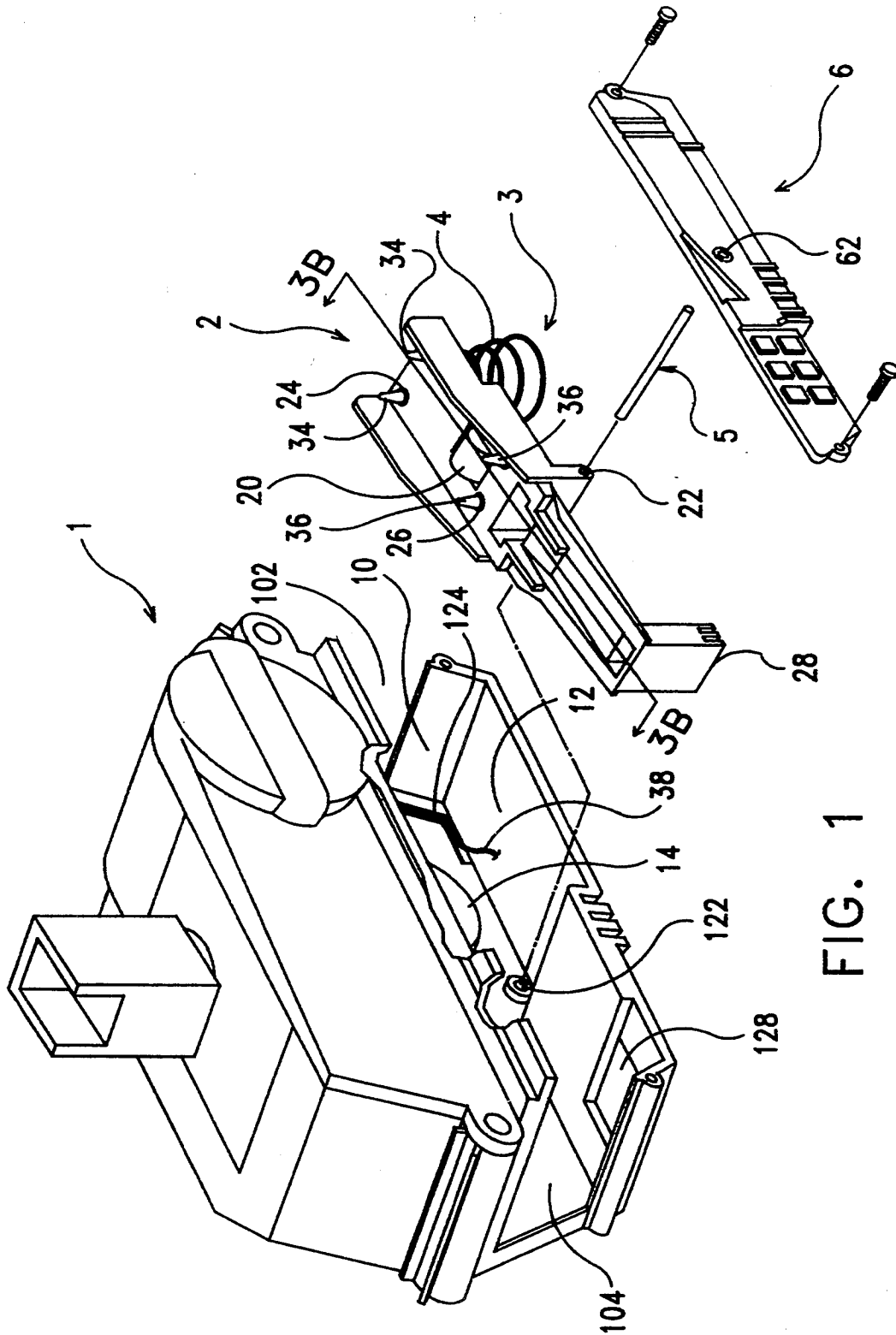


FIG. 1

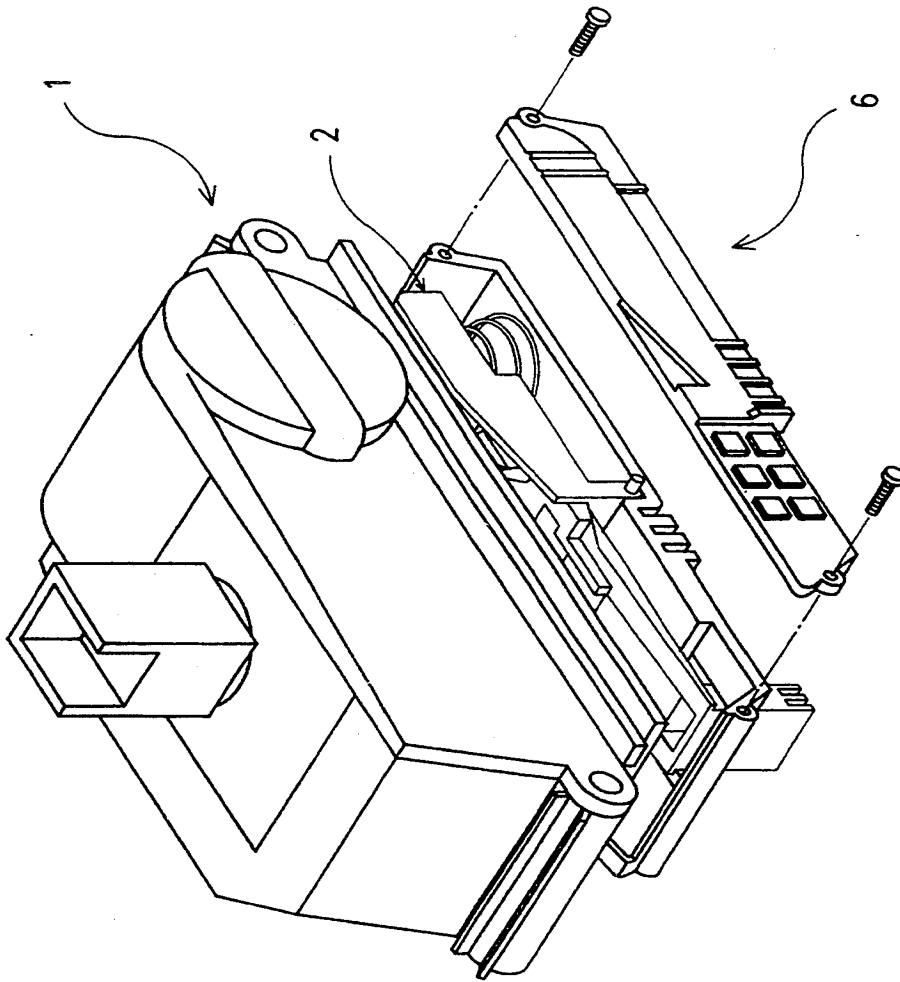


FIG. 2

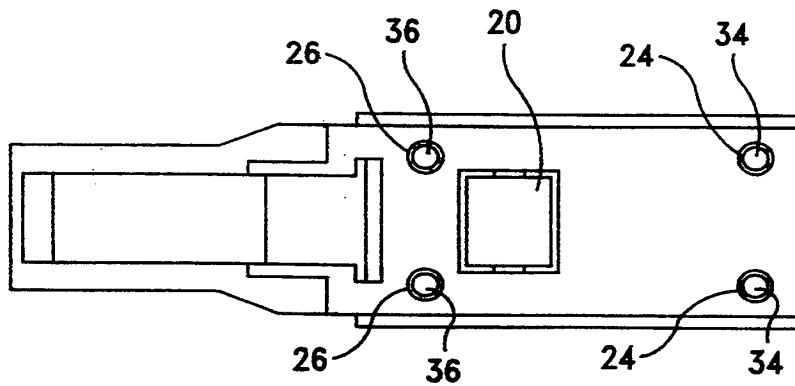


FIG. 3A

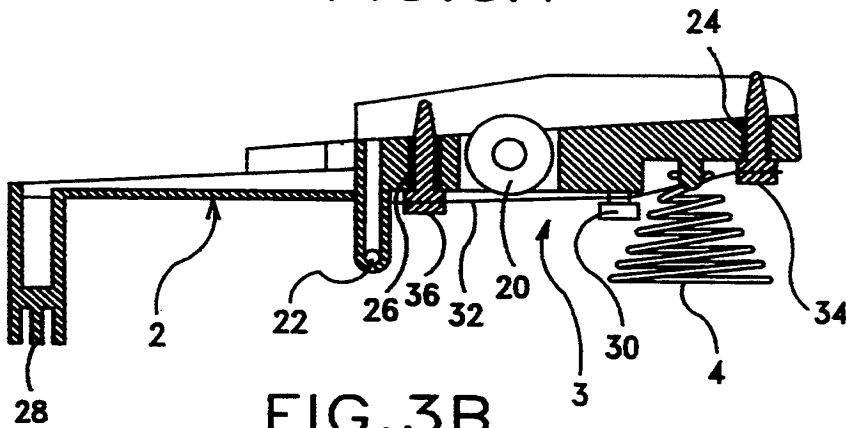


FIG. 3B

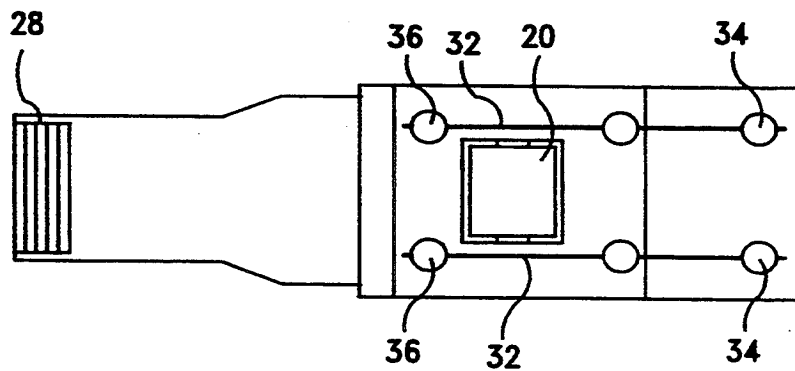


FIG. 3C

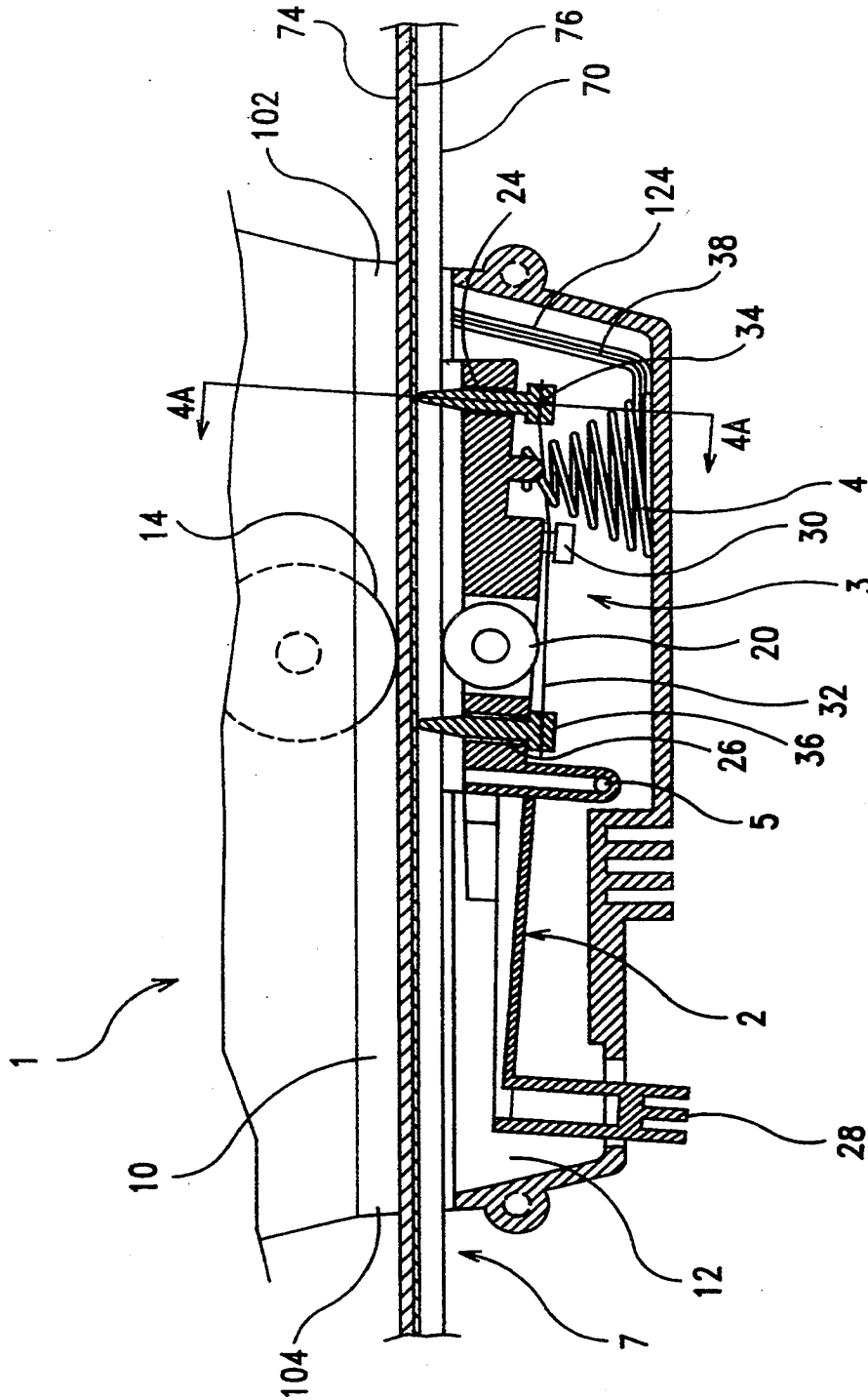


FIG. 4

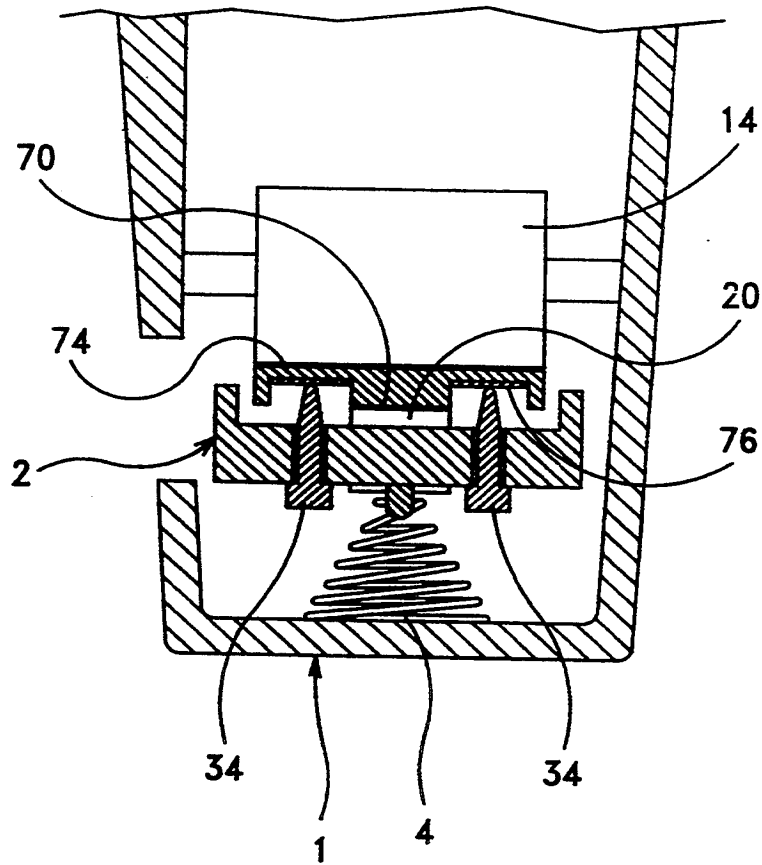


FIG. 4A

**SPRING-SUPPORTED ELECTRIC CONTACT
DEVICE FOR TOY VEHICLE AND TRACK
ASSEMBLIES**

BACKGROUND OF THE INVENTION

The present invention relates to self-propelled toy vehicle and track assemblies and more particularly to a spring-supported electric contact device for a self-propelled toy vehicle with a flexible track which passes through the vehicle for controlled vehicle travel therealong.

Toy vehicle and track assemblies in which a toy vehicle moves along a continuous track are well known, and several types of toy track and vehicle assemblies are currently available. These toy vehicle and track assemblies commonly use a battery DC power source installed in the toy vehicle to provide electricity to a respective motor drive so that they can be propelled to travel along a respective track. However, it is no economic to use a battery DC power source for providing electricity to the motor drive of a toy vehicle and track assembly because a battery DC power source will be used up within a short length of time when the toy vehicle is continuously propelled. Furthermore, waste battery will cause a severe environmental pollution problem. Therefore, it has become the inevitable way to get DC power from city power supply for the motor drive of a toy vehicle and track assembly through a DC adapter. By reversing the adapter or changing its phase, the vehicle is controlled to move forward or backward along the track. However, using city power supply through a DC adapter for the motor drive of a toy vehicle and track assembly is still not easy. There is still a key technical problem not satisfactorily settled. This problem is the stable electric contact between the track and the vehicle body while the vehicle is running and maneuvering on the track.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the aforesaid circumstances. According to the preferred embodiment of the present invention, the spring supported electric contact device comprises an electric contact assembly fastened to a seesaw plastic frame. The seesaw plastic frame is pivotably fastened within a chamber in a lower part of the vehicle body, having one end supported on a conical spring and an opposite end terminated to a downward push rod extended out of the vehicle body through a slot thereon. Pushing the downward rod upwards causes the seesaw plastic frame to open a track inlet for allowing the track passing through a track mounting space of the vehicle body so as to mount the vehicle on the track. The electric contact assembly comprises two pairs of contact nails spaced one pair on each end of the seesaw plastic frame and disposed in contact with the metallic electrical conductor strips on the track. The upward force from the conical spring forces the electric contact assembly to constantly maintain at least one pair of contact nails in contact with the metallic electrical conductor strips on the track in any condition.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of the preferred embodiment of the spring-supported electric contact device of the present invention;

FIG. 2 is a perspective view of the spring-supported electric contact device with the side cover dismantled;

FIG. 3A is the top, view of the seesaw plastic frame of the spring-supported electric contact device;

FIG. 3B is a sectional view taken along the line 3B—3B of FIG. 1; and FIG. 3C is the bottom view of the seesaw plastic frame of the spring-supported electric contact device; and

FIG. 4 is a longitudinal section view of the spring-supported electric contact device when mounted on the track; and

FIG. 4A is a cross sectional view taken along line 4A—4A of FIG. 4.

**DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENT**

Referring to FIGS. 1, 2, 3A, 3B and 3C, the present invention comprises a vehicle body 1, a seesaw plastic frame 2, an electric contact assembly 3, a conical spring 4, a pivot pin 5, and a side cover 6.

The vehicle body 1 comprises a track mounting space 10 in the longitudinal direction for passing the track, which has one end terminated to a flat, narrow track inlet 102 and an opposite end terminated to a flat, narrow track outlet 104, a chamber 12 disposed below the track mounting space 10 for holding the seesaw plastic frame 2 and the electric contact assembly 3 and the conical spring 4, a pivot hole 122 on an inner side wall of the chamber 12 for mounting the seesaw plastic frame 2 and the side cover 6, a wire groove 124 along which the electric lead wires 38 is connected between the electric contact assembly 3 and the motor drive (inside the vehicle body 1; not shown), a bottom slot 128, and a friction wheel 14 driven by the motor drive and disposed above the track mounting space 10.

The seesaw plastic frame 2 has a pivot hole 22 in the middle through which the pivot pin 5 is inserted into the pivot hole 122 on the vehicle body 1 for allowing the two opposite ends of the seesaw plastic frame to be moved up and down alternatively, a free wheel 20 transversely disposed below the friction wheel 14 on the vehicle body 1, a first pair of small through holes 24 bilaterally disposed near one end thereof, a second pair of small through holes 26 bilaterally disposed between the free wheel 20 and the pivot hole 22, a downward push rod 28 disposed on an opposite end thereof at right angles and inserted out of the bottom of the vehicle body 1 through the bottom slot 128.

The electric contact assembly 3 comprises two screw terminals 30 fastened to the seesaw plastic frame 2 at the bottom, two main contact nails 34 respectively fastened to the first pair of small through holes 24, two auxiliary contact nails 36 respectively fastened to the second pair of small through holes 26, two phosphor-bronze wires 32 each having one end fastened to either main contact nail 34 and an opposite end wound round the respective screw terminal 30 and then fastened to the respective auxiliary contact nail 36, and the electric lead wires 38 connected between the screw terminals 30 and the two opposite poles of the motor drive in the vehicle body 1.

The conical spring 4 is supported between the seesaw plastic frame 2 and the bottom wall of the chamber 12.

The side cover 6 has a pivot hole 62 in the middle connected to the pivot hole 22 on the seesaw plastic frame 2 and the pivot hole 122 on the vehicle body 1 by the aforesaid pivot pin 5.

Referring to FIGS. 4 and 4A when assembled, the rear end of the seesaw plastic frame 2 is supported by

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the conical spring 4 to contact the bottom wall of the chamber 12, therefore the track inlet 102 is closed and, the push rod 28 of the seesaw plastic frame 2 is constantly forced downward to extend out of the bottom slot 128. By pushing the push rod 28 upward to move the opposite end of the seesaw plastic frame downward, the track inlet 102 is opened for inserting the track 7. As the vehicle body 1 is mounted on the track 7, the friction wheel 14 is disposed in contact with the top friction surface 74 of the track 7, the free wheel 20 is disposed in contact with the bottom surface 70 of the track 7, and the main and auxiliary contact nails 34,36 are disposed in contact with the two metallic electrical conductor strips 76 in respective grooves (not shown) along the length of the track 7. By means of the main and auxiliary contact nails 34,36 of the electric contact assembly 3 are constantly and electrically disposed in contact with the metallic electrical conductor strips 76 of the track 7 as the vehicle body 1 is traveling along any part of the track 7 which may be turned upside down or extended at an upward or downward inclination.

What is claimed is:

1. A spring-supported electric contact device for toy vehicle and track assemblies comprising:
 - a vehicle body having a track mounting space extending from a front end to a rear end of said vehicle body, said space adapted to allow a flexible track to pass through said vehicle body, said vehicle body further having a side wall at a lower portion thereof and defining a first boundary of a chamber below said track mounting space, said wall including a pivot hole;
 - a seesaw frame having a pivot hole in an intermediate portion thereof and having one end supported on a conical spring;
 - an electric contact assembly fastened to said seesaw frame and disposed for constant contact with metallic electrical conductor strips fastened to the flexible track;
 - a side cover having a pivot hole in an intermediate portion thereof, said side cover defining a portion of said vehicle body and defining a second boundary of said chamber; and

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a pivot pin extending through said pivot hole in said seesaw frame and supported at its respective ends by the respective pivot holes in said side wall and said side cover.

2. The device of claim 1 wherein said track mounting space is defined by a flat, rectangular opening at said front end and a flat, rectangular opening at said rear end of said vehicle body; and a friction wheel located in said vehicle body for being in constant contact with the flexible track.

3. The device of claim 1 wherein said vehicle body further comprises a horizontal bottom wall connected to said side wall and defining a lower boundary of said chamber, said horizontal bottom wall having a slot opening therein; and

said seesaw frame further having a downwardly and vertically extending front end projecting outwardly through said slot opening of said horizontal bottom wall.

4. The device of claim 3 wherein said seesaw frame has a freely rotatable wheel transversely disposed in a middle portion thereof and adapted for contacting the bottom surface of the flexible track.

5. The device of claim 1 wherein said electric contact assembly comprises:

- two screw terminals fastened to a bottom surface of said seesaw frame;
- two main contact nails respectively fastened to a first pair of through holes in said seesaw frame and disposed for contact with the metallic electrical conductor strips of the flexible track;
- two auxiliary contact nails respectively fastened to a second pair of through holes spaced from said main contact nails and disposed for contact with the metallic electrical conductor strips of the flexible track;
- two wires, each having one end fastened to a respective said main contact nails, an intermediate portion wound around a respective said screw terminals and an opposite end fastened to a respective said auxiliary contact nails; and
- two electric lead wires connected to respective said screw terminals and a motor drive in said vehicle body.

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Sept. 18, 1962

W. R. SMITH ETAL

3,054,214

COMBINED TOY SAWMILL AND LUMBER LOADING STATION

Filed March 20, 1958

5 Sheets-Sheet 1

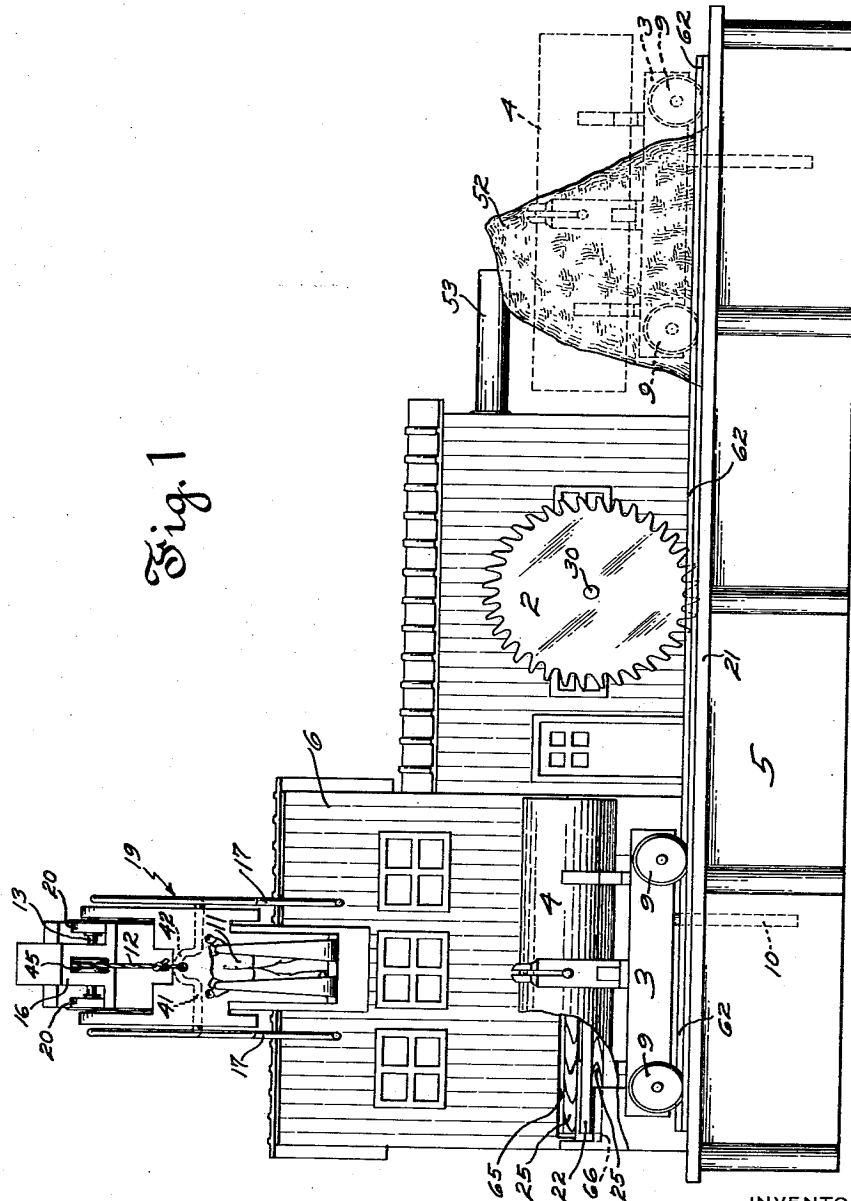


Fig. 1

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Sept. 18, 1962

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3,054,214

COMBINED TOY SAWMILL AND LUMBER LOADING STATION

Filed March 20, 1968

5 Sheets-Sheet 2

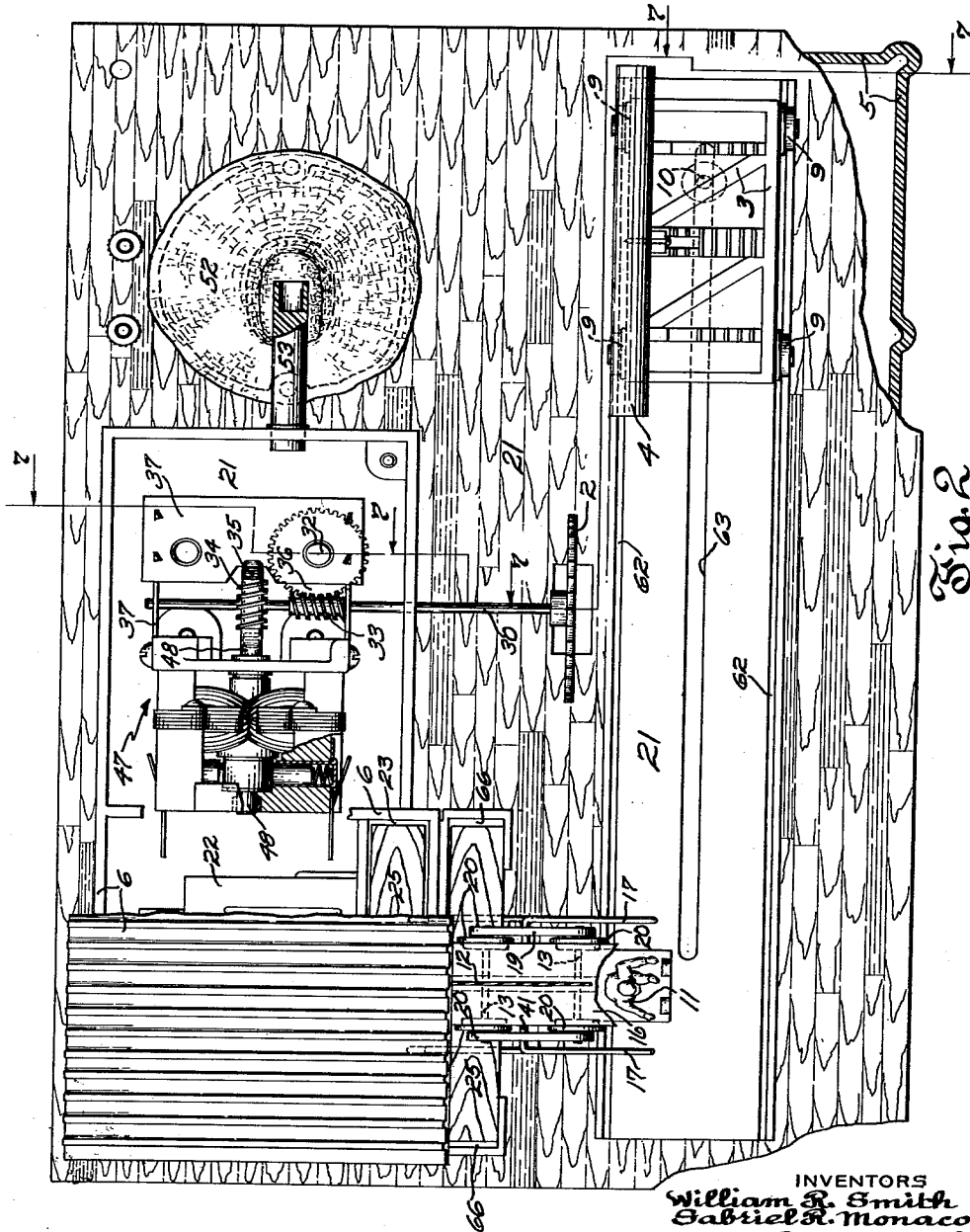


Fig. 2

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Sept. 18, 1962

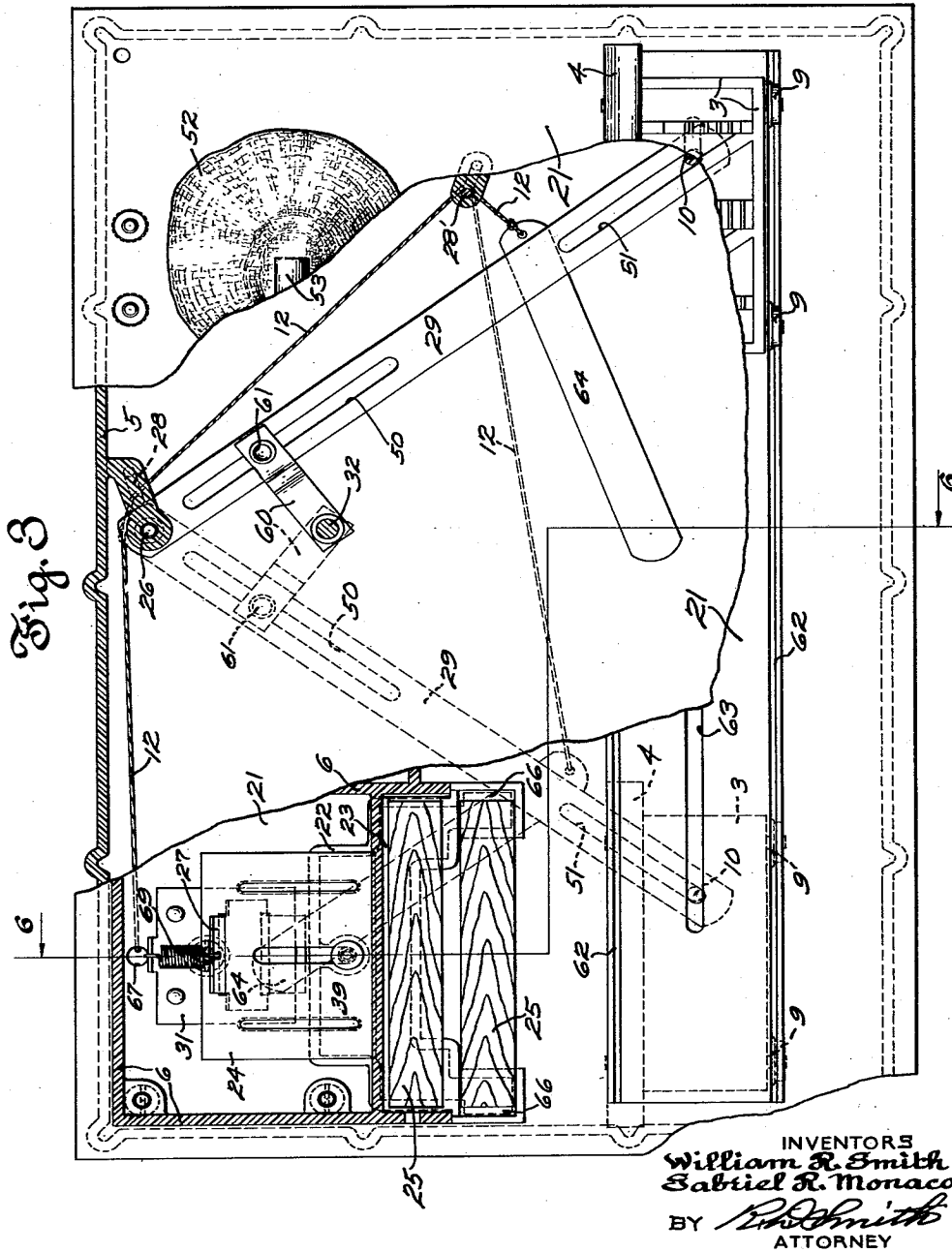
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COMBINED TOY SAWMILL AND LUMBER LOADING STATION

Filed March 20, 1958

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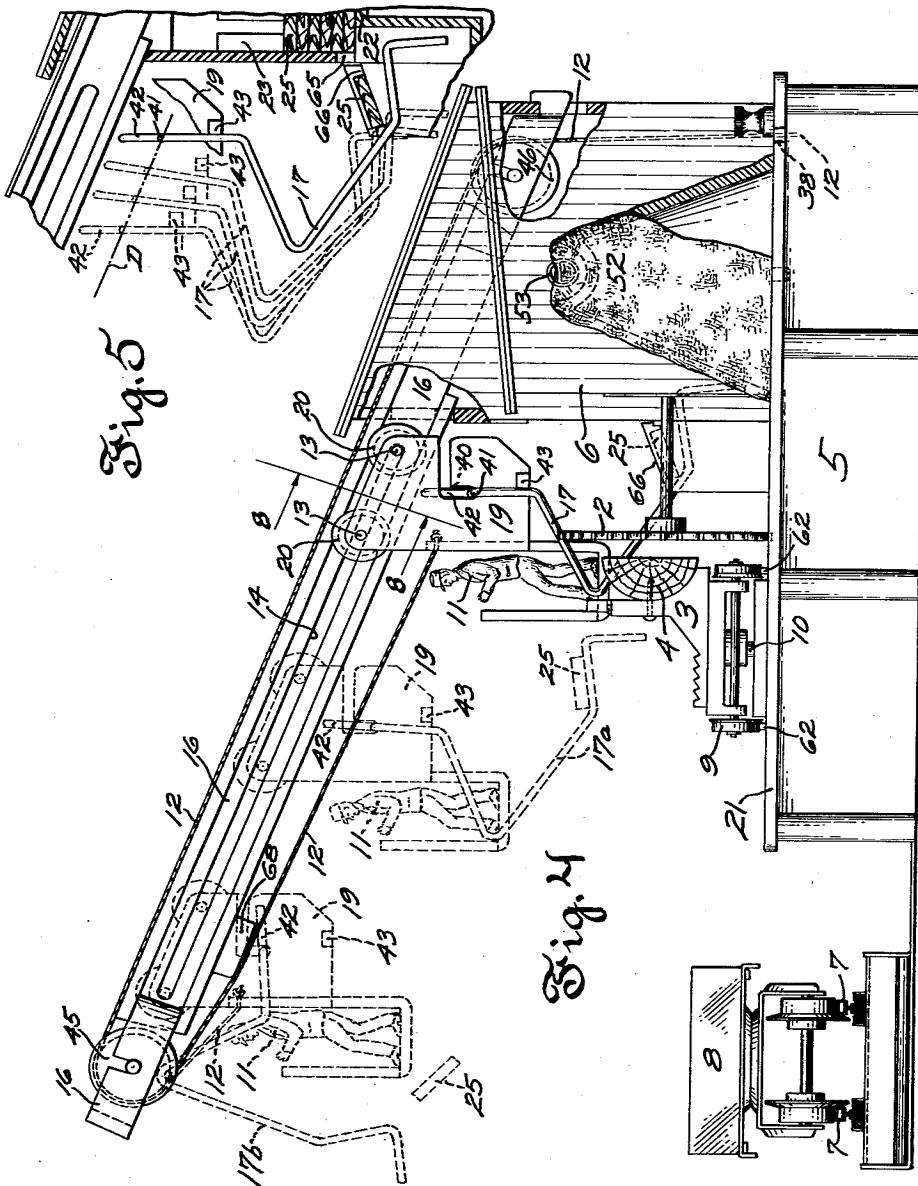
W. R. SMITH ETAL

3,054,214

COMBINED TOY SAWMILL AND LUMBER LOADING STATION

Filed March 20, 1958

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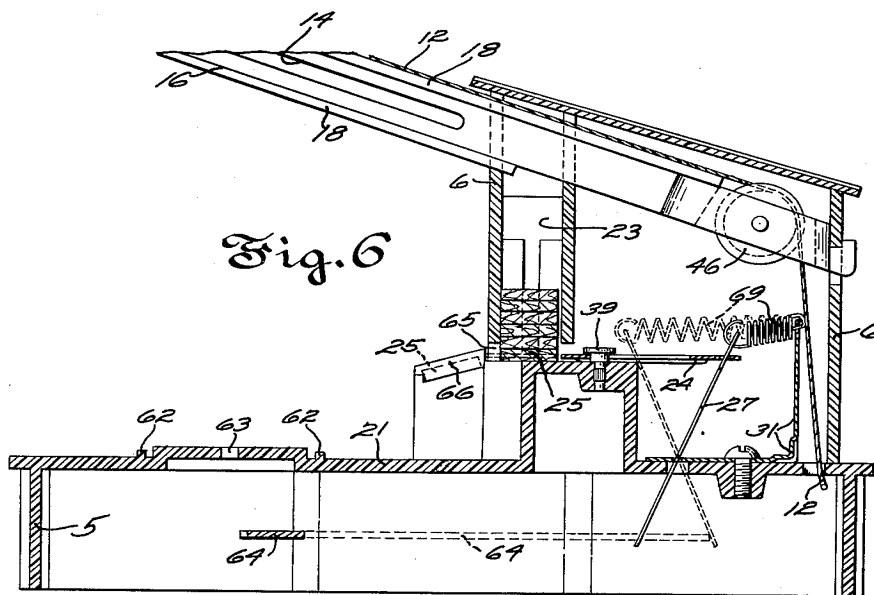


Fig. 6

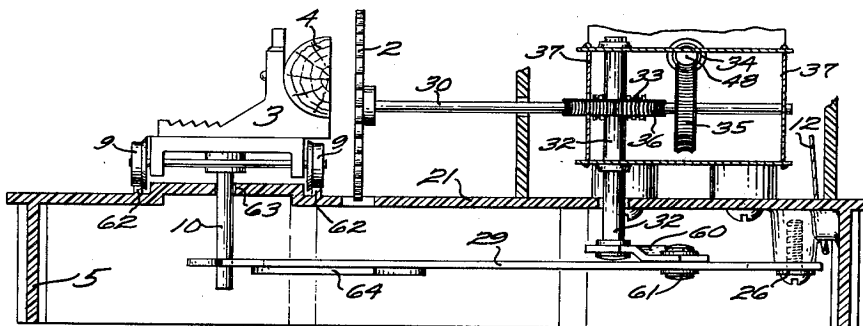


Fig. 7

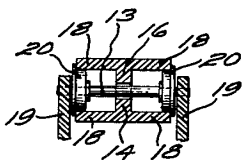


Fig. 8

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3,054,214

**COMBINED TOY SAWMILL AND LUMBER
LOADING STATION**

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Filed Mar. 20, 1958, Ser. No. 722,697
6 Claims. (Cl. 46-39)

This invention relates to an animated toy adapted particularly for use as a trackside station in a toy railway system whereby there is simulated automatically the operation of sawing logs into lumber boards followed by the loading of the "sawed-off" boards one by one onto a gondola or other suitable type of freight car of the toy railroad.

An object of the invention is to coordinate the pseudo log sawing travel of a log conveying carriage past a buzz saw with the car loading action of a crane trolley and in such synchronism that each excursion of the log carriage past the saw is followed by the pick up of a single lumber board by the crane trolley under such conditions that the board so picked up appears to have been sawed off from the log. The board is then conveyed along a projecting boom to the free end thereof where the conveyed board is dropped automatically from the trolley onto a waiting toy freight car.

A related object is to increase the realism of action of the toy by causing each toy lumber board to be automatically delivered at a point that is concealed by the log conveying carriage at the time of delivery of the board so that the board seems to have been sawed off from the log when the log traveled past the buzz saw.

A further object is to store a supply of the toy lumber boards in a concealed location and to feed them one by one to the point at which they are to be picked up by the crane trolley.

A further object is to power all motion transmitting mechanism of the toy that serves to impel the log carriage, the crane trolley, the buzz saw and the board ejecting mechanism, from a single electric motor which together with the motion transmitting mechanism is concealed within the hollow of a housing and base structure. Preferably the housing structure may be fashioned to represent the work shed of a saw mill.

The foregoing and other objects of the invention will appear in greater particulars from the following description of a successful form of the toy having reference to the accompanying drawings wherein:

FIG. 1 is a front elevation of the complete animated saw mill and car loading station incorporating the invention, showing the log conveying carriage at the left extremity of its path of shuttling travel and partly broken away to expose the concealed delivery point of the "sawed off" lumber boards where they are picked up by the crane trolley.

FIG. 2 is a plan view of the toy with the log carriage located at the right extremity of its path of shuttling travel, the roof of the shed housing being partially removed to expose underlying mechanism which animates the toy, a projecting portion of the crane boom being omitted.

FIG. 3 is a view looking toward the left at the saw mill and loading station of FIG. 1 showing in broken lines successive positions of the crane trolley in its car loading excursion along the boom.

FIG. 4 indicates a succession of positions of the lumber board conveying hooks of FIG. 3 and their action in moving into position to engage and pick up a lumber board.

FIG. 5 is a plan view like FIG. 2 showing the station flooring partly broken away to expose underlying motion transmitting mechanism by which the toy is animated.

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FIG. 6 is a view taken in section on the plane 6-6 in FIG. 3 looking in the direction of the arrows.

FIG. 7 is a section taken on the planes 7-7-7 in FIG. 2 looking in the direction of the arrows.

FIG. 8 is a view taken in section on the plane 8-8 in FIG. 4, looking in the direction of the arrows.

An animated toy incorporating these improvements may have a hollow base 5 conveniently molded from hard plastic and topped by a hollow superstructure fashioned to simulate a shed-like housing 6 from which there projects into offset or outboard relation to base 5 an inclined crane boom 16. The free end of boom 16 overhangs a toy railroad track 7 on which there may stand a toy freight car 8 preferably of the flat car or gondola type suitable for carrying piled toy lumber boards 25.

Such boards are shown in FIGS. 4 and 6 to be stacked loosely in a concealed position within a vertical magazine compartment 23 in shed housing 5 so that they rest loosely on a platform 22 elevated above the base flooring 21. Platform 22 is overlapped by a horizontally slidable ejector plate 24 which on occasion is impelled forward edgewise in FIG. 6, or from right to left in FIG. 6, so as to engage and shove the bottom board 25 of the stack in magazine 23 outward through a horizontally elongate outlet slot 65 in the upright wall of shed 6 and onto support ledges 66 that flank the ends of slot 65 just outside the shed. Boards 25 are thus ejected through slot 65 one at a time and come to rest with only the ends of the board supported on ledges 66. The ejector is powered to act as described by a prime mover or electric motor 47 through the medium of motion transmitting mechanism hereinafter to be described.

In FIG. 1 the outlet slot 65 is concealed by a toy half-log 4 fixedly mounted on a log carriage 3 whose wheels 9 ride on a short stretch of rails 62 extending lengthwise of the base 5 which determine a course of travel for the log at the rear of which magazine 23 upstands from the flooring 21. In the flooring 21 of base 5 there is an elongate slot 63 between and parallel with rails 62 to accommodate travel therealong of an impellable vertical stud 10 fixed on and depending from log carriage 3. By means of stud 10, carriage 3 is impelled under the power of the aforesaid motor 47 to shuttle back and forth between its positions shown respectively in FIGS. 1 and 2 by means of motion transmitting mechanism hereinafter to be described.

A crane trolley 19 performs excursions along the boom 16 riding on overhead truck wheels 20 which roll on tracks 18 between top and bottom laterally extending flanges on the boom 16 which latter is H-shaped in cross section and whose vertical web wall contains the lengthwise extending slot 14 through which the axles 13 of wheels 20 extend with clearance. The car body of trolley 19 is thus prevented from swinging as it rides upward and downward along boom 16 and for realism there is carried as part of the body of the trolley a figurette 11 fashioned to represent a workman in operative control of the crane.

Swingably nested in a bearing notch 40 of a bayonet shape in the side walls of crane trolley 19 is the cross bail 41 of hook arms 17 that are formed by a continuous length of bent stiff wire. A middle portion of bail 41 loops upward at 42 to form a trippable extension that encounters a stationary stop lug 68 fixedly depending from boom 16 toward the end of the excursion of trolley 19 up the incline of the boom, thereby to cause hook arms 17 to swing to a position 17b for discharging the board 25. Each board will therefore fall into the car 8 upon reaching its highest point of travel along the boom. The normal position of hook arms 17 relative to the trolley is determined by a stop lug 43 on the car of the trolley into abutment with which the arms 17 are swung by gravity.

Travel of trolley 19 upward of the incline of boom 16

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is caused by the pull of a flexible cord or cable 12 anchored to the trolley and trained about freely rotatable pulleys 45 and 46, such pull being exerted by the power of the aforesaid motor 47 through motion transmitting mechanism next to be described.

The motion transmitting mechanism is best shown in FIGS. 2, 5, 6 and 7 wherein the electric motor 47 is shown to be mounted on the flooring 21 of base 5 within the hollow of shed housing 6 so that the horizontal motor shaft 48 having worm threads 34 lies above and in gearing mesh with a speed reduction worm wheel 35 in the gear box 37. Worm wheel 35 is carried on a horizontal shaft 30 which has rotary bearings in side walls of the gear box and projects forwardly as shown in FIGS. 2, 3 and 7 to carry and rotate at its front end an imitation buzz saw 2 in a position closely flanked by the rear flat face of the half-log 4 as the latter is conveyed past saw 2 by the carriage 3.

Saw shaft 30 carries worm threads 33 within the gear box which mesh with another speed reducing driven worm wheel 36 fixed on the vertical shaft 32 which has rotary bearings in the top and bottom walls of the gear box and extends downward through a clearance aperture 38 in flooring 21 as shown in FIG. 7. Thrust collars on shaft 32 sustain its vertical position.

At its bottom end, shaft 32 fixedly carries the crank arm 60 whose wrist pin 61 slides freely in a slot 50 in the swingable actuator arm 29 which is pivotably anchored on the base 5 at 26. A terminal slot 51 near the free end of actuator arm 29 engages and impels the carriage carried stud 10 as the arm swings between its full line and broken line positions in FIG. 15.

Swingable actuator arm 29 further carries in fixed relation thereto an actuating pusher 64 whose free end travels in an arc in unison with the swinging of arm 29 and thus is brought at appropriate times in the operating cycle into actuating engagement with the depending end of a rocker lever 27 that is pivotally mounted on a stationary angle fixture 31 secured on the base flooring 21. Rocker lever 27 extends downward through a clearance aperture in the flooring 21 and its upper end operatively engages a board ejecting slide plate 24 that is guided for rectilinear horizontal movement by headed stud 39 upstanding from platform 22 and which occupies a guide slot in the ejector plate 24. When rocker lever 27 swings counterclockwise in FIG. 6 its upper end pushes slide plate 24 forward so that the front edge of the latter encounters the rear edge of bottom board 25 of the stack of boards in compartment 33 and shoves the board forward through slot 65 in the wall of housing 6 into resting position on the ledges 66 aforesaid.

Tied to actuator arm 29 at a hole in the pusher 64 there is a flexible cable 12 which passes through two guide eyes 28 and 28' and then upward through a smoothly bushed aperture 67 in the flooring 21. The cable is then trained about the aforesaid lower pulley 46 and looped about upper pulley 45 whence it extends backward to be tied to the trolley 19.

By means of the operating connections which have now been described swinging of the actuator arm 29 causes the following sequence of animation of the movable parts of the toy and in such timing relation that operations of a real trackside saw mill and car loading station are realistically simulated as follows.

For realism there may be added in upstanding position on the flooring 21 a hollow form 52 of shape, color and surface texture to represent a pile of sawdust assumed to have been discharged from the saw mill through the exhaust pipe 53.

In operation, the running of the power motor 47 can be started and stopped by any conveniently located electric switch (not shown). While the motor runs the crank 60 continually revolves clockwise in FIG. 3 and its wrist pin 61 slides in the slot 50 of actuator arm 29 and thus swings arm 29 slowly back and forth between its full line position

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and its broken line position in FIG. 3. In such full line position of arm 29 the trolley 19 is at rest in its lowest position shown in full lines in FIGS. 2 and 4; the log and its carriage 3 are stationed in their full line position shown in FIGS. 2 and 3 (broken line position in FIG. 1); the board ejecting plate 24 is held yieldably retracted toward the rear of the housing 6 by means of the spring 69; and meanwhile the buzz saw 2 is rapidly rotating in readiness to "saw off" a board from the log 4. One such board 25 then rests in position to be picked up on the ledges 66 as shown in FIGS. 1, 2 and 3 and in broken lines in FIGS. 4 and 6.

As actuator arm 29 begins its clockwise swing from its full line position in FIG. 3 toward its broken line position, the log carriage 3 starts its movement toward the left from its position shown in FIG. 2. Simultaneously the trolley 19 starts to climb the incline of boom 16 with its hook-arms 17 carrying one of the boards 25 which it will have lifted from the ledges 66 as the trolley starts its climb along the boom in the direction of travel (D). The ledges 66 are now left empty as the log 4 performs its travel toward the left past the saw 2 and comes to rest in a place indicated by its full line position shown in FIG. 1 in front of, and concealing, the horizontal outlet slot 65 in the front wall of housing 6 which slot is at the level of the log. Just prior to the stopping of log carriage 3 in its travel toward the left the leading end of the actuating pusher 64 will engage and thrust rearward on the lower end of rocker lever 27 thus to swing this lever counterclockwise from its full line position to its broken line position in FIG. 6 against the retractive pull of spring 69. This action takes place rather abruptly and forces the slide plate 24 edgewise in a forward direction so that the bottom board 65 is shoved out of the magazine 33 onto the ledges 66 before the log carriage 3 starts its return travel from left to right in FIG. 1.

In the meantime trolley 19 has completed its travel upward along the boom until the upstanding tripping extension 42 of the arm hooks 17 encounters the tripping lug 68 that depends from the boom. This causes the arm hooks to swing to their broken line position 17b in FIG. 4 as the trolley completes its final increment of upward travel which causes the carried lumber board 25 to be dropped into the freight car 8.

As actuator arm 29 reverses its swinging travel to a counterclockwise direction in FIG. 3, the board ejecting plate 24 is withdrawn to the rear by spring 69 and the stack of boards 29 in magazine 23 is thus permitted to drop into a position directly resting on the bare top surface of platform 22 thus to bring the bottom board into edgewise alignment with the housing slot 65. The log carriage 3 continues to travel along its rails 62 back to its full line position in FIG. 2 as the cable 12 is payed out toward the upper end of the boom which permits the trolley 19 to coast backward down the incline of the boom with its hook arms 17 empty of the board that had previously been conveyed up the incline.

We claim:

1. In an animated toy saw mill including a toy circular saw and a simulated toy log supported on a carriage adapted to convey said log in a course of travel past said saw repeatedly from one to the other side thereof and back again, the combination with said saw and said log and carriage of, a magazine upstanding at the rear of said course of log travel adjacent to said saw at said other side thereof adapted to contain and conceal a stack of toy lumber boards, said magazine having a forwardly opening outlet for lumber boards to be successively ejected from said magazine therethrough, said outlet being located at the rear of said course of log travel in position to be substantially obscured from view by said log at one place in the latter's said course of travel, mechanism operative to cause successive ejections of individual boards from said stack through said opening, a prime mover, and motion transmitting means powered by said prime mover

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and connected to activate said saw carriage and said board ejecting mechanism in such synchronism that a board is ejected through said opening each time said opening is obscured from view by the presence of said log at said place, whereby each departure of said log from said place reveals a lumber board that has newly arrived behind said log and hence seemingly has been sawed therefrom.

2. In an animated toy saw mill as defined in claim 1, the combination recited in said claim, together with a repository located to receive a lumber board ejected from the said stack through the said outlet, a toy crane for automatically transferring the said lumber board from the said repository to a delivery station some distance therefrom, comprising a crane track, a trolley supported by said crane track powered by the said prime mover to perform an excursion therealong away from and back to said repository, and a pick-up claw suspended from said trolley in position to enter into pick-up engagement with said board.

3. In an animated toy saw mill as defined in claim 2, the combination recited in said claim, together with motion transmitting mechanism connecting the said trolley and the said log conveying carriage to the said prime mover to operate said trolley and said carriage in such synchronism that the said claw is brought into engagement with the said lumber board only when said log is absent from its said board obscuring place in its said course of travel.

4. In an animated toy saw mill as defined in claim 2, the combination recited in said claim, in which the said repository is constructed to support one of the said toy lumber boards in a manner to provide working room therebeneath, and the said pick-up claw is supported

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by the said trolley so as to travel in a path to enter and occupy said working room beneath said supported board preliminary to picking up and removing the latter from the repository.

5. In an animated toy saw mill as defined in claim 4, the combination recited in said claim, in which the said repository comprises ledges spaced apart a distance to support simultaneously and respectively only the end portions of a toy lumberboard spanning the said working room that is entered by the said pick-up claw.

6. In an animated toy saw mill as defined in claim 4, the combination recited in said claim, in which the said pick-up claw is pivotally suspended from the said trolley in a manner to cam yieldably against a lumber board supported by the said repository when entering the said working room beneath said board, whereby said claw can pass said board on entering said working room and pick up and carry away said board when leaving said working room.

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[54] **MULTI-ACTION TOY VEHICLE**

[76] **Inventor:** John Maxim, 25 Mill Valley La.,
North Stamford, Conn. 06903

[21] **Appl. No.:** 527,624

[22] **Filed:** Aug. 29, 1983

[51] **Int. Cl.⁴** A63H 17/00

[52] **U.S. Cl.** 446/457; 446/437

[58] **Field of Search** 446/457, 464, 463, 462,
446/461, 459, 465, 469, 470, 437, 440, 454, 455,
456, 431

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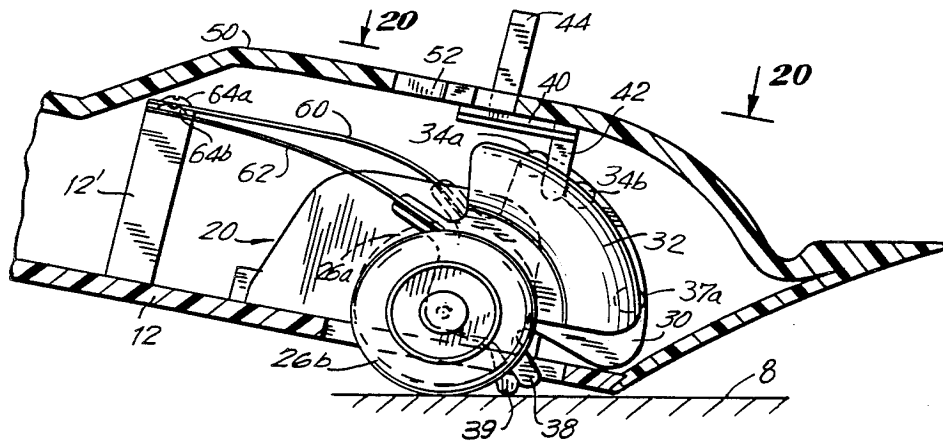
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Primary Examiner—Mickey Yu
Attorney, Agent, or Firm—Blum & Kaplan

[57] **ABSTRACT**

A multi-action toy vehicle which includes a chassis having wheels coupled thereto. A changing mechanism supported on the chassis changes the center of gravity of the vehicle. A control lever operatively coupled to the changing mechanism acts to control and set the changing mechanism in desired positions. In a first embodiment, the changing mechanism includes weights whose positions can be changed by the control lever. In a second embodiment, the changing mechanism includes a sliding platform to which the rear wheels are coupled so that the wheel base of the toy vehicle can be adjusted.

10 Claims, 36 Drawing Figures



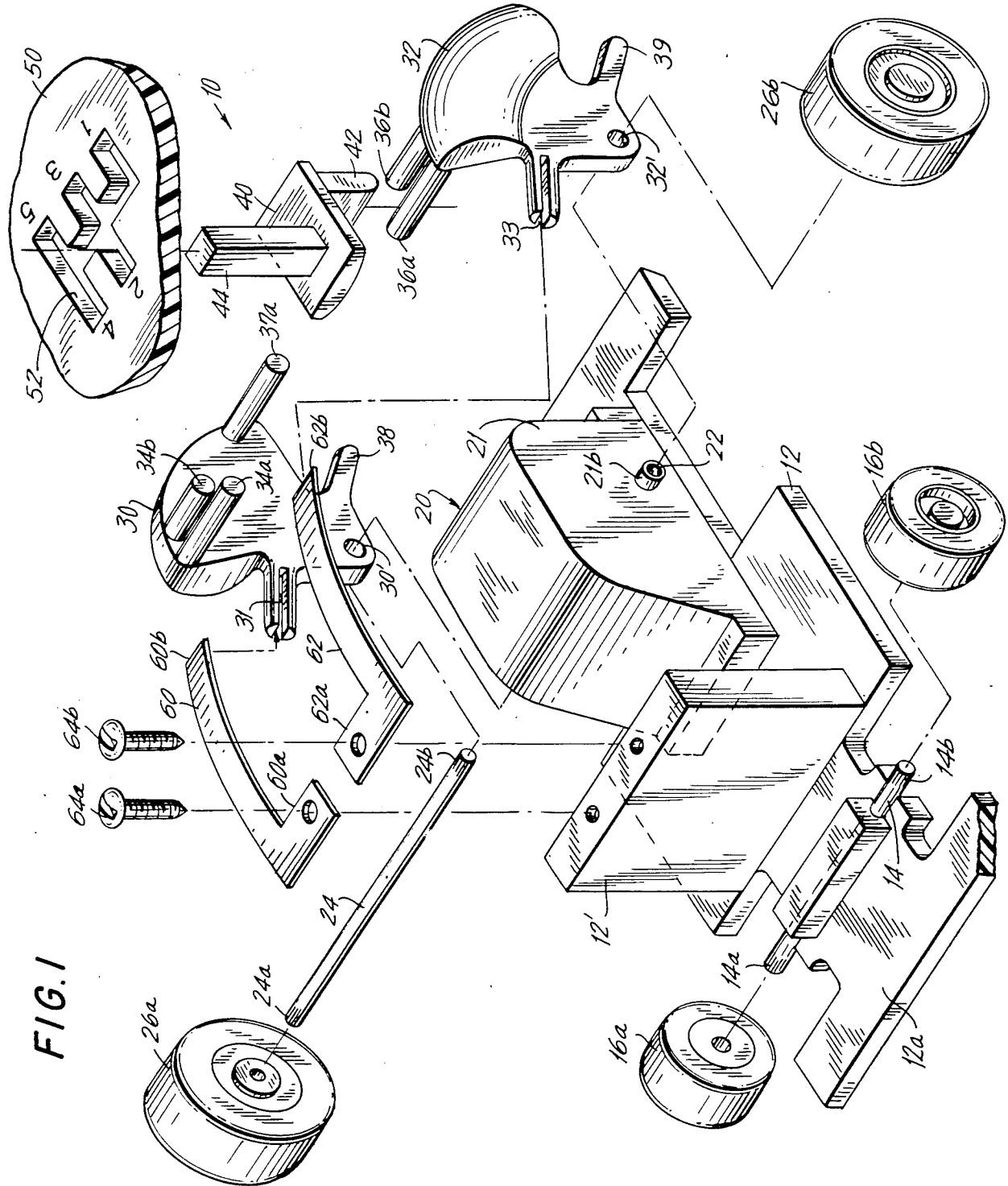


FIG. 1

FIG. 2

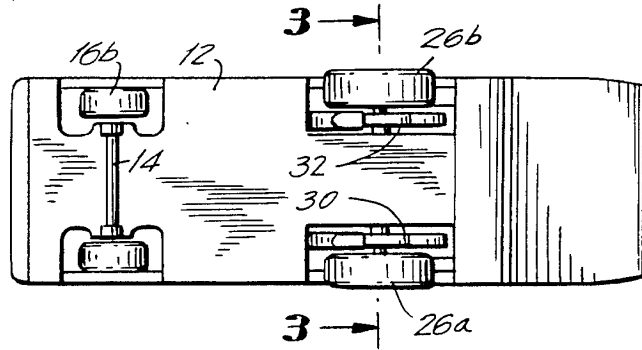


FIG. 3

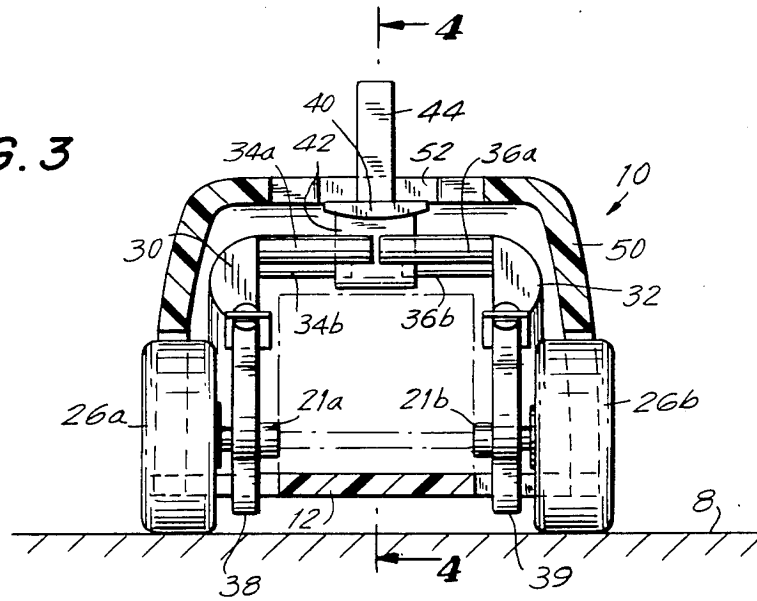
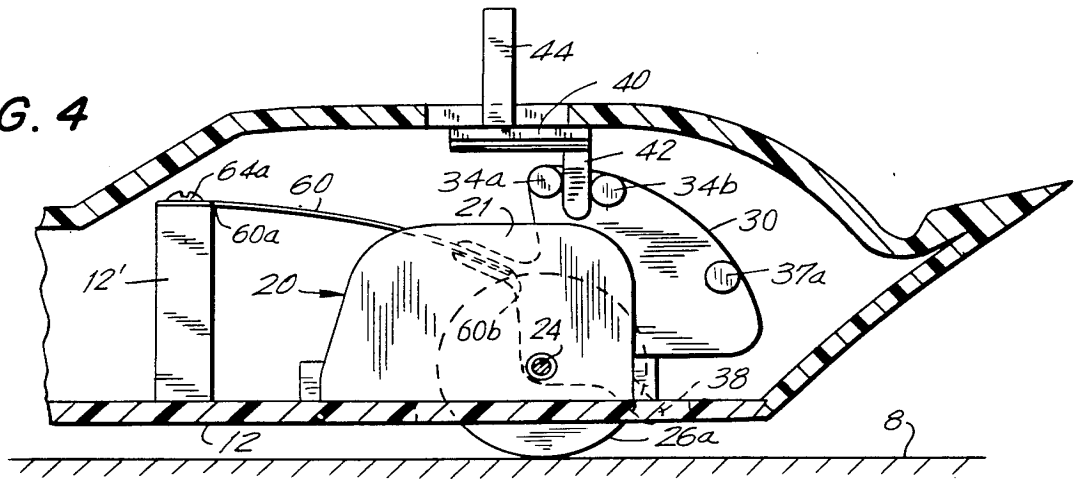
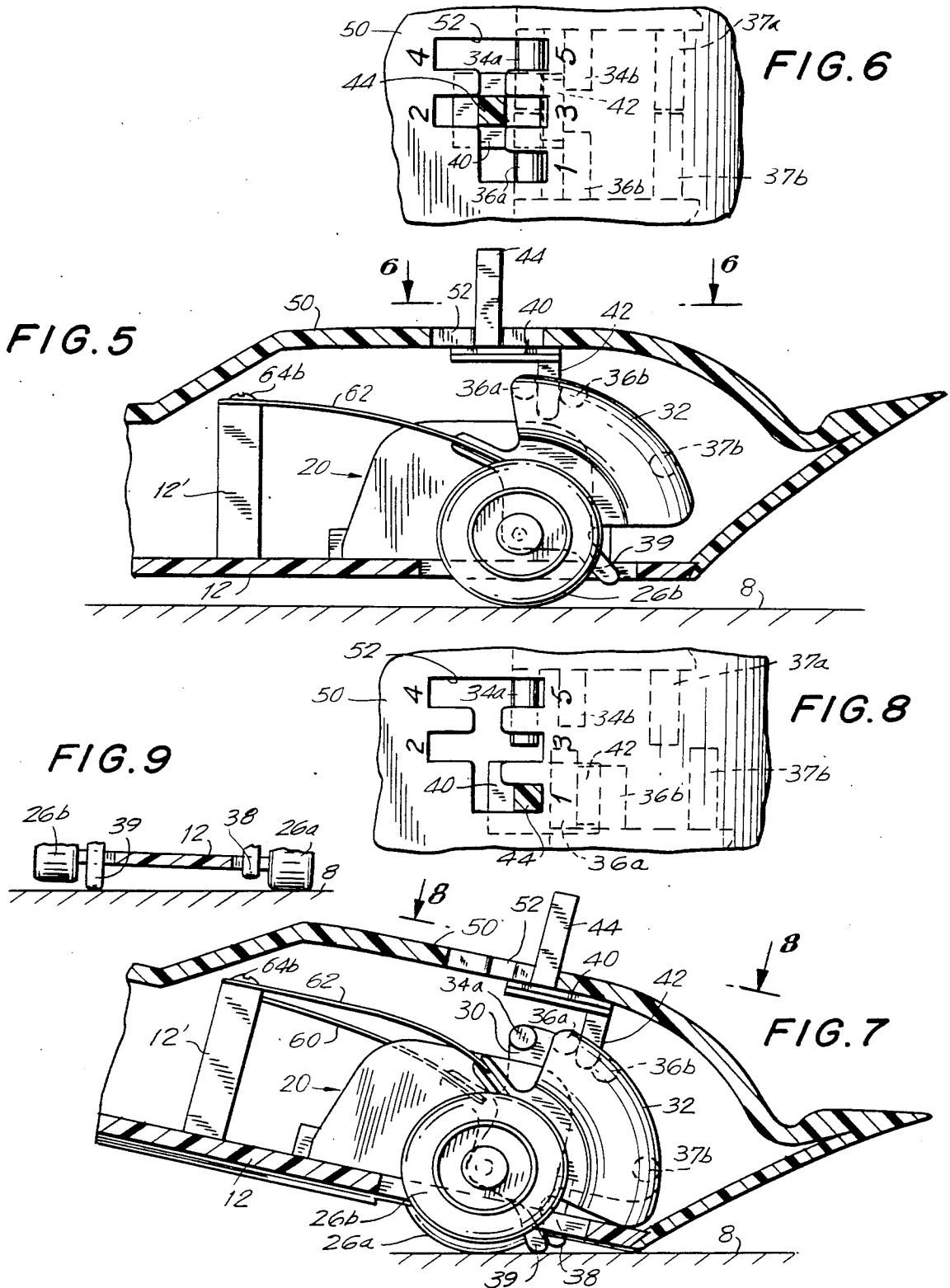
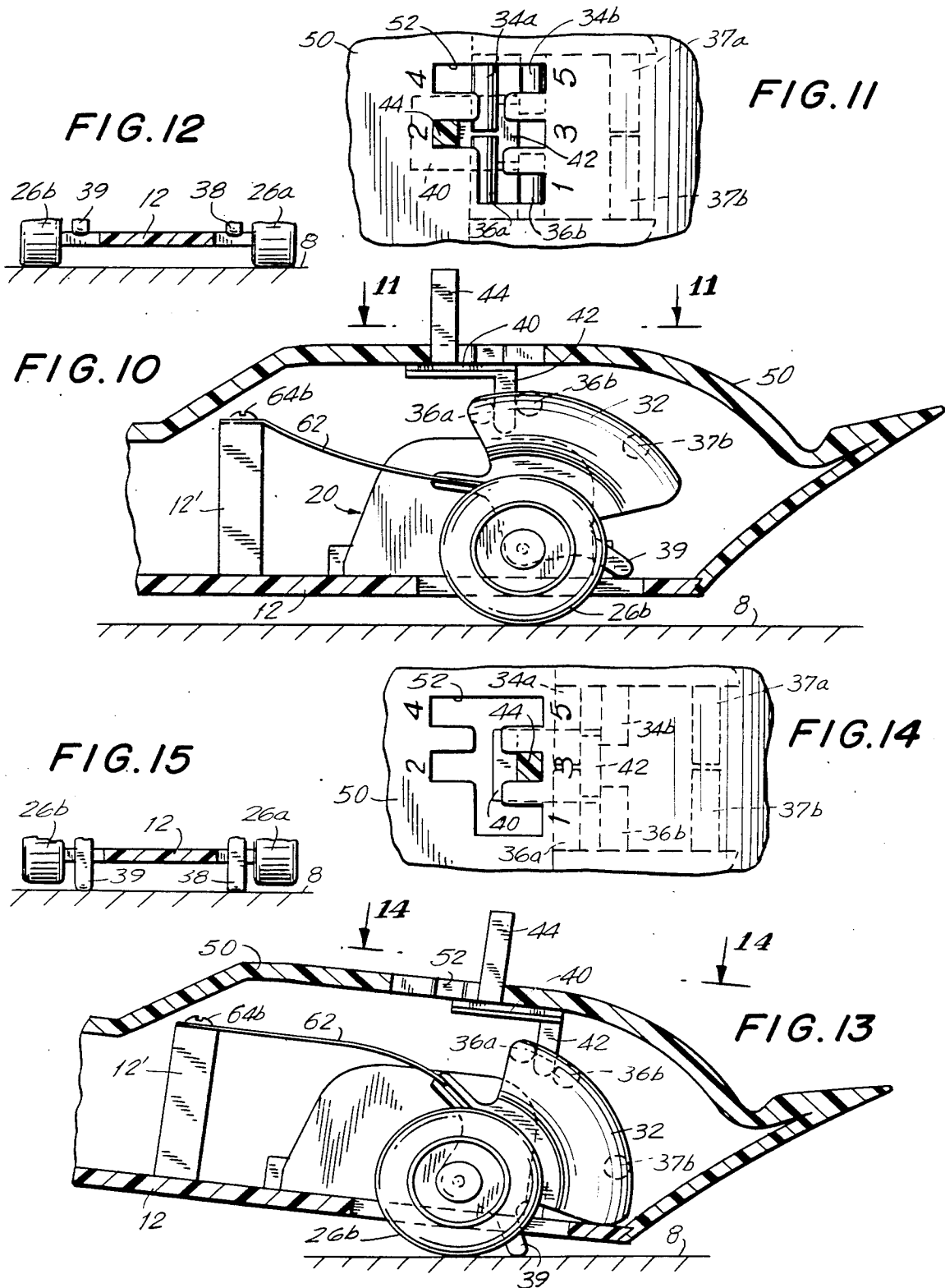


FIG. 4







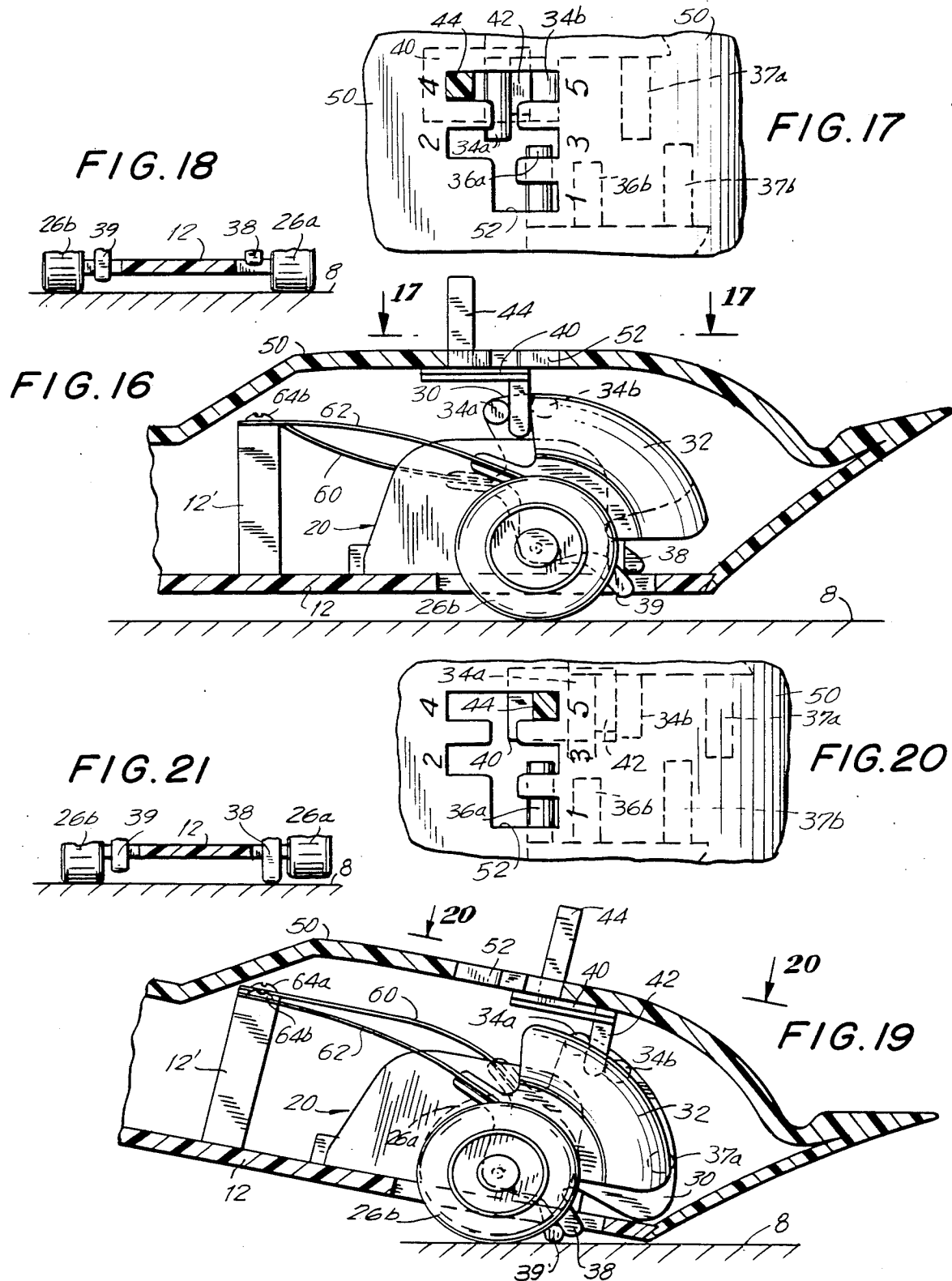


FIG. 22

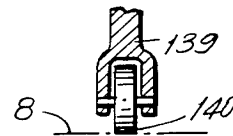
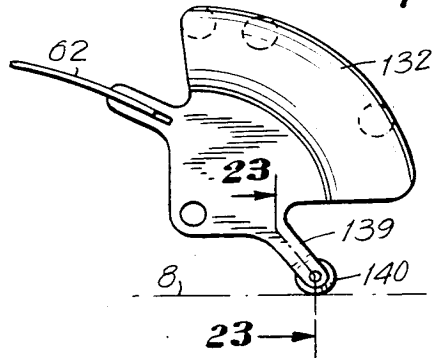


FIG. 23

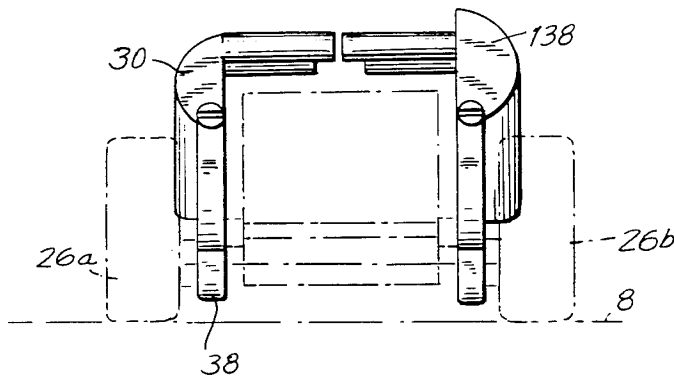


FIG. 24

FIG. 25

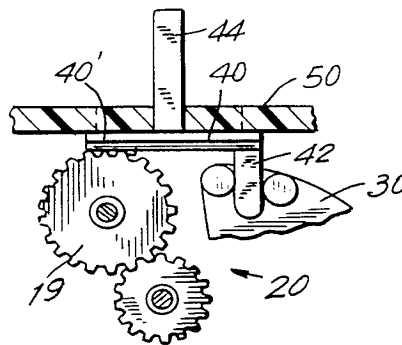


FIG. 26

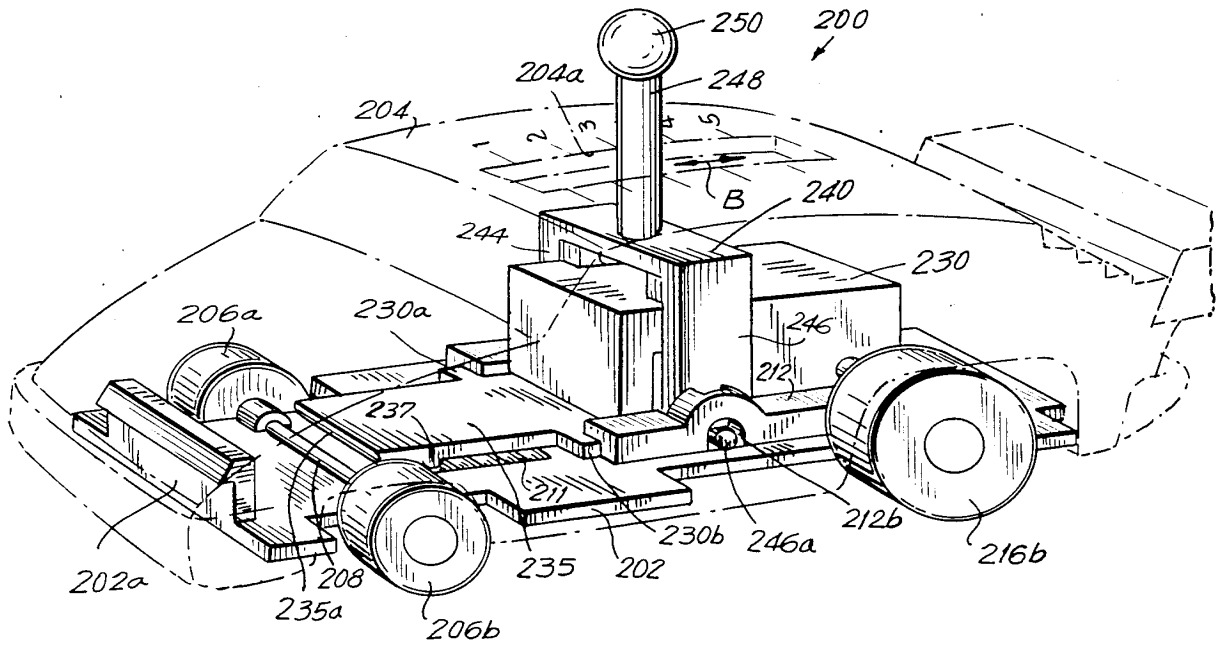
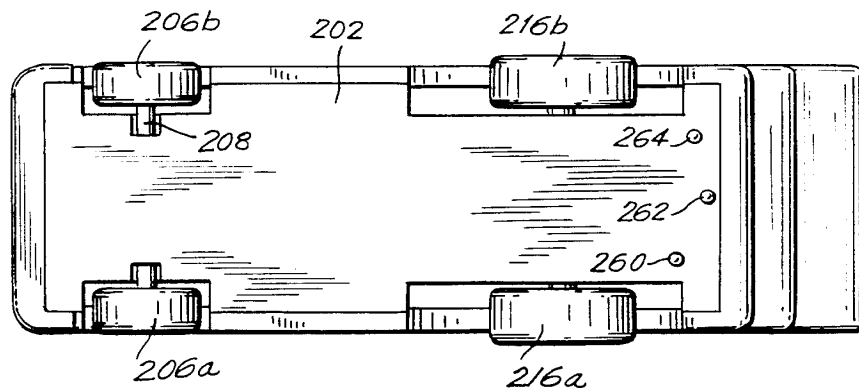


FIG. 27



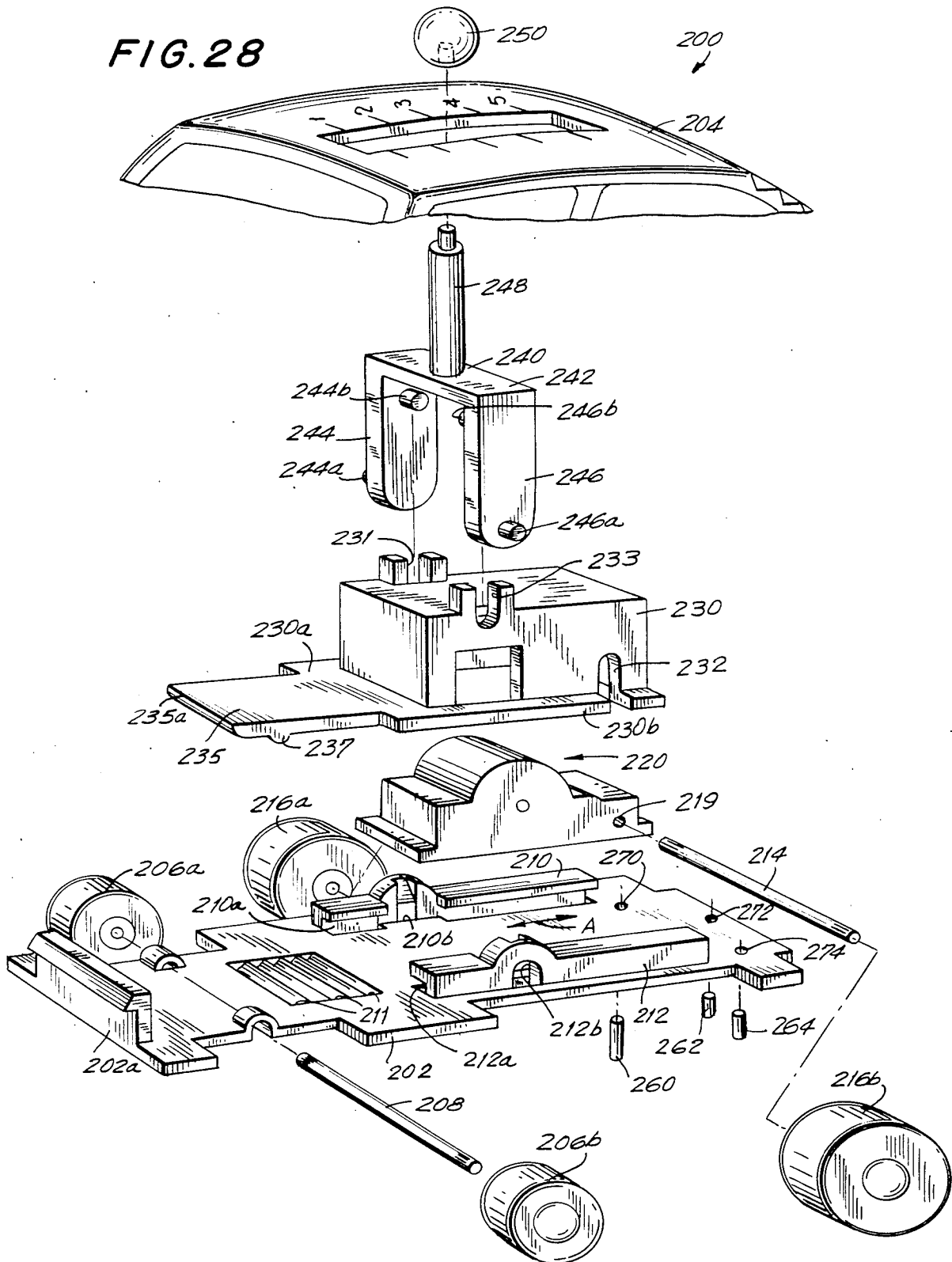


FIG. 29

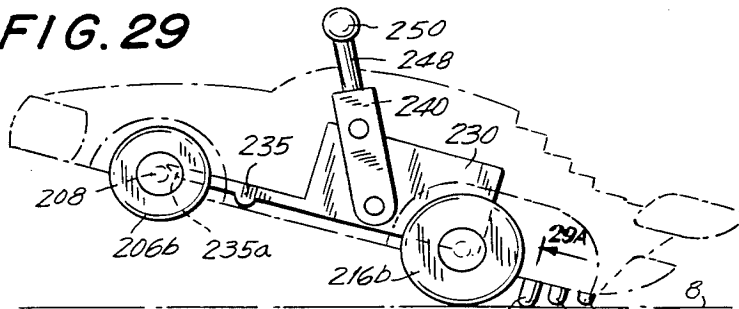


FIG. 29A

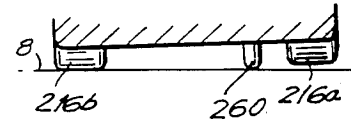


FIG. 30

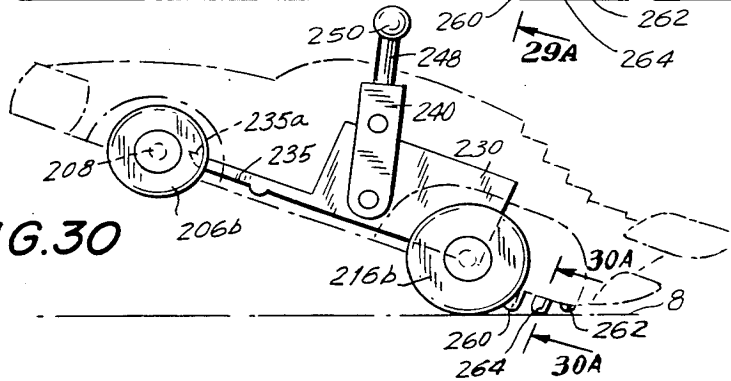


FIG. 30A

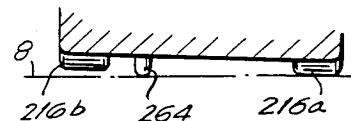


FIG. 31

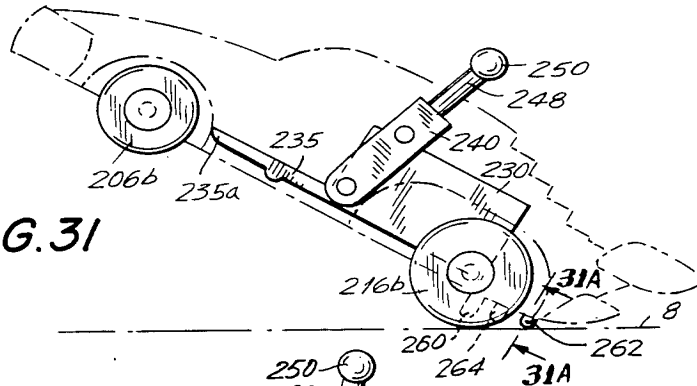


FIG. 31A

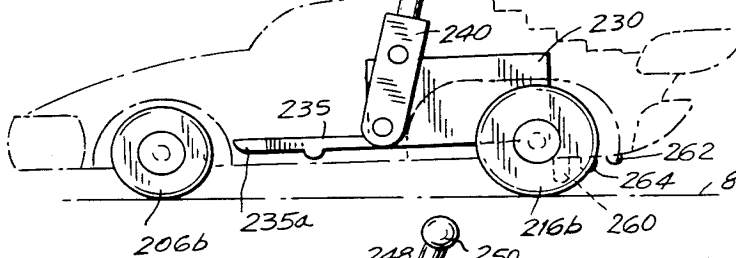
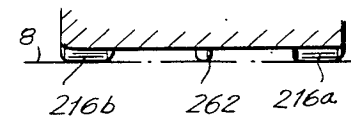


FIG. 32

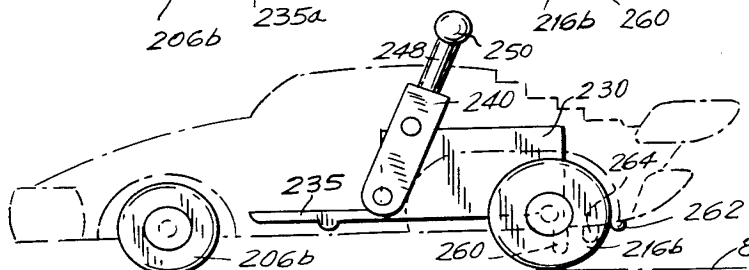


FIG. 33

MULTI-ACTION TOY VEHICLE**BACKGROUND OF THE INVENTION**

The present invention is directed to a toy vehicle and, in particular, to a toy vehicle whose physical behavior and operating characteristics can be selectively altered by a child playing with the toy vehicle, preferably by moving a simulated gear-shift lever, which permits the toy vehicle to perform multiple actions depending on the position of the operative components as selected by the shift lever.

Toy vehicles such as toy automobiles which simulate the appearance and operation of real automobiles and which are capable of being self-propelled by an internal motor or the like have become popular with children of all ages. One such type of toy vehicle includes what has been commonly known as a pull-back motor. In such vehicles, the rear wheels of the toy vehicle are coupled to a motor which includes a spring which is tightened as the rear wheels are rolled backwards along a surface. In such fashion, the spring becomes tightened so that when the vehicle is released, the spring will relax and transfer its energy via torque to the rear wheels causing them to rotate in a forward direction to propel the toy vehicle in a forward direction. Mechanisms of the type under discussion are disclosed, for example, in U.S. Pat. Nos. 4,077,156 and 3,798,831. Other than being capable of changing the acceleration and speed of such toy vehicles depending upon the amount of energy stored in the spring, only one type of action, namely forward action on all four wheels is possible.

It would be extremely desirable if a toy vehicle having a motor which permits self-propulsion could be developed to perform multiple actions such as wheel stands, turning, spinning-out and the like. It would be even more desirable if such a toy vehicle could perform such multiple actions as controlled by a lever which simulates a real gear-shift lever in an automobile having a manual transmission whereby the placing of the gear-shift lever in a desired gear position in the toy vehicle results in different types of action to be performed by the toy vehicle. The present invention provides a multi-action toy vehicle which meets the desires expressed above.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the instant invention, a toy vehicle is provided which includes a chassis having wheels rotatably supported thereon to permit the toy vehicle to roll on a surface. A changing mechanism is provided for selectively changing the operating characteristics of the toy vehicle. A lever actuates the changing mechanism in response to manual actuation thereof in order to change the manner in which the toy vehicle will ride on a surface.

In a first preferred embodiment, weights are movably supported on the chassis. The lever is operatively coupled to the weights and, in response to manual actuation thereof, selectively positions the weights with respect to the chassis to selectively change the center of gravity of the toy vehicle. In a second embodiment, the lever is manually actuatable to change the distance between the front and rear wheels thereby changing the center of gravity of the toy vehicle.

Projections may be provided on the chassis which selectively contact the ground in various operating

modes such as when the vehicle is performing a wheel stand.

The toy vehicle may include an energy storing mechanism such as a pull-back or wind-up motor to permit the toy vehicle to be self propelled.

Accordingly, it is an object of the present invention to provide a multi-action toy vehicle.

Another object of the present invention is to provide a multi-action toy vehicle in which a simulated gear-shift lever is manually actuatable to change the operating characteristics and physical behavior of the toy vehicle.

A further object of the present invention is to provide a toy vehicle whose operating characteristics such as the center of gravity or wheel base, can be altered in response to manual actuation of a lever to provide the vehicle with multiple actions.

A still further object of the present invention is to provide a toy vehicle capable of multiple actions which has a greatly enhanced play value.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is an exploded perspective view of a multi-action toy vehicle constructed in accordance with a preferred embodiment of the present invention, with only a portion of the toy vehicle body being depicted;

FIG. 2 is a bottom plan view of the toy vehicle depicted in FIG. 1, as constructed;

FIG. 3 is an enlarged sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a sectional side elevational view similar to FIG. 4 but taken through a different portion of the toy vehicle, with the lever in a neutral position;

FIG. 6 is a sectional view taken along lines 6—6 of FIG. 5;

FIG. 7 is partial side elevational view of the toy vehicle depicted in FIG. 1 performing a wheel stand with the lever in the first gear position;

FIG. 8 is a sectional view taken along line 8—8 of FIG. 7;

FIG. 9 is a partial elevational view of the rear wheels of the toy vehicle depicted in FIG. 7;

FIGS. 10, 11 and 12 are views similar to FIGS. 7, 8 and 9 but depict the toy vehicle in the second gear position;

FIGS. 13, 14 and 15 are views similar to FIGS. 7, 8 and 9 but depict the toy vehicle in the third gear position;

FIGS. 16, 17 and 18 are views similar to FIGS. 7, 8 and 9 but depict the vehicle in the fourth gear position;

FIGS. 19, 20 and 21 are views similar to FIGS. 7, 8 and 9 but depict the toy vehicle in the fifth gear position;

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FIG. 22 is an elevational view of an alternative construction of the pivotable weight in the toy vehicle of the present invention;

FIG. 23 is an enlarged sectional view taken along lines 23—23 of FIG. 22;

FIG. 24 is a partial front sectional elevational view depicting an alternative embodiment of the pivotable weights of the toy vehicle of the present invention;

FIG. 25 is a partial elevational view of several gears in the motor and lever constructed in accordance with an alternative embodiment of the present invention;

FIG. 26 is a perspective view of a toy vehicle constructed in accordance with a second embodiment of the present invention with the vehicle body shown in phantom;

FIG. 27 is a bottom plan view of the toy vehicle depicted in FIG. 26;

FIG. 28 is an exploded perspective view of the toy vehicle depicted in FIG. 26;

FIGS. 29, 30, 31, 32 and 33 are side elevational views of the toy vehicle depicted in FIG. 26 shown with the lever in different gear positions for explaining the operation of the toy vehicle depicted in FIG. 26; and

FIGS. 29A, 30A and 31A are associated respectively with FIGS. 29, 30 and 31 and are sectional views thereof and depict the rear wheels and projections of the toy vehicle depicted in FIG. 26.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference is first made to FIGS. 1 through 3 which depict a toy vehicle, generally indicated at 10, constructed in accordance with a preferred first embodiment of the present invention. Toy vehicle 10 includes a toy vehicle frame or chassis 12 on which the several components of toy vehicle 10 are disposed. A front axle 14 is rotatably supported on front end 12a of chassis 12. A pair of front wheels 16a and 16b are secured to opposite ends 14a and 14b, respectively, of axle 14 so as to be rotatable therewith.

An energy storing mechanism such as a motor 20 is secured to chassis 12. Motor 20 includes a through hole 22 in which a rear axle 24 is inserted. A pair of rear wheels 26a and 26b are secured to ends 24a and 24b, respectively, of axle 24 so as to be rotatable therewith.

Motor 20 may be a pull-back motor of the type disclosed in U.S. Pat. Nos. 4,077,156 and 3,798,831 in which a spring is tightened by rolling the rear wheels in a reverse direction over a surface to store energy, which energy, when the vehicle is released, will cause the vehicle to be projected forward. Accordingly, rear axle 24 will be appropriately linked to motor 20 so that torque created thereby can be applied to rear axle 24 to cause it to rotate in a forward direction. It is noted that other types of energy storing mechanisms may be utilized, such as a conventional wind-up motor or the like. However, it is also recognized that the present invention may operate under manual propulsion although a selfpropelled toy vehicle is preferable.

First and second weights 30 and 32 are pivotably supported intermediate rear wheels 26a and 26b, respectively, and motor 20. In this regard, housing 21 of energy storing mechanism 20 may include cylindrical open projections 21a and 21b which respectively pivotably support weights 30 and 32 through respective openings 30' and 32'. As will be described below in detail, weights 30 and 32 are pivotable to selected positions to alter the center of gravity of toy vehicle 10 in

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order to provide vehicle 10 with different operating conditions and physical behavior dependent upon the position of weights 30 and 32.

A simulated gear-shift lever or control knob 40 is provided for selectively positioning weights 30 and 32. Control knob 40 includes a downwardly extending projection 42 which is captured between pegs 34a and 34b of weight 30 and pegs 36a and 36b of weight 32. Control knob 40 also includes an upwardly extending rod or lever 44. A toy vehicle body 50 is appropriately coupled to chassis 12. Body 50 includes a cut out pattern or slot 52 in the form of a gear shift pattern and is appropriately marked with indicia such as the numbers 1 through 5 as depicted to denote the plurality of positions and in order to further simulate a gear shift pattern of an actual automobile. Shift lever 44 extends through slot 52 and is movable between the positions indicated.

First and second leaf springs 60 and 62 each have a first end 60a and 62a, respectively, which is secured to vertical block 12' on chassis 12 by means of screws 64a and 64b. Opposite ends 60b and 62b of leaf springs 60 and 62 extend into slots 31 and 33 formed in weights 30 and 32 respectively. Leaf springs 60 and 62 apply a force to weights 30 and 32 so that they remain in a neutral position, as described below in detail, and which also return weights 30 and 32 to their neutral position when shift lever 44 is returned to its neutral position after being moved from one of the five gear positions. Weights 30 and 32 include additional extending rods 37a and 37b, respectively, which aid in stabilizing weights 30 and 32 and to insure proper pivoting thereof.

Weights 30 and 32 include projections 38 and 39 respectively which will contact the surface on which vehicle 10 is riding under certain operating conditions when shift lever 44 is positioned in certain of the gear positions, as will also be described below in detail.

Reference is now made additionally to FIGS. 3 through 21, in order to describe the use and operation of toy vehicle 10. FIGS. 3 through 5 depict toy vehicle 10 when shift lever 44 is in a neutral position, that is when shift lever 44 is not set in one of the numbered gear slots as best depicted in FIG. 6. In the neutral position, weights 30 and 32 remain in their central, neutral position as positioned by leaf springs 60 and 62. Projections 38 and 39 on weights 30 and 32 do not substantially extend through chassis 12 and will not contact surface 8 on which toy vehicle 10 is riding even if toy vehicle 10 performs a wheel stand where front end 12a of chassis 12 is lifted into the air. The center of gravity of toy vehicle 10 will be in a normal position such that, after torque is applied by motor 20 to rear wheels 26a and 26b, as toy vehicle 10 moves forward, the vehicle will either run straight on all four wheels or will perform a wheel stand if a sufficient amount of rotational energy is supplied to the rear wheels to cause the front of the toy vehicle to lift up.

When shift lever 44 is moved into the first gear position as depicted in FIGS. 7 through 9, toy vehicle 10 will exhibit a different physical behavior as described hereinafter. It is noted that sufficient friction is provided between slot 52 and shift lever 44 so that shift lever 44 is held in the first gear position until manually forced back to the neutral position. The same is also true for gear positions 2 through 5 where shift lever 44 will be held in those gear positions until manually forced back to the neutral position.

In the first gear position, weight 32 on the left side of toy vehicle 10 is pivoted and locked in a rearward posi-

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tion. Projection 39 protrudes through chassis 12 as best depicted in FIGS. 7 and 9. Since weight 32 is pivoted, the center of gravity of toy vehicle 10 will be shifted back to 50% of its maximum rear position. After motor 20 is energized and toy vehicle 10 is released on surface 8 to ride in a forward direction, the front wheels of the vehicle will lift off the ground causing the toy vehicle to perform a wheel stand and toy vehicle 10 will turn to the left as projection 39 contacts surface 8.

Toy vehicle 10 with shift lever 44 in the second gear position is depicted in FIGS. 10 through 12. In the second gear position, projection 42 contacts both pegs 34a of weight 30 and 36a of weight 32 causing weights 30 and 32 to pivot and remove in a forward direction. The center of gravity of toy vehicle 10 is moved forward to 100% of its maximum position. Because the center of gravity is moved forward sufficiently, the toy vehicle will run straight when driven by motor 20 and will not perform a wheel stand.

FIGS. 13 through 15 depict toy vehicle 10 when shift lever 44 is moved to the third gear position. In third gear, both weights 30 and 32 are pivoted in the rearward direction since projection 42 on control knob 40 contacts both pegs 34b on weight 30 and 36b on weight 32. Both projections 38 and 39 are lowered through chassis 12. The center of gravity of toy vehicle 10 is moved to 100% of its maximum to the rear of the toy vehicle.

As motor 20 causes toy vehicle 10 to move in the forward direction, the front wheels of the toy vehicle will readily lift off the ground and the vehicle will turn right or left depending upon the running surface friction characteristics. In addition, projections 38 and 39 will contact the ground as toy vehicle 10 performs wheel stands to cause different physical behavior and operating characteristics of the toy vehicle.

In the fourth gear position as depicted in FIGS. 16 through 18, right weight 30 is pivoted forward. The center of gravity of toy vehicle 10 will be moved forward 50% of its maximum since only one of the weights is pivoted forward. As motor 20 releases its stored energy to the rear wheels, toy vehicle 10 will either ride forward with all four wheels on the ground or the vehicle will perform a wheel stand.

FIGS. 19 through 21 depict toy vehicle 10 when shift lever 44 is in the fifth gear position. In this position, right weight 30 is pivoted to the rear lowering projection 39 thereof below chassis 12 and will contact the ground when a wheel stand is performed. When in fifth gear, the center of gravity of toy vehicle 10 is moved back to 50% of its maximum since only one weight is pivoted to the rear. Toy vehicle 10, when driven by motor 20, will turn to the right as the front wheels are lifted and a wheel stand is performed.

In accordance with the above description of a toy vehicle constructed in accordance with the present invention, a multi-action toy vehicle which exhibits different physical behavior and operating characteristics depending upon the position in which the simulated gear shift lever is placed provides an enhanced play value to a regular motorized or propelled toy vehicle. The objects and advantages of the present invention are achieved through a construction as described above and such a toy vehicle is simple and relatively inexpensive to manufacture. It is noted that the objects and advantages may be obtained in the first embodiment even if a single movable weight is used.

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FIG. 22 depicts an alternative embodiment of a weight 132 wherein projection 139 thereof includes a roller 140 which, when weight 132 is pivoted in the rearward direction, will contact and roll on surface 8. Roller 140 will reduce the running friction of projection 139 as it rolls along surface 8. It is noted that both weights in the toy vehicle may have such rollers.

As depicted in FIG. 24, one of the two pivotable weights can be heavier than the other to permit further variations between left and right turns of the toy vehicle. As depicted in FIG. 24, left side weight 138 is more massive and larger than right side weight 30.

FIG. 25 depicts another alternative embodiment of the present invention where a portion 40' of platform 40 contacts a gear 19 of motor 20 when shift lever 44 is in neutral position so that a braking action by means of friction on gear 19 can be provided.

Reference is now made to FIGS. 26 through 28 which depict a toy vehicle, generally indicated at 200, constructed in accordance with another embodiment of the present invention. Toy vehicle 200 includes a chassis 202 which supports a toy vehicle body 204. A pair of front wheels 206a and 206b are rotatably supported on front end 202a of chassis 202 by means of an axle 208. Opposing side rails 210 and 212 are provided on opposing sides of chassis 202 on the upper surface thereof. An energy storing mechanism 220 such as a pull back motor or other wind-up motor or the like is slidably supported on chassis 202 between rails 210 and 212. An axle 214 extends through an opening 219 in motor 220 and is operatively coupled to motor 220 so as to be rotated thereby. A pair of rear wheels 216a and 216b are secured to opposite ends of axle 214. A sliding motor retainer cover 230 is positioned over motor 220 and includes slots 232 through which rear axle 214 may extend. Cover 230 is positioned over motor 220 and includes side wings 230a and 230b which are captured within cutouts 210a and 212a formed in rails 210 and 212, respectively. This permits cover 230 and motor 220 captured thereunder to be slidable on chassis 202 in the directions indicated by arrow A.

A shift lever mechanism 240 includes a U-shaped section 242 having downwardly extending arms 244 and 246 and a shift arm lever 248 which extends in an upward direction through slot 204a in car body 204. Pivot pins 244a and 246a on the outer surface of legs 244 and 246 are captured in openings 210b and 212b formed respectively in rails 210 and 212. Slide pins 244b and 246b on the inner surface of legs 244 and 246 ride in U-shaped slots 231 and 233, respectively, formed on sliding motor cover 230. A shift knob 250 is secured to the top of shift lever 248.

Three projections 260, 262 and 264 preferably of different lengths are secured in openings 270, 272 and 274 so as to extend from the underside of chassis 202. Motor cover 230 includes an extension 235 having a detent 237. Detent position recesses 211 are formed on the upper surface of chassis 202 so as to coact with detent 237 in order to hold motor cover 230 in a desired position. By moving shift lever 248 along slot 204a formed in vehicle body 204 in the directions of arrow B, the wheel base, that is, the distance between the front wheels and rear wheels, can be changed to alter the balance of the vehicle, its center of gravity and the vehicle's running stability.

Reference is now made additionally to FIGS. 29 through 33 for explaining the operation and use of toy vehicle 200.

When shift lever 248 is in its forward-most position in the first gear position as depicted in FIGS. 29 and 29A, the rear wheels will be moved to their forward-most position thereby producing the shortest wheel base. The front end 235a of extension 235 presses against front axle 208 so as to apply a force thereagainst. Rear wheels 216a and 216b will be forward of all three projections 260, 262 and 264. As motor 220 drives vehicle 200 in a forward direction, the toy vehicle will perform a wheel stand as depicted in FIG. 29. When a wheel stand is performed, the longest projection 260 will contact ground 8. When projection 260 contacts the ground during a wheel stand, right rear wheel 216 will be lifted off the ground causing the left rear wheel 216b to power the vehicle in a spin to the right. Surface 235a pressing against the front axle will cause a breaking action when front wheels 206a and 206b are attempting to roll on the ground.

FIGS. 30 and 30A depict toy vehicle 200 with shift lever 248 in the second gear position. Front surface 235a of extension 235 is released from engagement with front axle 208. Detent 237 engages in a second detent position recess 211. The wheel base is lengthened slightly so that the longest projection 260 is positioned slightly behind the rear wheels. As motor 230 drives vehicle 200 in a forward direction and a wheel stand is performed, projection 260 will move up and away from the ground and left projection 264 will contact the ground thereby lifting left rear wheel 216b. This causes right rear wheel 216a to power the vehicle in a spin or turn to the left.

FIGS. 31 and 31A depict toy vehicle 200 with shift lever 248 in the third gear position. In this third gear position, the rear wheels are moved further back thereby lengthening the wheel base and moving left projection 264 behind the rear wheels. Accordingly, during a wheel stand as vehicle 200 is powered forward, projections 260 and 264 will move upward and the shortest center projection 262 will contact the ground. This action aids toy vehicle 200 in running straight during the wheel stand since projection 262 is centrally located.

FIG. 32 depicts toy vehicle 200 when shift lever 248 is in the fourth gear position. In the fourth gear position, the rear wheels are moved back a sufficient difference to create a relatively stable wheel base for the toy vehicle. There is generally sufficient weight in front of the rear axle to prevent the toy vehicle from performing a wheel stand while moving forward. However, in an alternative embodiment, the front wheels may be elliptical in shape which would cause the front end to be raised when in fourth gear since the front end of the vehicle would be thrown upward by the rotating elliptical wheels.

FIG. 33 depicts toy vehicle 200 when in a fifth gear position. The distance between the front and rear wheels is greatest in the fifth gear position so that the wheel base is longest. A stable ride without wheel stands will be performed by the toy vehicle.

The present embodiment under discussion like the preferred embodiment depicted in FIGS. 1 through 3 provides a multi-action toy vehicle in which the physical behavior and operating characteristics of the toy vehicle can be determined by the child by setting a simulated gear shift lever in a desired gear position. Whereas the first embodiment utilizes pivoting weights to change the center of gravity of the toy vehicle, the present embodiment utilizes a change in the wheel base to alter

the physical behavior and center of gravity of the toy vehicle. Such multi-action toy vehicles as those described in detail herein provide a toy having a high level of play value to children.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A toy vehicle comprising a chassis, wheel means rotatably supported on said chassis for permitting said chassis to roll on a surface, changing means supported on said chassis for changing the center of gravity of said toy vehicle and control means operatively coupled to said changing means for selectively controlling said changing means in response to manual manipulation thereof, said changing means including weight means movably supported on said chassis, said control means selectively adjusting said weight means to adjust the center of gravity of said toy vehicle, said control means being a lever means coupled to said weight means for selectively positioning said weight means on said chassis, said chassis including a front end and a rear end, said wheel means including at least a first front wheel rotatably supported on said front end of said chassis and first and second rear wheels rotatably supported on the rear end of said chassis, said weight means being supported on said chassis proximate said first and second rear wheels, said weight means including a first weight pivotally supported on said chassis proximate said first rear wheel and a second weight pivotally supported on said chassis proximate said second rear wheel, said lever means being operatively coupleable to said first and second weights to selectively pivot said first and second weights whereby the center of gravity of said toy vehicle is changed.

2. The toy vehicle as claimed in claim 1, further comprising motor means supported on said chassis and operatively coupled to said first and second rear wheels for powering said toy vehicle.

3. The toy vehicle as claimed in claim 2, wherein said motor means is a pull-back motor which is tightened when said first and second rear wheels are rolled in a reverse direction over said surface, said pull-back motor driving said rear wheels in a forward direction when said toy vehicle is released.

4. The toy vehicle as claimed in claim 3, wherein said lever means simulates a gear shift lever.

5. The toy vehicle as claimed in claim 4, wherein said chassis includes a toy car body attached thereto, said toy car body having a slot formed therein in the shape of a gear shift pattern, said lever means extending through said slot.

6. The toy vehicle as claimed in claim 5, wherein said slot defines a plurality of gear shift positions, said lever means being manually movable between said gear shift positions to set said lever means in a selected one of said positions, each said gear shift position corresponding

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to a position of said first and second weights as controlled by said lever means.

7. The toy vehicle as claimed in claim 1, further comprising motor means coupled to said wheel means for rotating said wheel means, said lever means simulating a gear shift lever.

8. The toy vehicle as claimed in claim 1, wherein said first weight is heavier than said second weight.

9. The toy vehicle as claimed in claim 6, wherein said lever means contacts said motor means when said lever means is in a selected one of said gear shift positions to provide a continuous braking drag at said one position.

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10. A toy vehicle comprising a toy vehicle frame, a pair of front wheels rotatably supported on said frame, a pair or rear wheels rotatably supported on said frame, first and second weights movably supported on said frame proximate said pair of rear wheels, a lever operatively coupleable to said first and second weights for selectively positioning said weights in preselected orientations with respect to said frame, a toy vehicle body coupled to said frame and having a slot through which said lever extends for manipulation, and motor means for rotating said rear wheels to drive said vehicle in a forward direction.

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- [54] TOY VEHICLE
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- [21] Appl. No.: 742,087
- [22] Filed: Nov. 16, 1976

Related U.S. Application Data

- [63] Continuation-in-part of Ser. No. 635,583, Nov. 28, 1975, Pat. No. 3,999,771.
- [51] Int. Cl.² A63G 19/08
- [52] U.S. Cl. 280/1.182; 280/218
- [58] Field of Search 280/1.181, 1.182, 1.183, 280/1.184, 218, 1.13 R

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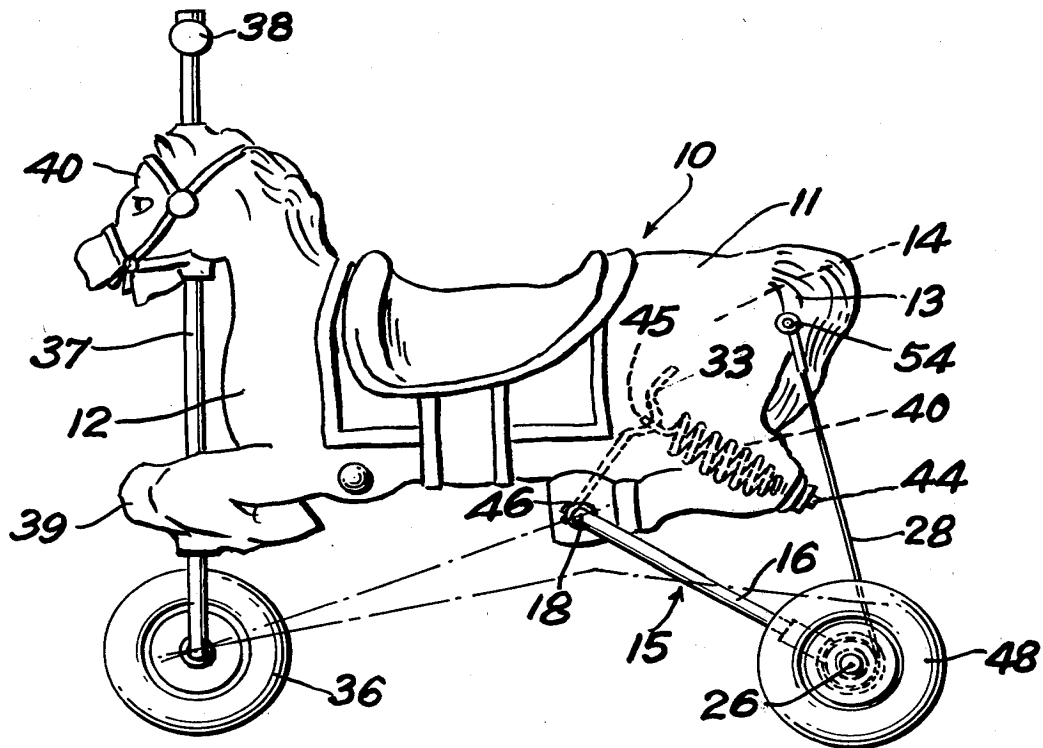
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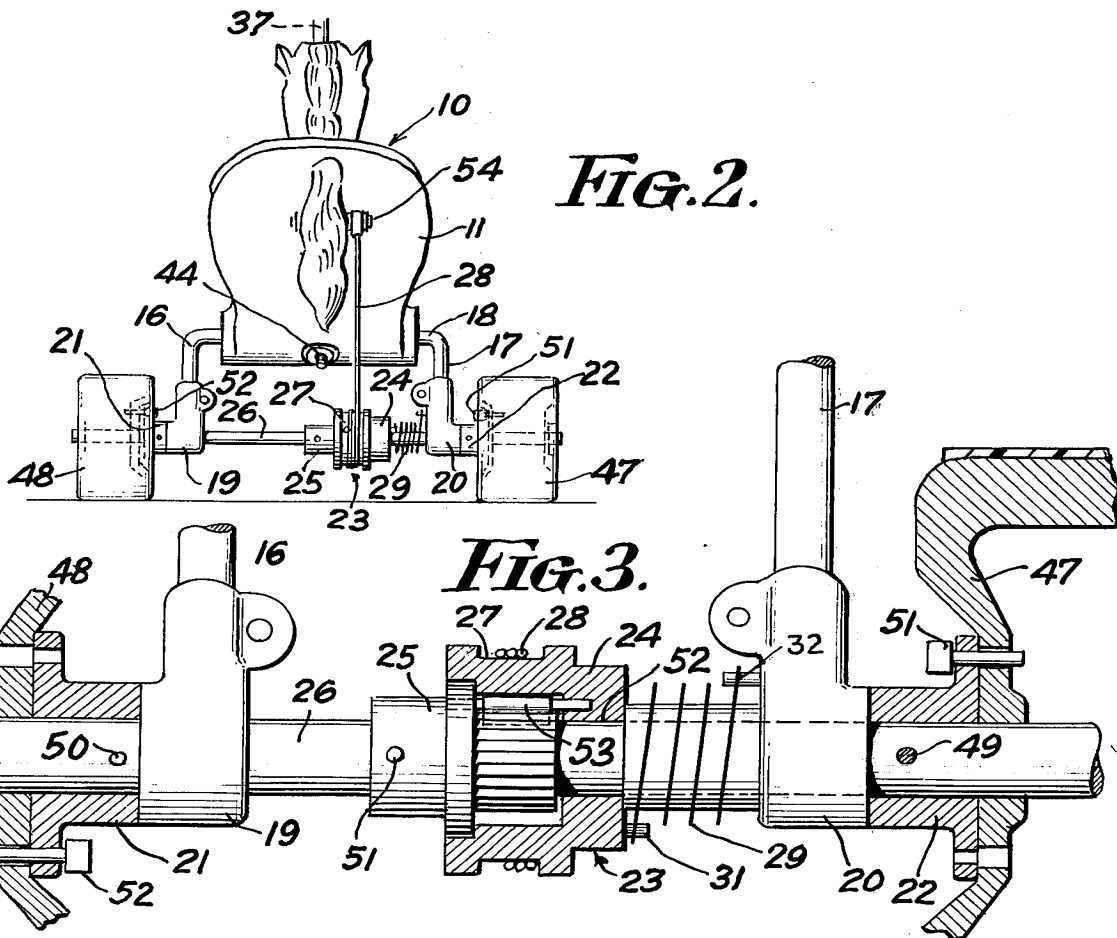
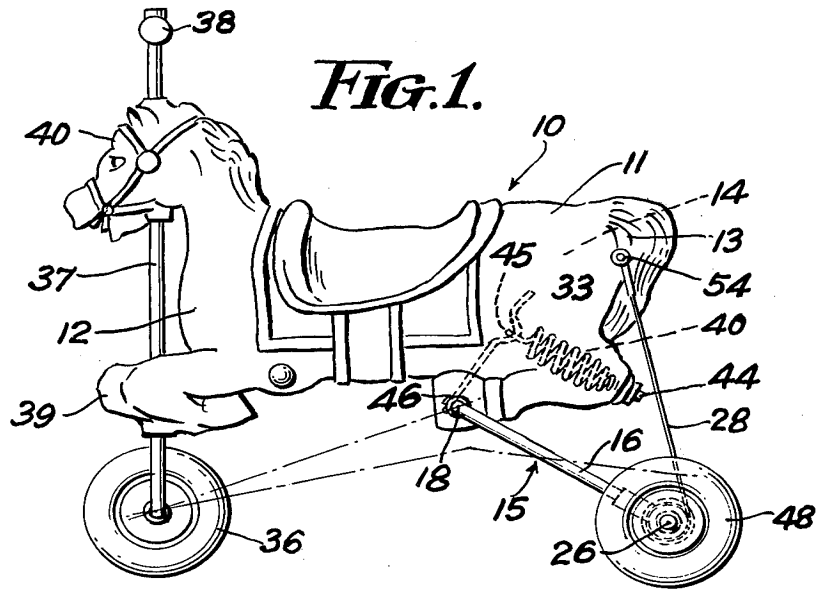
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[57] **ABSTRACT**

A toy having a body and a downwardly-extending rear frame movably supported on the body with a spring on the frame to urge the body upwardly, an axle supported on the lower end of the frame and wheels attached to the axle. The axle has a one-way clutch attached to it and the clutch is connected to the body by a cord. As the body moves downwardly, stressing the spring, the clutch is free-wheeled in a first direction and, when the spring forces the body upward, the cord rotates the clutch rotating the axle and, with it the wheels.

9 Claims, 3 Drawing Figures





TOY VEHICLE

REFERENCE TO CO-PENDING APPLICATION

This application is a continuation-in-part of patent application Ser. No. 635,583, filed Nov. 28, 1975, now issued as U.S. Pat. No. 3,999,771.

OBJECTS OF THE INVENTION

It is an object of the invention to provide an improved toy wherein a child sitting on the toy can bounce it up and down, and thereby rotate the wheels in a forward direction.

Another object of the invention is to provide an improved toy.

Another object of the invention is to provide a toy that is simple in construction, economical to manufacture and simple and efficient to use.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

GENERAL DESCRIPTION OF DRAWINGS

FIG. 1 is a side view of the toy according to the invention.

FIG. 2 is a rear view of the toy according to the invention.

FIG. 3 is a longitudinal cross-sectional view of the rear drive system according to the invention.

DETAILED DESCRIPTION OF DRAWINGS

Now, with more particular reference to the drawing, the toy 10 has a body 11 shown by way of example as a horse with a saddle, bridle, head, tail and front legs. Instead of a horse, the body could be made in the form of any other animal, bird, or vehicle such as a motorcycle or automobile. The body 11 has a front 12 and rear 13 and is supported by a rear suspension connected to the rear axle by a one-way clutch 23 in such a way that when a child sits on the toy and bounces up and down on the body 11, the rear wheels will be driven forward. The clutch's inner member 25 is fixed to the axle 26 and a cable 28 is wound around and attached to its outer member 24. The cable 28 is fixed to the body at 54.

Wheels 47 and 48 are rotatably supported on axle 26. Hubs 21 and 22 are received on axle 26 and held to rotate with axles 26 by fastening members 49 and 50. Removable pins 51 and 52 hold wheels to rotate with hubs 21 and 22. Pins 51 and 52 can be removed so that the toy will freely roll. Wheels 47 and 48 have rubber tires to insure better friction with the floor. When the body moves downward stretching the tension spring 40, tension on cable 28 is relaxed and torsional coil spring 29 rotates the outer clutch member 24, thereby winding the cable on the outside surface 27 of the clutch member 24. On upward movement of the body, the tension spring 40 inside the hollow 14 of the horse's body engages the body at end 44 and exerts its force on levers 33 at 45 and swings the U-shaped frame 15 downward, pulling the cable 28 upward and thereby rotating the outer clutch member 24.

The U-shaped frame 15 has legs 16 and 17 that terminate in bearings 19 and 20 which freely receive the axle 26. The intermediate part 18 of the frame is fixed to the lever 33 and is pivoted to the body at 46. The inner member 25 of the one-way clutch as well as hubs 21 and 22 are fixed to the axle 26 to rotate with it. The pin 51 is shown by way of example only and the inner clutch member could be attached to axle 26 by any suitable means familiar to those skilled in the art. The outside member 24 of the one-way clutch 23 may freely rotate on the inner member in one direction but is locked to the inner member 25 when rotated in the opposite direction. This locking action can be accomplished by any ratchet design familiar to those skilled in the art. In the example shown, applicant prefers to use a one-way clutch that is molded of thermoplastic material and has ratchet teeth and a pawl arrangement 53.

The coil spring 29 is fixed to the outer clutch member 24 at one end by a suitable connector 31 and to the bearing 20 at 32.

The lower end of steering rod 37 is bent at right angles to the vertically-extending part and the front wheel 36 is supported on the laterally-extending part of steering rod 37 extending up through the front legs 39 of the horse's body and up through the head 30 and has a handle bar 38 fixed to its upper end.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel as is commensurate with the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A toy comprising,
 - a body,
 - said body having a front end and a rear end,
 - said rear end having a hollow therein,
 - a U-shaped rear frame having two legs and a transverse member connecting said legs,
 - said legs each having bearing means on the distal ends thereof,
 - an axle extending transversely of said toy and rotatably received in said bearing means,
 - two rear wheels,
 - said rear wheels being supported on said axle on the ends thereof and pinned against rotation thereon,
 - a one-way clutch,
 - said one-way clutch having an outer member and an inner member,
 - said inner member being fixed to said axle,
 - and means to allow said outer member to rotate in one direction relative to said inner member but restrained against rotation relative to said inner member in the other direction,
 - a drum surface on the outer periphery of said outer member,
 - a cable wrapped around said drum surface and extending upwardly and fixed to said body,
 - a return spring,
 - said return spring having one end attached to a said bearing and the other end fixed to said outer clutch member, urging said outer clutch member to rotate in a direction to wrap said cable on said drum surface,
 - a crank member in said hollow,

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one end of said crank member being fixed to said transverse member of said frame, the other end of said crank member extending upwardly, generally perpendicular to said legs,

a tension spring,
said tension spring being disposed in said hollow in said body and having one end fixed to said body and the other end connected to the distal end of said crank, whereby a load on said body causes said U-shaped frame to tend to rotate, exerting a tensile force on said spring and allowing said cable to wrap on said outer drum surface, said outer member of said one-way clutch,

said tension spring urging said legs to move downwardly, lifting said body whereby said clutch and said inner member with it, rotate, said axle pinned thereto, whereby said wheels are rotated in a forward direction with each cycle of movement downward and upward of said body.

2. The toy recited in claim 1 wherein a rod member extends upwardly through the front end of said body and a wheel is supported on the lower end of said rod, and a handle is supported on the upper end of said rod for rotating said rod, thereby steering said vehicle.

3. A toy comprising,
a body,
a frame extending downwardly from said body and movable upwardly and downwardly relative thereto,

an axle rotatably supported on said frame, wheels on said axle,
a one-way clutch on said axle,
said clutch having an inner member fixed to said axle and an outer member freely rotatable in a first direction and having means to restrain said inner member and said outer member to rotate together in a second direction,

a flexible member having a first end and a second end, said first end being fixed to said body and said second end being wrapped around said outer member, and resilient torsional means connected to said outer member urging said outer member to rotate in said first direction, whereby, as said body moves up and

down, said one-way clutch rotates said axle, moving said wheels on the floor.

4. The toy recited in claim 3 wherein said toy has at least one front ground engaging wheel thereon and means to steer said front wheel.

5. The toy recited in claim 3 wherein said resilient torsional means comprises a helical spring disposed around said axle and connected to said outer clutch member at one end and connected to said frame at the other end whereby said outer clutch member is urged to rotate in said first direction to wind said cable on said second clutch member.

6. The toy recited in claim 3 wherein said frame comprises a U-shaped member having an intermediate part, bearing means supporting said intermediate part of said U-shaped member on said body, said wheels being supported on the ends of the legs of said U-shaped member,
a crank fixed to said intermediate part of said U-shaped member, and
a tension spring connected to said crank, urging said legs of said U-shaped member to move downward, lifting said body.

7. The toy recited in claim 6 wherein said clutch is a one-way clutch and comprises a ratchet member having a pawl and teeth thereon,

said pawl being connected to said outer clutch member and said teeth being connected to the said inner clutch member whereby said inner clutch member and said outer clutch member are restrained to rotate together in said second direction to advance said axle,
and said outer clutch member and said inner clutch member rotate relative to each other in said first direction.

8. The toy recited in claim 1 wherein said body is in the form of an animal body having rear legs and said tension spring is disposed in said legs and has a washer on the outside of the animal body resting thereon and said spring has means extending therethrough retained on said washer.

9. The toy recited in claim 7 wherein said body has front knees and a head and said front wheel is supported on a rod extending through said knees and said head.

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(54) **VARIABLE LENGTH CHILDRENS WEAR HANGER**

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(57) **ABSTRACT**

A childrens wear hanger has a primary hanger with a first body, a hook extending upward from the first body, a first means for suspending a garment from the first body, and a first connection tab extending downward from the body, operative to releasably suspend a dependent hanger therefrom. A connection link having a locking end at each end thereof, the locking end having at least one snap lock with at least one horizontal surface is releasably attachable to at least a connection tab of a primary hanger. A dependent hanger has a body and a second means for suspending a garment from the second body, and a second connection tab extending upward from the second body. The second connection tab is operative to releasably secure the locking end of the connecting link therein.

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(21) Appl. No.: **11/676,679**

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Related U.S. Application Data

(60) Provisional application No. 60/775,310, filed on Feb. 21, 2006. Provisional application No. 60/869,434, filed on Dec. 11, 2006.

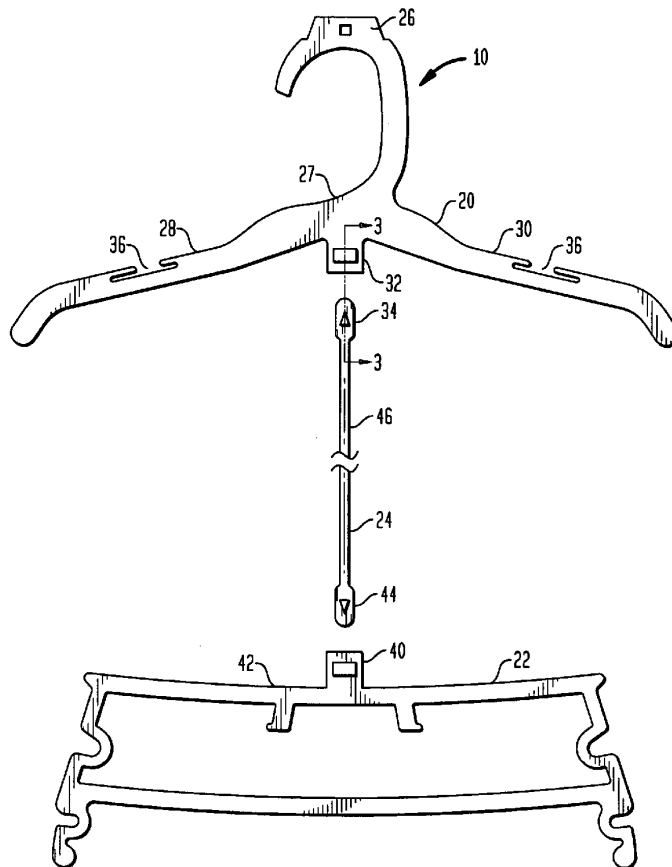


FIG. 1

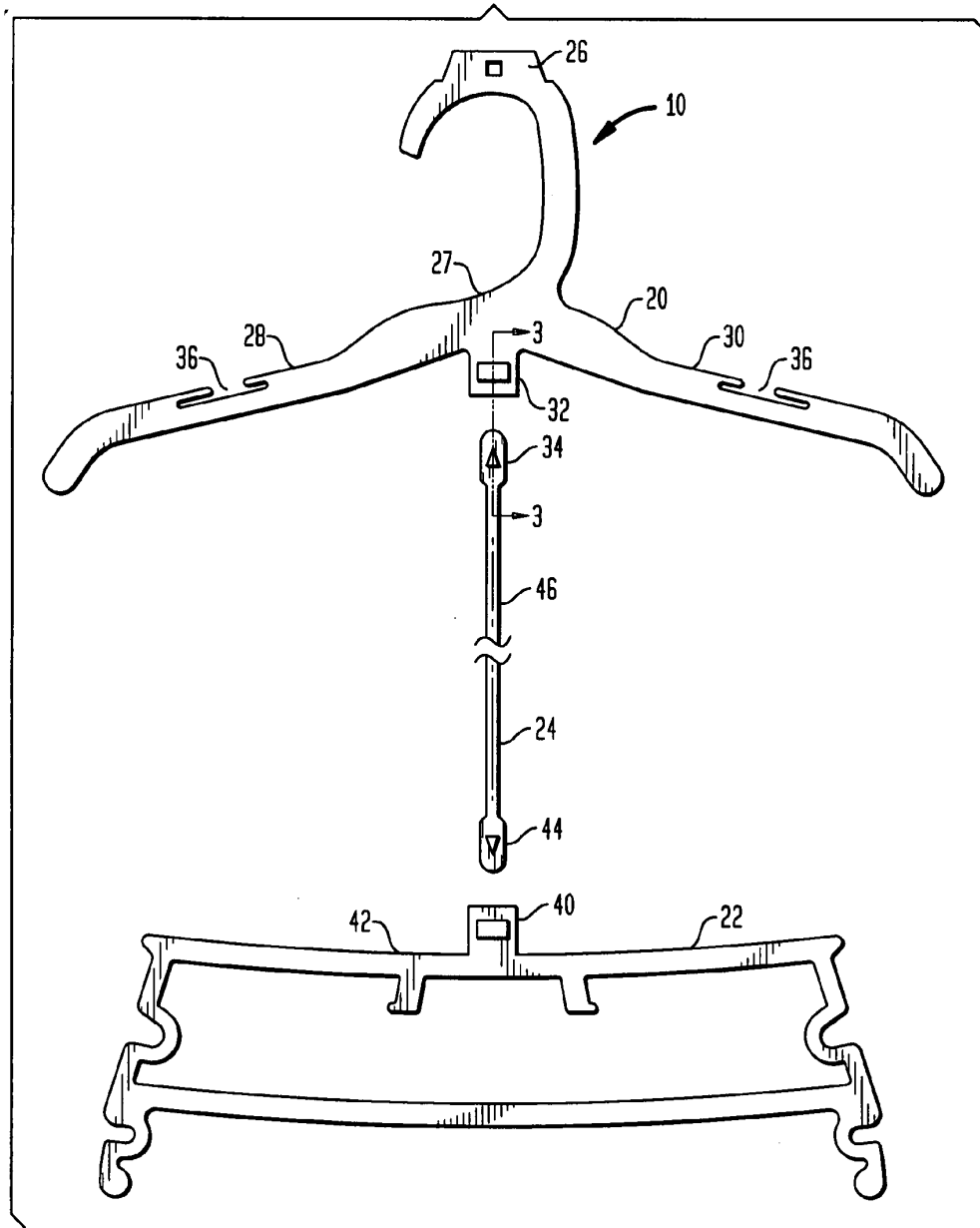


FIG. 2

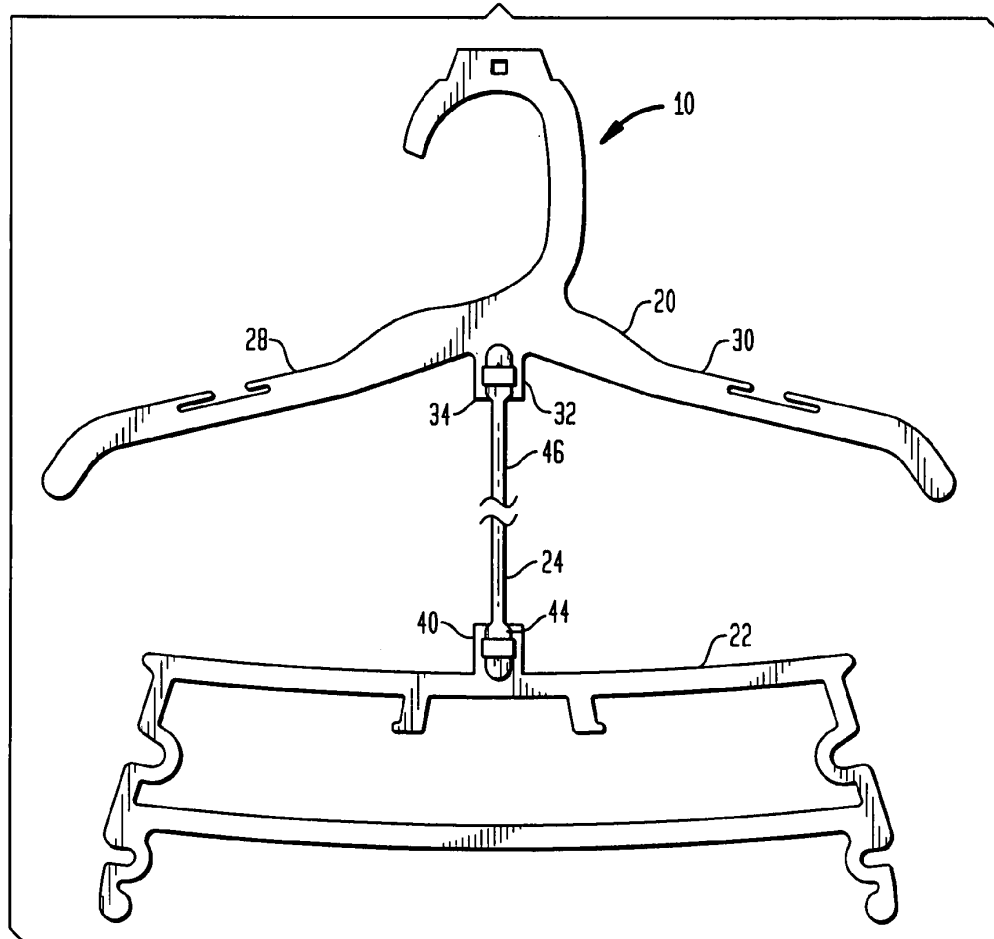
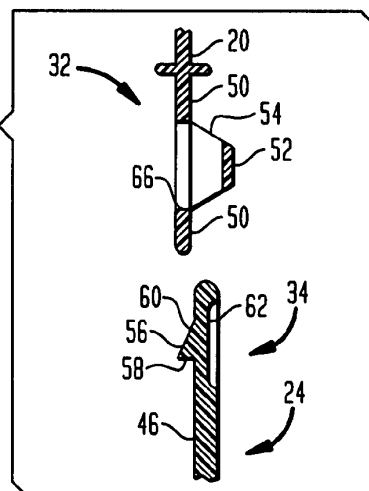


FIG. 3



VARIABLE LENGTH CHILDRENS WEAR HANGER

CROSS REFERENCE OF RELATED APPLICATIONS

[0001] Under 35 U.S.C. § 119(e), this application claims priority of U.S. Provisional Patent Application Ser. No. 60/775,310 filed Feb. 21, 2006 entitled VARIABLE LENGTH COORDINATE SET HANGER and U.S. Provisional Patent Application Ser. No. 60/869,434 filed Dec. 11, 2006, entitled VARIABLE LENGTH CHILDRENS WEAR HANGER, the disclosure of which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND OF THE INVENTION

[0002] 1. Field of Invention

[0003] The present invention relates to the field of garment hangers, and more particularly to an interchangeable garment hanger system for coordinated garment sets with a variable length attachment.

[0004] 2. Description of Related Art

[0005] In the field of retail garment sales it is often desirable to display and sell a plurality of garments as a coordinated set and thus to hang them from a unitary hanger. This is particularly the case when the set of garments are sold using a so-called Garment-On-Hanger (GOH) program. GOH programs have become preferred to retailers. In a GOH program, garments are suspended from hangers by the manufacturer at the manufacturing site, and are shipped as such to retail merchants. Whereupon arrival at the retail location, the garments may be placed on the retail floor for display and sale without additional effort. Formerly, retailers accomplished the task of hanging garments from hangers with labor provided at their own expense.

[0006] Towards this end, certain special-purpose hangers have been developed to accommodate and display a coordinated set of garments. Among these are a double hanger, disclosed in United States Patent Application Publication No. 2004/0188475, published 30 Sep. 2004, by the present inventor and commonly assigned with the present application, the entire disclosure of which is hereby incorporated by its reference for all purposes. Another is a so-called bow hanger, particularly adapted for children and infants' clothing, illustrated in United States Design Pat. No. Des. 498, 936, issued 30 Nov. 2004 to the present inventor and commonly assigned with the present application, the entire disclosure of which is hereby incorporated by its reference for all purposes. Yet another is a coordinate loop hanger, having a provision for supporting a second hanger from a loop provided beneath the body of the first, for example as disclosed in U.S. Pat. No. 6,875,932, issued 05 Apr. 2005 to Olk, et al., and commonly assigned with the present application, the entire disclosure of which is hereby incorporated by its reference for all purposes. Finally, a coordinate gripper or similar style hanger has a loop in substitution for a hook, the loop being adapted to depend from the base of the hook of another hanger. A coordinate gripper hanger is illustrated for example in United States Design Pat. No. Des. 502,011, issued 22 Feb. 2005 to the present inventor and commonly assigned with the present application, the entire disclosure of which is hereby incorporated by its reference for all purposes.

BRIEF SUMMARY OF THE INVENTION

[0007] Provided according to the present invention is a coordinate set hanger having a primary hanger with a first body, a hook extending upward from the first body, a first means for suspending a garment from the first body, and a first connection tab extending downward from the body, operative to releasably suspend a dependent hanger therefrom. A connection link having a locking end at each end thereof, the locking end having at least one snap lock with at least one horizontal surface is releasably attachable to at least a connection tab of a primary hanger. A dependent hanger has a body and a second means for suspending a garment from the second body, and a second connection tab extending upward from the second body. The second connection tab is operative to releasably secure the locking end of the connecting link therein. In this regard, reference may be made to copending U.S. Provisional Patent Application No. 60/775,310; filed Feb. 21, 2006, the contents of which is incorporated herein in its entirety.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] These and other features, advantages and benefits of the present application will be made apparent with reference to the following detailed description and accompanying figures, and wherein:

[0009] FIG. 1 illustrates a front elevation exploded assembly view of a variable length coordinate childrens wear hanger set according to the present invention;

[0010] FIG. 2 illustrates a front elevational view of the components of FIG. 1 in their assembled condition; and

[0011] FIG. 3 illustrates, on an enlarged scale, a cross-section taken along line 3-3 in FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Referring now to FIGS. 1 and 2, illustrated in front elevation is an exploded assembly view of a variable length childrens wear set hanger 10 according to the present invention. The childrens wear set hanger 10 comprises a primary hanger 20, a dependent hanger 22, and a connection link 24. The primary hanger 20 includes a hook 26 extending upwardly from a central body portion 28, and with lateral arms 28, 30 extending outwardly from the body in generally coplanar opposite directions. The primary hanger 20 also includes a connection tab 32 for receiving and engagingly retaining a first locking end 34 of the connection link 24.

[0013] Primary hanger 20, in this example, is a garment top hanger, especially for childrens wear, such as shirts, blouses, sweaters, coats, jackets, and the like, but in actuality can be designed in nearly any hanger style. In this case, the arms comprise a structure for suspending a garment from the primary hanger 20 and may have garment-engaging recesses 36 formed in the upper surfaces of the arms 28, 30. However, in alternate embodiments (not shown), such structure for suspending a garment from the hanger may comprise plural finger grippers on the dependent hanger 22 among other resilient garment clip styles, a trouser bar, or pinch grips, in any of the many forms as are known in the art.

[0014] Dependent hanger 22, in this exemplary embodiment, is a trouser-suspending hanger, but in practice may be

nearly any hanger style. Dependent hanger 22 has a connection tab 40 extending centrally upward from body portion 42, whereby connection tab 40 is inverted, but otherwise identical to connection tab 32 on the primary hanger 20, and receives and latchingly engages a further locking end connection 44 at the opposite end of the connection link 24.

[0015] As shown, the connection link 24 has the locking end connection 44 at, respectively, each end thereof, and a shaft 46 joining the locking connection end. Shaft 46 may be any arbitrary suitable length. In preferred embodiments, a variety of connection links 24 may be provided in multiple lengths adapted to be interchanged as dictated by the needs of the application.

[0016] As described, connection tabs 32, 40, and locking ends 34, 40, and locking ends 34, 44 are configured as complementary mating parts of an interlock system, generally female and male, respectively. However, without departing from the scope of the present invention, the components may be reversed, i.e., either or both the connection tabs 32, 40 configured as the male component, and either or both locking ends 34, 44 configured as the female components. Moreover, connection tabs 32, 40 and/or locking ends 34, 44 can be configured for universal adaptability as either or both female and male ends, further increasing utility. Further, the mating parts may be of any detail or configuration which permits interlocking the connection tabs with the locking ends.

[0017] Referring now to FIG. 3, illustrated is a cross-section taken along line 3-3 of FIG. 1. Connection tab 32 has two generally coplanar retaining surfaces 50 vertically separated from one another and an offset retaining band 52 out of the plane of the retaining surfaces 50. Retaining band 52 is joined to the connection tab 32 by at least one, extension 54, or preferably two, with one on each end of the retaining band 52, as in the exemplary embodiment.

[0018] The associated locking end 34 of connection link 24 has a snap-lock 56 extending from one side. The snap-lock 56 has a horizontal surface 58 on an underside. To engage the connection link 24 with the connection tab 32 on hanger 20, the locking end 24 is inserted into the connection tab 32 between the retaining surface 50 and the offset retaining band 52. Either of both of the snap-lock 56 and the retaining surface 50 deflect to be able to pass one another upon insertion of the locking end 34. This deflection is aided by a sloped surface 60 of the snap-lock 56 and a material void or space 62 formed in the locking end 34 opposite the snap-lock 56, either or both of which may optionally be present in the locking end 34.

[0019] Once the snap-lock 56 is located above the lowermost retaining surface 50, the horizontal surface 58 of the snap-lock 56 engages a complementary horizontal surface 66 of the connection tab 32. This interlock between surfaces 58 and 66 is generally resistant to removal without the application of a considerable pulling force, or through the use of a tool, which is specially designed for that purpose, and is therefore considered child-proof according to industry standards, for example those promulgated by the Voluntary Inter-industry Commerce Standards Association (VICS) or Bureau Veritas Consumer Product Services, Inc.

[0020] In the illustrated embodiment, connection tab 32 is inverted with respect to connection tab 40, but is otherwise

identical in form and function. The connecting link 24 has locking ends 34, 44 at both ends thereof, and can function in either vertical or inverse orientation. Optionally, the locking end 34, 44 may be provided with a snap-lock on both the front and back side thereof, so that the locking end 34 can engage the connection tab 32 in any of an upright, inverted, front-facing or rear-facing orientation. Moreover, dependent hanger 22 can include a further connection tab (not shown) depending from beneath the body thereof for the attachment of additional connection links and/or depending hangers. The mating parts of the locking end and connection link may be of any detail or configuration that permits interlocking. Further, the connection link and locking ends can be reversed, inverted, duplicated or in any configuration to permit interlocking with all alternatives of this feature at either end.

[0021] As is typical in the industry, garment hangers or any portion thereof disclosed herein may be formed in whole or in part of an injection molded plastic, more commonly a rigid plastic such as polystyrene, SAN, ABS, PPO, nylon, polypropylene (PP), polyethylene, PET, polycarbonates (PC), acrylics, K resin, and polyvinyl chloride (PVC) among others.

[0022] The present invention has been described herein with reference to certain exemplary or preferred embodiments. These embodiments are offered as merely illustrative, not limiting, of the scope of the present invention. Certain alterations or modifications may be apparent to those skilled in the art in light of instant disclosure without departing from the spirit or scope of the present invention, which is defined solely with reference to the following appended claims.

What is claimed is:

1. A childrens wear hanger comprising:

a primary hanger having a first body, a hook extending upward from the first body, a first means for suspending a garment from the first body, and a first connection tab extending downward from the first body and operative to releasably suspend a dependent hanger therefrom;

a connection link having a locking end at each end thereof being releasably attachable to the first connection tab; and

a dependent hanger having a second body and a second means for suspending a garment from the second body, a second connection tab extending upward from the second body, the second connection tab operative to releasably secure the locking end of the connecting link thereto.

2. The childrens wear hanger according to claim 1, wherein the first and second connection tabs, and each locking end comprise at least one of two complementary male or female mating parts.

3. The childrens wear hanger according to claim 2, wherein a male mating part comprises a snap lock with at least one horizontal surface and a recess in the surface of the locking end on an opposite side from the snap lock.

4. The childrens wear hanger according to claim 2, wherein a female mating part comprises a retaining band offset from a retaining surface, and a second horizontal surface for engaging a snap lock of the male mating part.

* * * * *



US007617947B2

(12) **United States Patent**
Schäfer

(10) **Patent No.:** **US 7,617,947 B2**
(45) **Date of Patent:** **Nov. 17, 2009**

- (54) **STACKABLE STORAGE/TRANSPORT/STOCKING BOX WITH OPENABLE END**
- (75) Inventor: **Gerhard Schäfer**, Neunkirchen (DE)
- (73) Assignee: **Fritz Schafer GmbH**, Neunkirchen (DE)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 655 days.

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(21) Appl. No.: **11/280,779**

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Oct. 14, 2005 (DE) 20 2005 016 115 U

(51) **Int. Cl.**
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B42F 17/14 (2006.01)
B65D 6/18 (2006.01)
B65D 8/14 (2006.01)
B65D 6/04 (2006.01)
B65D 6/06 (2006.01)

(52) **U.S. Cl.** **220/558**; 220/666; 220/7;
220/4.28; 16/354; 312/328

(58) **Field of Classification Search** 16/231,
16/232, 354; 220/4.28, 531, 558, 6, 7, 666;
312/327-329
See application file for complete search history.

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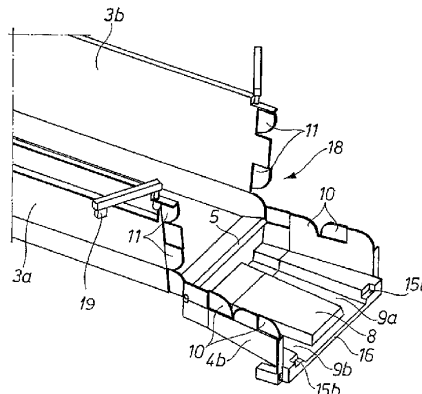
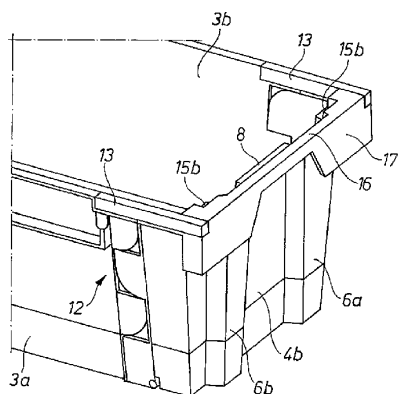
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(57) **ABSTRACT**

A reusable box has a floor having opposite side edges and opposite end edges bridging the side edges, respective side walls extending upward from the side edges, a fixed end wall extending upward from one of the end edges and fixedly bridging between the side walls, and a movable end wall extending in a closed position upward from the other of the end walls and fitting between the side walls. The movable end wall is displaceable between a position clear of the side walls and giving access to an interior of the box at the other end. Formations extend to upper edges of both of the end walls that for nesting interfit and that for stacking vertically engage each other.

9 Claims, 4 Drawing Sheets



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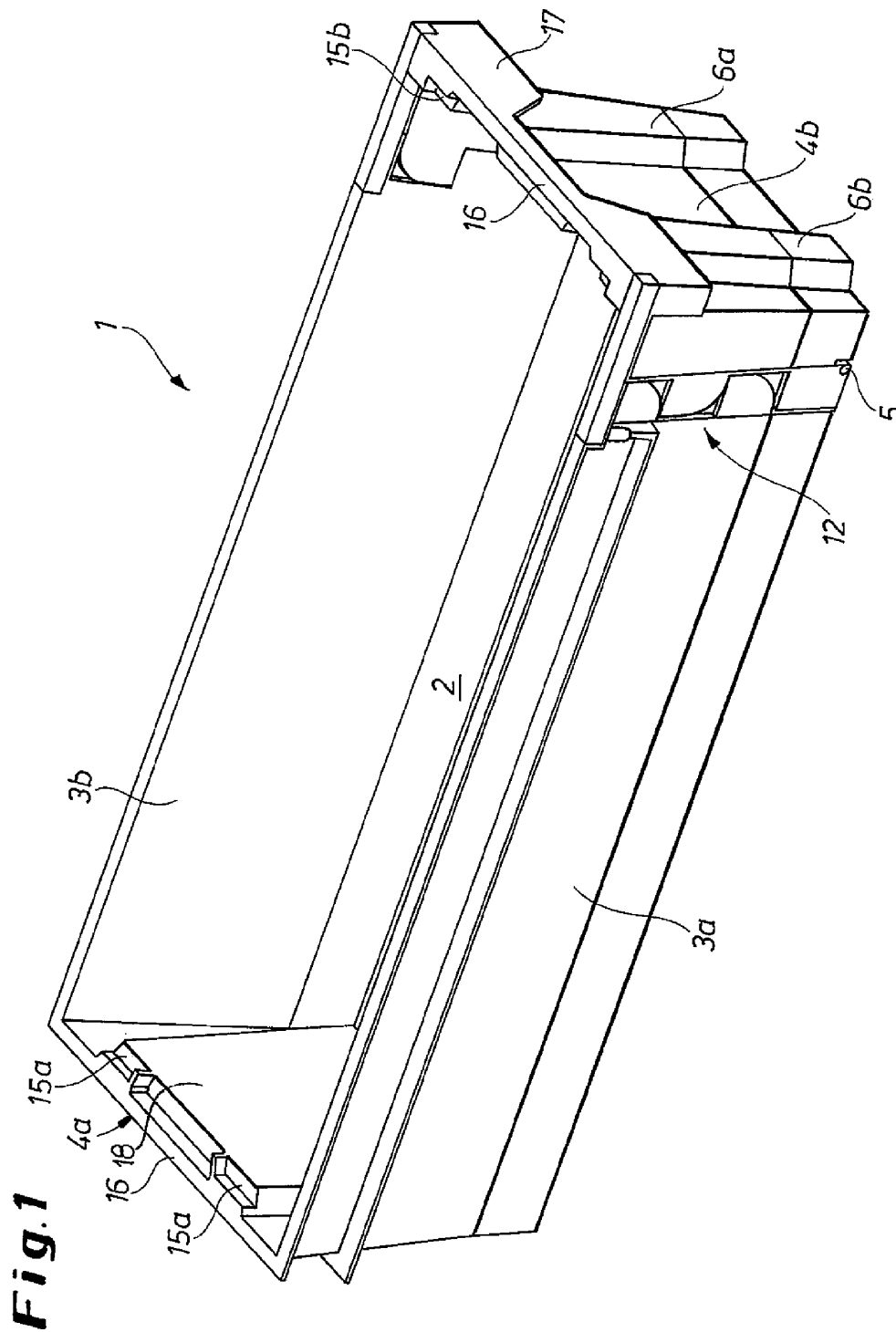


Fig. 2

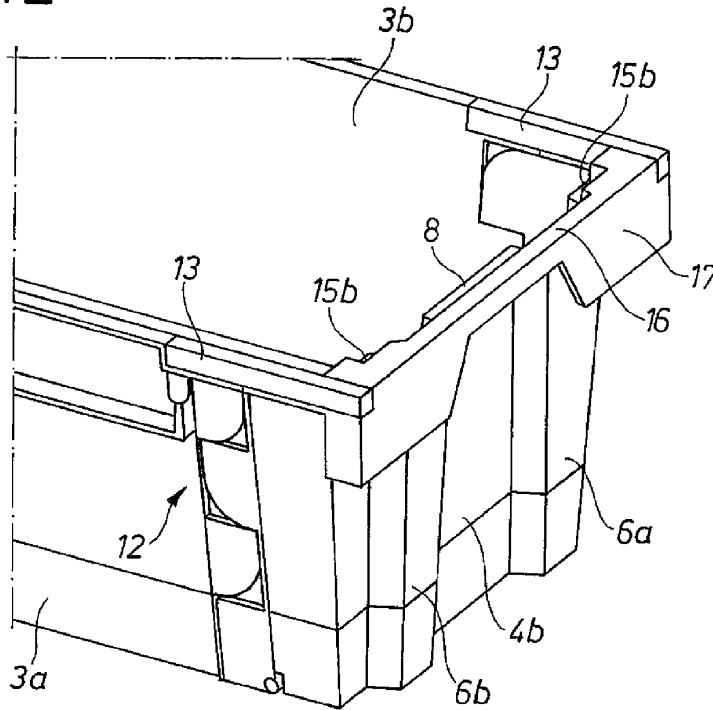


Fig. 3

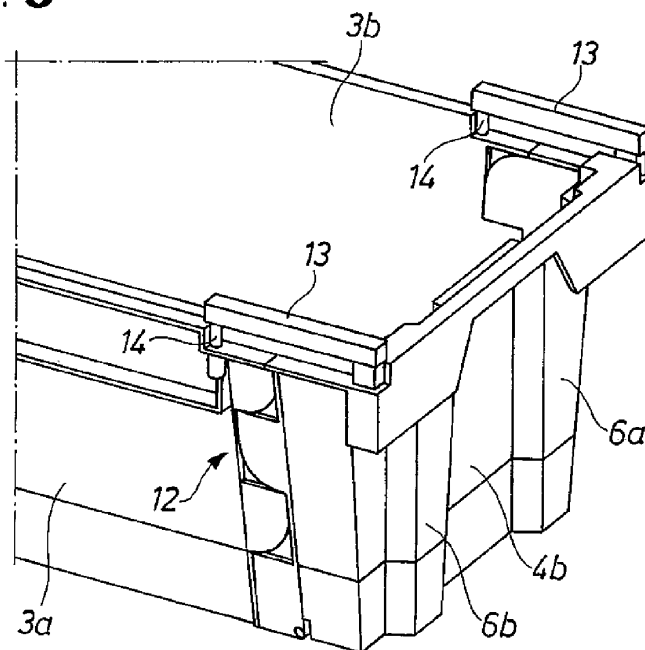


Fig. 4

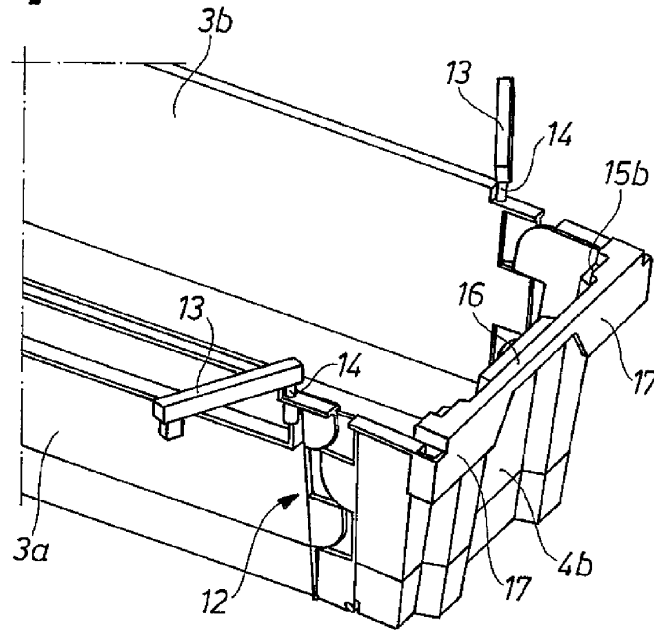


Fig. 5

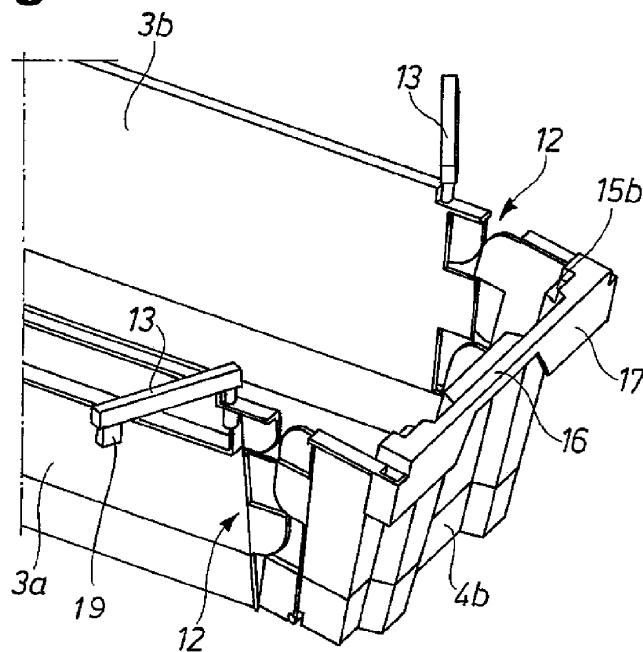


Fig. 6

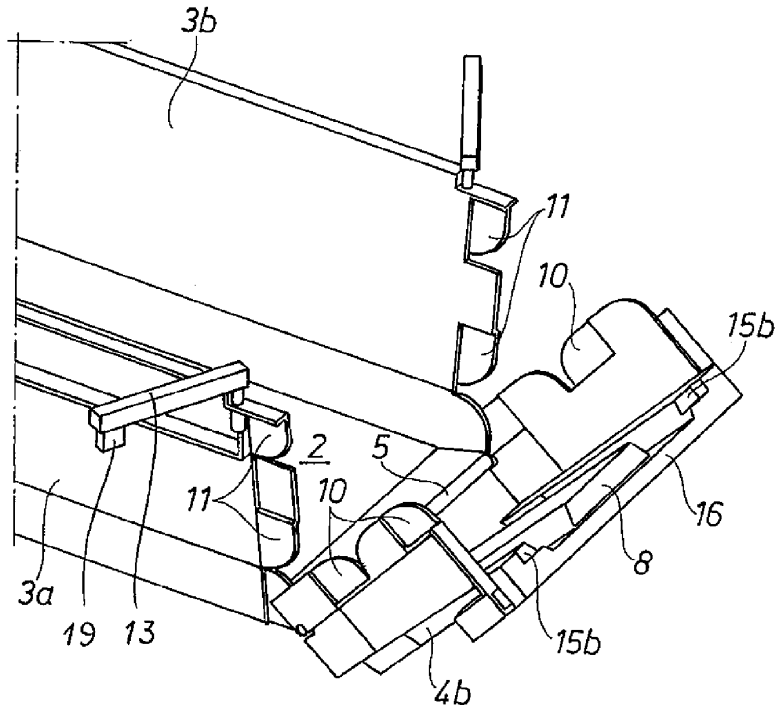
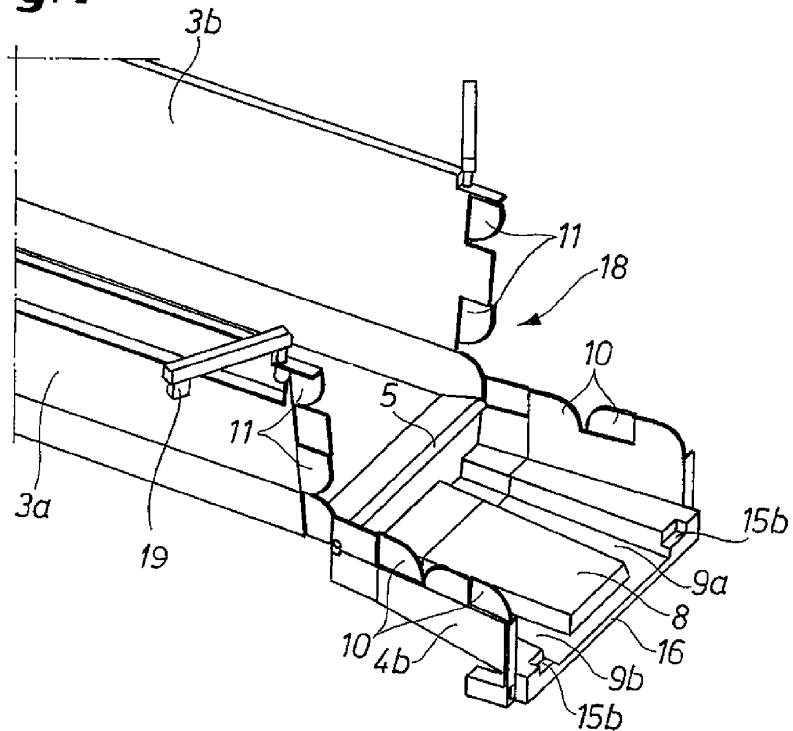


Fig. 7



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**STACKABLE
STORAGE/TRANSPORT/STOCKING BOX
WITH OPENABLE END**

FIELD OF THE INVENTION

The present invention relates to a reusable box suitable for storage, transport and stocking. More particularly this invention concerns such a box that can be stacked and even nested.

BACKGROUND OF THE INVENTION

In EP 0,876,963 of Triadu and Boulot such a box is shown. It has a rectangular floor and side and end walls that extend perpendicularly up from respective edges of the floor. One of the walls has a cutout that can be closed by a movable door flap. During transport and storage, the cutout is closed by the flap, but for stocking purposes the flap is hinged down so is that a user can reach into the box and retrieve items in it, even when the box is part of a stack of such boxes, that is otherwise upwardly closed by the overlying box. The difference between "stacking" and "nesting" is that when two boxes are stacked, the floor of the upper box sits on and is supported by the upper edge of the lower box, but when they are nested the floor of the upper box is recessed down in the lower box and may indeed even sit on the floor of the lower box.

A box according to EP 0,876,963 cannot be nested when empty so as to take up less space when being shipped back to the supplier. In addition the cutout is only big enough to allow removal through it of items that are substantially smaller than the end wall formed with the cutout. Thus such a box cannot be used for stocking large items. Finally, the cutout in one wall of the box makes it structurally somewhat less rugged, limiting how many of these boxes can be stacked atop one another and also limiting how much weight such a box can hold without deforming.

In order for boxes to be nestable, they must typically be formed with upwardly flaring walls so that they have a downwardly tapering shape. With enough taper, the boxes can be nested very tightly, with their floors literally resting directly one atop the other. The problem is that with increasing taper the boxes lose vertical strength, that is their side walls can withstand lesser vertical loads. Furthermore the required interfitting often necessitates a wall structure that is not very strong in general.

For a box to be both nestable and stackable, it is typically formed such that one side wall is generally complementary to but oppositely shaped from the opposite side wall. Thus one side wall can have two vertical ridges and the other one central ridge. When the two vertical ridges of one box are aligned with the one central ridge of an underlying box, the boxes nest, but when the two ridges on one side and the single ridges on the other side are vertically aligned, the boxes stack.

OBJECTS OF THE INVENTION

It is therefore an object of the present invention to provide an improved reusable box.

Another object is the provision of such an improved reusable box that overcomes the above-given disadvantages, in particular that is which can be opened fully, yet which can nest tightly and still form a stable stack.

SUMMARY OF THE INVENTION

A reusable box has according to the invention a floor having opposite side edges and opposite end edges bridging the side edges, respective side walls extending upward from the side edges, a fixed end wall extending upward from one of the end edges and fixedly bridging between the side walls, and a

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movable end wall extending in a closed position upward from the other of the end walls and fitting between the side walls. The movable end wall is displaceable between a position clear of the side walls and giving access to an interior of the box at the other end. Stiffening formations extend to upper edges of both of the end walls that for nesting interfit when the one and other ends of an upper such box are set down on the one and other ends of a lower such box and that for stacking vertically engage each other to support the upper box above the lower box when the one and other end walls of the upper box are set down on the other and one end walls of the other box.

The movable end wall, when open, thus creates a full-width opening extending all the way between the side walls, so that anything that can fit in the box can be removed through this opening. On the other hand, when the movable end wall is in the closed position, its upper end solidly supports another such box. The box is both nestable and stackable, according to the criss-cross method whereby the upper boxes.

According to the invention a latch is provided for releasably securing the movable end wall in the closed position. To this end latching formations extending horizontally between the movable end wall and the side walls at the other end snugly interfitting in the closed position. These latching formations are teeth on confronting vertical edges of the movable end wall and side walls. The teeth have rounded edges. Furthermore the latch includes a pair U-shaped elements engageable between the side walls and the movable end wall.

The stiffening formations include an odd number of vertically extending grooves and ridges on one of the end walls and an even number of vertically extending grooves and ridges on the other of the end walls. The grooves and ridges terminate at the upper edges of the end walls and at lower edges of the end walls at flat support surfaces that engage each other flatly between the upper and lower box for stacking. Thus when one box is oriented with its end walls above the identical end walls of another box, the two boxes will slip together and nest. When the upper box is reversed it will sit atop the lower box and stack. In this system the walls are all canted outward such that the box tapers downward toward the floor.

According to the invention a hinge is provided between an end edge of the floor and a lower edge of the movable end wall furthermore the end wall is generally U-shaped, having a flat bight part extending full width between the side walls and a pair of short U-legs aligned in the closed position with the side walls.

BRIEF DESCRIPTION OF THE DRAWING

The above and other objects, features, and advantages will become more readily apparent from the following description, reference being made to the accompanying drawing in which:

FIG. 1 is a perspective view of the box according to the invention with its end closed;

FIG. 2 is a large-scale view of the end of the box; and

FIGS. 3 through 7 are views like FIG. 2 but showing the box end in successive stages of opening, with FIG. 7 showing it fully opened.

SPECIFIC DESCRIPTION

As seen in FIG. 1 a box 1 according to the invention has a rectangular, elongated, and normally horizontal floor 2. Longitudinal side walls 3a and 3b and end side walls 4a and 4b extend upward from the longitudinal and end edges of the floor 2, all canted outward somewhat so as to give the box 1 overall a slightly downwardly tapering or upwardly flaring shape. The end wall 4b fills the entire space between the ends of the walls 3a and 3b, and in fact is of U-shape seen from

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above so that its U-legs in effect form end extensions or portions of the walls **3a** and **3b**. A hinge **5** extending the full width of the one end edge of the floor **2** supports the wall **4b** for movement between the fully closed position of FIGS. **1**, **2**, and **3** and the fully open position of FIG. **7**. The hinge **5** can be constructed such that the entire end wall **4b** is removable when it reaches the FIG. **7** position. The whole box **1** is formed of an injection-molded plastic and has a generally uniform wall thickness. The walls **3a**, **3b**, **4a**, and **4b** have at their upper edges outwardly projecting lips forming a continuous and planar upper rim **16**, formed at the ends **4a** and **4b** with downwardly projecting stiffening skirts **17** that are notched out to form hand holds.

The box **1** can be nested or stacked. To this end as also shown in FIGS. **2** through **7** the movable end wall **4b** is formed with two vertically extending outwardly projecting ridges **6a** and **6b** of trapezoidal section flanking a wide central and inwardly projecting ridge **8**. These formations **6a**, **6b**, and **8** define a pair of inwardly open grooves **9a** and **9b** (FIG. **7**) that are in fact complementary to the ridges **6a** and **6b** and into which the ridges **6a** and **6b** can fit for nesting when one box **1** is set atop another such box **1** with the end walls **4a** and **4b** of the upper box **1** above the respective end walls **4a** and **4b** of the lower box **1**.

Similarly, the fixed end wall **4a** is formed centrally with a wide inwardly projecting ridge **18** of an overall width that is equal generally to the center-to-center distance between the ridges **6a** and **6b** of the opposite end wall **4b**. This ridge **18** also defines an outwardly open wide groove (not visible in the drawing) that allows nesting of two boxes also.

In addition the ridge **18** defines at its upper end a pair of support surfaces **15a** that interfit perfectly with lower end surfaces of the ridges **6a** and **6b** when the upper box **1** is reversed and set atop the lower box **1**. Similarly the ridges **6a** and **6b** define at their upper ends flat support surfaces **15b** into which fit corners of a lower end surface of the ridge **18** in this reversed position.

Thus with this arrangement when two boxes **1** are aligned vertically in the same orientation, that is with the ends **4a** and **4b** of the upper box **1** above the respective ends **4a** and **4b** of the lower box **1**, the boxes **1** will interfit and nest with the floor **2** of the upper box **1** virtually resting on the floor **2** of the lower box. When, however, the upper box **1** is reversed, its ridges **6a** and **6b** will sit on the surfaces **15a** of the lower box and its ridge **18** will sit on the surfaces **15b** of the lower box **1**, and the boxes **1** will stack with the upper box **1** almost entirely above the lower box **1**.

According to the invention means **12** is provided for securing the movable end wall **4b** in the closed position of FIGS. **1** and **2**. This means **12** comprises horizontally extending and interfitting teeth **10** and **11** on the end wall **4b** and sides **3a** and **3b**. These teeth **10** and **11** each have one rounded edge so that they can pivot together, with some elastic formation, but will latch solidly. In addition the means includes U-shaped latch elements **13** each having a vertical pin **14** seated and rotatable in a bore of the respective side wall **3a** or **3b**, and a opposite downwardly projecting dog or tab **19** that can fit in a complementary seat in the respective corner of the movable end wall **4b**. It is therefore possible, once the latch elements **13** have been raised from a latching position of FIGS. **1** and **2** to a freeing position shown in FIGS. **4** through **7**, to pivot down the end wall **4b** such that an opening **18** (FIG. **7**) is formed that extends full-width between the side walls **3a** and **3b**. Thus anything that can be fitted into the box **1** can be pulled out through the opening **18**, making it possible to use the box **1** for stocking in a shelf system.

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I claim:

1. A reusable box comprising:
 - a floor having opposite side edges and opposite end edges bridging the side edges;
 - respective side walls extending upward from the side edges;
 - a fixed end wall extending upward from one of the end edges and fixedly bridging between the side walls;
 - a movable end wall extending in a closed position upward from the other of the end edges and fitting between the side walls, the movable end wall being displaceable away from the fixed end wall from the closed position into an open position clear of the side walls and giving access to an interior of the box at the other end, the side walls and movable end wall having adjacent upwardly open holes;
 - at least one upwardly flaring vertical groove and at least one upwardly tapering vertical ridge extending to an upper edge of each of the end walls and terminating at upper and lower edges of the respective end walls at respective flat and horizontal support surfaces, the grooves and ridges being dimensioned and shaped such that, for nesting, they interfit when the fixed and movable end walls of an upper such box are set down respectively on the fixed and movable end walls of a lower such box and that, for stacking, they vertically engage each other at the support surfaces to support the upper box above the lower box when the fixed and movable end walls of the upper box are set down respectively on the movable and fixed end walls of the lower box; and
 - a pair of U-shaped elements having legs fittable into the holes and extending between the movable end wall and the side walls for releasably securing the movable end wall in the closed position.
2. The box defined in claim 1, further comprising latching formations extending horizontally between the movable end wall and the side walls and snugly interfitting in the closed position.
3. The box defined in claim 2 wherein the latching formations are teeth on confronting vertical edges of the movable end wall and side walls.
4. The box defined in claim 3 wherein the teeth have rounded edges.
5. The box defined in claim 1 wherein there are an odd number of vertically extending grooves and ridges on one of the end walls and an even number of vertically extending grooves and ridges on the other of the end walls.
6. The box defined in claim 1 wherein the walls are all canted outward such that the box tapers downward toward the floor.
7. The box defined in claim 1, further comprising a hinge between an end edge of the floor and a lower edge of the movable end wall.
8. The box defined in claim 1 wherein the movable end wall is generally U-shaped and has a flat bight part extending full width between the side walls and a pair of short U-legs aligned in the closed position with the side walls.
9. The box defined in claim 1 wherein when the boxes are stacked with the movable end wall in the closed position and the U-shaped elements fitted to the holes, each overlying box sits atop the U-shaped elements of the underlying box and retains them in the holes, whereby the respective movable end wall is locked in the closed position.

* * * * *

- [54] WHIRLWIND POWER SYSTEM 463,771 8/1928 Germany 415/4
- [75] Inventors: Earl L. Carson, Felton; Donald W. Carson, Ben Lomond, both of Calif.
- [73] Assignee: The Raymond Lee Organization, Inc., New York, N. Y. ; a part interest
- [22] Filed: Sept. 19, 1975
- [21] Appl. No.: 614,979
- [52] U.S. Cl. 415/2; 290/55
- [51] Int. Cl.² F03B 3/04
- [58] Field of Search 415/2-4, 415/183, 185, DIG. 8; 290/44, 52, 54, 55

Primary Examiner—Henry F. Raduazo
 Attorney, Agent, or Firm—Daniel Jay Tick

[57] ABSTRACT

A structural housing has a generally toroidal part horizontally positioned and having an upwardly inclining lower base extending upward from a circumference to a first generally circular central area and an upwardly inclining upper base extending upward from a circumference equidistantly vertically spaced from the circumference of the lower base to a second generally circular central area equidistantly vertically spaced from the first central area. The lower and upper bases are coaxial. The housing also has a hollow cylindrical part extending upward from the second central area and coaxial with the lower and upper bases. Partitions in the toroidal part of the housing compress air entering the housing between the circumferences of the lower and upper bases and direct the compressed air in a whirlwind manner to the cylindrical part of the housing and thereby greatly increase the force of the air. A power generator has a rotor device coaxially rotatably mounted in the cylindrical part of the housing and rotated by the air directed via the partitions.

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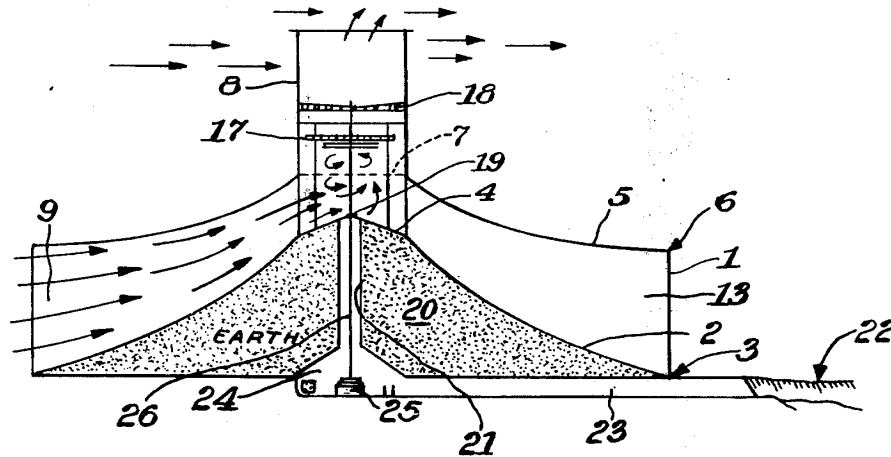
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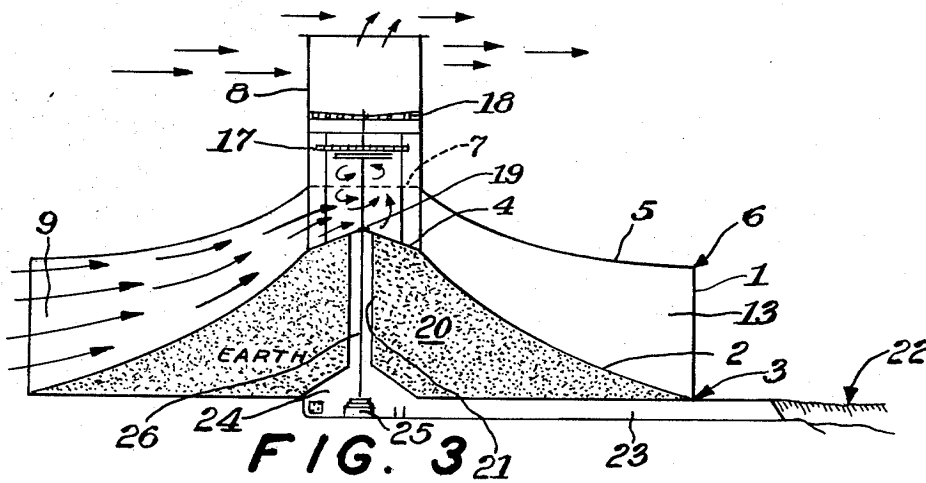
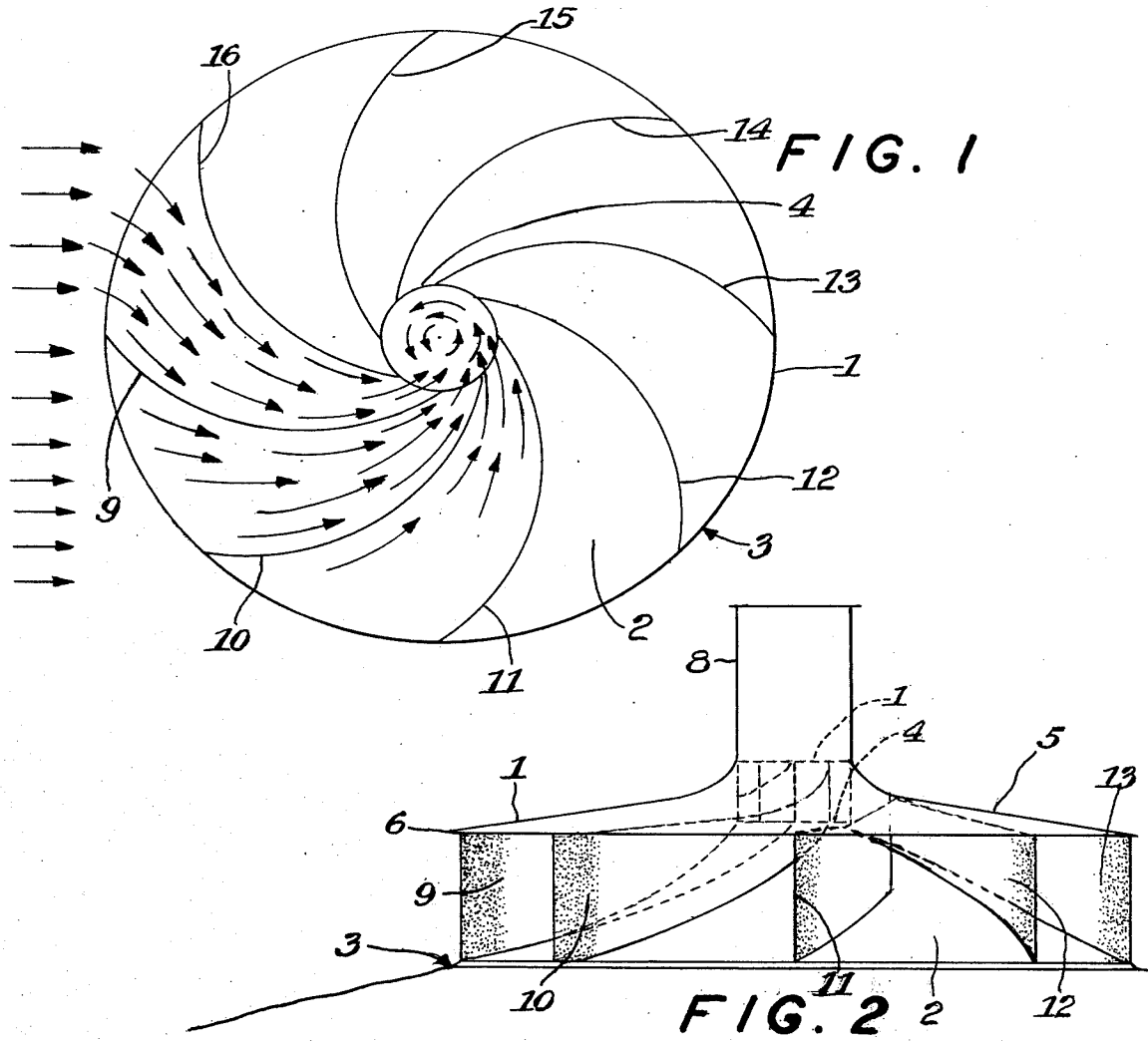
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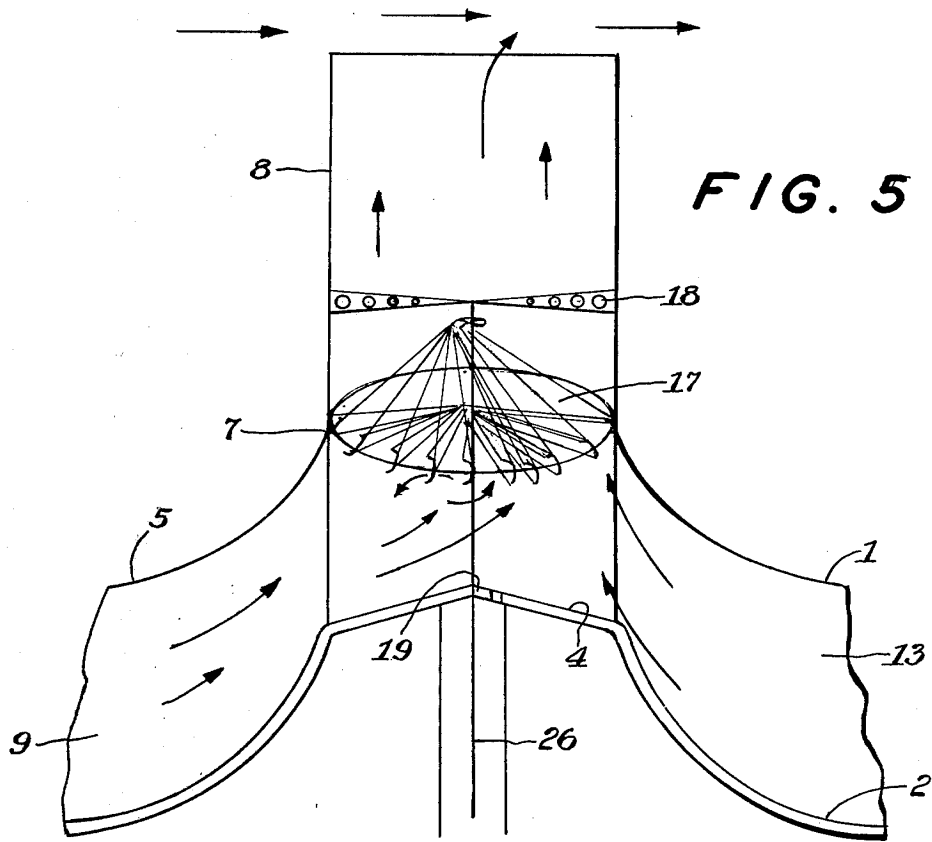
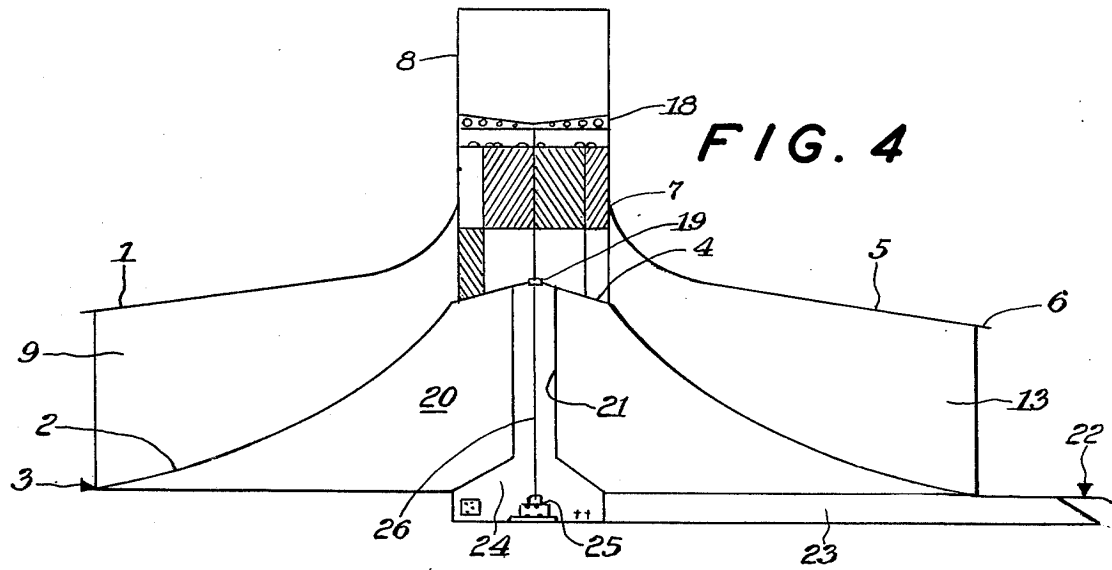
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2 Claims, 5 Drawing Figures







WHIRLWIND POWER SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to a whirlwind power system.

Objects of the invention are to provide a power system which functions to greatly increase the natural force of wind or air and utilize the enhanced force to generate power thereby producing power with fuel, without atmospheric pollution, and without the many problems and difficulties inherent in the use of fuel and the polluting of the atmosphere.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be readily carried into effect, it will now be described with reference to the accompanying drawings, wherein:

FIG. 1 is an axial view of an embodiment of the toroidal part of the structural housing of the power system of the invention;

FIG. 2 is a radial view of an embodiment of the structural housing of the power system of the invention;

FIG. 3 is a cross-sectional diametrical view of an embodiment of the structural housing of the power system of the invention;

FIG. 4 is a schematic diagram, in a diametrical view, on an enlarged scale, of an embodiment of the structural housing showing the operation of the air control apparatus and the power generator of the power system of the invention; and

FIG. 5 is a schematic diagram, on an enlarged scale, of an embodiment of the cylindrical part of the structural housing of the power generator of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The power system of the invention comprises a structural housing having a generally toroidal part 1 substantially horizontally positioned. The toroidal part 1 has an upwardly inclining lower base 2 extending upward from a circumference 3 to a first generally circular central area 4. The toroidal part 1 has an upwardly inclining upper base 5 extending upward from a circumference 6 substantially equidistantly vertically spaced from the circumference 3 of the lower base 2 to a second generally circular central area 7. The second generally circular central area 7 is substantially equidistantly vertically spaced from the first generally circular central area 4. The lower and upper bases 2 and 5 are coaxial, as are the first and second central areas 4 and 7.

A substantially hollow cylindrical part 8 extends upward from the second central area 7 and is substantially coaxial with the lower and upper bases 2 and 5, respectively.

A plurality of partitions 9, 10, 11, 12, 13 (FIGS. 1 and 2), 14, 15 and 16 (FIG. 1) are provided in the toroidal part 1 of the structural housing of the power system of the invention and function to compress air entering the housing between the circumferences 3 and 6 of the lower and upper bases 2 and 5 and direct the compressed air in a whirlwind manner to the cylindrical part 8 of the housing thereby greatly increasing the force of the air. Each of the partitions 9 to 16, as shown in FIGS. 1 and 2, has the configuration of part of a spiral and extends from the lower base 2 to the upper base 5. The partitions 9 to 16 are equidistantly spaced at the first and second central areas 4 and 7 and are

equidistantly spaced at the circumferences 3 and 6 of the lower and upper bases 2 and 5, respectively.

Power generating apparatus of any suitable type, has a rotor device 17 (FIGS. 3 and 5) substantially coaxially rotatably mounted in the cylindrical part 8 of the structural housing of the power system of the invention. The rotor device 17 is rotated by the air directed via the partitions 9 to 16. The rotor device 17 preferably comprises a plurality of turbine blades rotatably supported by a pair of spaced rotor shaft bearing members 18 and 19, coaxially positioned in the cylindrical part 8 of the structural housing and in the first circular central area 4 (FIGS. 3 to 5), respectively.

As shown in FIGS. 3 and 4 the area 20 under the lower base 2 is generally frustoconical in configuration and preferably comprises an earth fill covered by concrete and having partitions therein. A substantially vertical axial bore 21 is formed through the area 20 from the first central area 4 to a point beneath the surface 22 of the earth, as shown in FIGS. 3 and 4. A tunnel 23 (FIGS. 3 and 4) extends substantially horizontally from a chamber 24 formed in the area 20 at the base of the bore 21 to a point beyond the circumference 3 of the lower base 2, whence access is provided to the surface. Power generating equipment 25 is housed in the chamber 24 and is coupled by shaft 26 to the rotor device 17 (FIGS. 3, 4 and 5).

While the invention has been described by means of a specific example and in a specific embodiment, I do not wish to be limited thereto, for obvious modifications will occur to those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A whirlwind power system, comprising
 - a structural housing having a generally toroidal part substantially horizontally positioned and having an upwardly inclining lower base extending upward from a circumference to a first generally circular central area and an upwardly inclining upper base extending upward from a circumference substantially equidistantly vertically spaced from the circumference of the lower base to a second generally circular central area substantially equidistantly vertically spaced from the first central area, the lower and upper bases being coaxial, and a substantially hollow cylindrical part extending substantially vertically upward from the second central area and substantially coaxial with the lower and upper bases to provide a chimney type flue;
 - partition means in the toroidal part of the housing for compressing air entering the housing between the circumferences of the lower and upper bases and directing the compressed air in a whirlwind manner to the cylindrical part of the housing and thereby greatly increasing the force of the air, said partition means comprising a plurality of stationary partitions each having the configuration of part of a spiral and extending from the lower base to the upper base, said partitions being equidistantly spaced at the first and second central areas and equidistantly spaced at the circumferences of the lower and upper bases; and
 - power generating means having rotor means substantially coaxially rotatably mounted in the cylindrical part of the housing and rotated by the air directed via the partition means, said power generating means including a plurality of turbine blades coaxially rotatably supported in the cylindrical part, a

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chamber formed in the earth under the structural housing, power generating means in the chamber and coupling means coupling the turbine blades to the power generating means for operating said

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bearing means substantially coaxially mounted in the cylindrical part and a rotor shaft rotatably mounted in the bearing means substantially coaxially in said cylindrical part, said turbine blades comprising a plurality of equiangularly spaced turbine blades affixed to said rotor shaft and extending radially therefrom and rotatable therewith.

* * * * *

2. A whirlwind power system as claimed in claim 1, wherein said power generating means further includes

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Electronic Patent Application Fee Transmittal

Application Number:	13626057			
Filing Date:	25-Sep-2012			
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT			
First Named Inventor/Applicant Name:	Cheong Choon Ng			
Filer:	John M. Siragusa/Amy Spaulding			
Attorney Docket Number:	67467-009 PUS1			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	20095179
Application Number:	13626057
International Application Number:	
Confirmation Number:	7803
Title of Invention:	BRUNNIAN LINK MAKING DEVICE AND KIT
First Named Inventor/Applicant Name:	Cheong Choon Ng
Customer Number:	26096
Filer:	John M. Siragusa/Amy Spaulding
Filer Authorized By:	John M. Siragusa
Attorney Docket Number:	67467-009 PUS1
Receipt Date:	10-SEP-2014
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Time Stamp:	11:02:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

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Payment Type	Deposit Account
Payment was successfully received in RAM	\$180
RAM confirmation Number	5577
Deposit Account	501482
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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Warnings:					
Information:					
46	Other Reference-Patent/App/Search documents	Exhibit-1017P.PDF	1550963	no	10
			5f6339f77343823cdf10a62dfe12b42e45e0ca8		
Warnings:					
Information:					
47	Other Reference-Patent/App/Search documents	Exhibit-1018P.PDF	1820254	no	6
			f53ac07ed636d8efcb0f2026dc393471dc1b954		
Warnings:					
Information:					
48	Other Reference-Patent/App/Search documents	Exhibit-1019P.PDF	1869637	no	16
			cce8406c1c9f9e98886bd52b117df59da6e27e5		
Warnings:					
Information:					
49	Other Reference-Patent/App/Search documents	Exhibit-1020P.PDF	1279780	no	4
			ea7fb7ba6c6d099c8091b0c6cf7c9f02e1eb364		
Warnings:					
Information:					
50	Other Reference-Patent/App/Search documents	Exhibit-1021P.PDF	20121607	no	25
			b9a77ec3aa707d8c5b05a268decc9c834661319a		
Warnings:					
Information:					
51	Other Reference-Patent/App/Search documents	Exhibit-1022P.PDF	1949513	no	8
			f5d33d9ea96d1c2c3f5e1199d3c55a1f281f010a		
Warnings:					
Information:					
52	Other Reference-Patent/App/Search documents	Exhibit-1023P.PDF	1570287	no	6
			4eae4baba72d4be2c5997fb249db90fcdffa7bb4		
Warnings:					
Information:					
53	Other Reference-Patent/App/Search documents	Exhibit-1024P.PDF	837854	no	8
			6f5423113dbad802df3d99829c51f4abfbcc09c4		
Warnings:					
Information:					

54	Other Reference-Patent/App/Search documents	Exhibit-1025P.PDF	1057733	no	8
			87555bd440aa2b0d87565f18c3b5d57b24e9f0		
Warnings:					
Information:					
55	Other Reference-Patent/App/Search documents	Exhibit-1026P.PDF	1409109	no	15
			7e7ab71a174676a1d22e76516eb20d443806029f		
Warnings:					
Information:					
56	Other Reference-Patent/App/Search documents	Exhibit-1027P.PDF	734950	no	4
			cd3c475c527d01805d8ca9cb78f9381da28e28e5		
Warnings:					
Information:					
57	Other Reference-Patent/App/Search documents	Exhibit-1028P.PDF	1687227	no	5
			a6384f439443b0face015e1c6602ea3a962320d0		
Warnings:					
Information:					
58	Other Reference-Patent/App/Search documents	Exhibit-1029P.PDF	892566	no	8
			6c0eac3e5383752119801a4b48fb4f3530db7e3		
Warnings:					
Information:					
59	Other Reference-Patent/App/Search documents	Exhibit-1030P.PDF	733560	no	5
			318e77674eaad3e8be1257300ae40681c0fb1dcc		
Warnings:					
Information:					
60	Other Reference-Patent/App/Search documents	Exhibit-1031P.PDF	3283799	no	3
			2db9b3fe03afb052f12bf091091d18d267c3a9		
Warnings:					
Information:					
61	Fee Worksheet (SB06)	fee-info.pdf	30518	no	2
			0350b7571c82457f58a5386924dcd94aec73ca0		
Warnings:					
Information:					
Total Files Size (in bytes):			264542615		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

26096 7590 08/07/2014
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

EXAMINER

HURLEY, SHAUN R

ART UNIT PAPER NUMBER

3765

DATE MAILED: 08/07/2014

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

13/626,057 09/25/2012 Cheong Choon Ng 67467-009 PUS1 7803

TITLE OF INVENTION: BRUNNIAN LINK MAKING DEVICE AND KIT

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional SMALL \$480 \$0 \$0 \$480 11/07/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26096 7590 08/07/2014
CARLSON, GASKEY & OLDS, P.C.
 400 WEST MAPLE ROAD
 SUITE 350
 BIRMINGHAM, MI 48009

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/626,057	09/25/2012	Cheong Choon Ng	67467-009 PUS1	7803

TITLE OF INVENTION: BRUNNIAN LINK MAKING DEVICE AND KIT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/07/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
HURLEY, SHAUN R	3765	289-001500

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____	Date _____
Typed or printed name _____	Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

26096 7590 08/07/2014
CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

EXAMINER

HURLEY, SHAUN R

ART UNIT PAPER NUMBER

3765

DATE MAILED: 08/07/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/626,057	Applicant(s) NG, CHEONG CHOON	
	Examiner Shaun R. Hurley	Art Unit 3765	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to Amendment filed 21 April 2014.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-6,8-21 and 23-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>03/20/14, 07/18/14</u> 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material 4. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>07/30/14</u>. | <ol style="list-style-type: none"> 5. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 7. <input type="checkbox"/> Other _____. |
|--|--|

--	--

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. John M. Siragusa on 30 July 2014.

The application has been amended as follows:

In the Claims:

Claim 1, line 4: After the phrase "the first end"

INSERTED: -- includes an outwardly extending flange and--

Claim 4, line 5: After the phrase "wherein"

INSERTED: -- the first end includes an outwardly extending flange and--

Claim 22:

DELETED in its entirety

DETAILED ACTION

Terminal Disclaimer

3. The terminal disclaimer filed on 21 April 2014 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on US Application No. 13/938717 has been reviewed and is accepted. The terminal disclaimer has been recorded.

4. The terminal disclaimer filed on 21 April 2014 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 8684420 has been reviewed and is accepted. The terminal disclaimer has been recorded.

5. The terminal disclaimer filed on 21 April 2014 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 8485565 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

6. Claims 1-6, 8-21, and 23-26 are allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaun R. Hurley whose telephone number is (571)272-4986. The examiner can normally be reached on Mon - Fri, 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Clinton T. Ostrup can be reached on (571) 272-5559. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shaun R Hurley
Primary Examiner
Art Unit 3765

SRH
30 July 2014

/Shaun R Hurley/
Primary Examiner, Art Unit 3765

Examiner-Initiated Interview Summary	Application No. 13/626,057	Applicant(s) NG, CHEONG CHOON	
	Examiner Shaun R. Hurley	Art Unit 3765	

All participants (applicant, applicant's representative, PTO personnel):

(1) Shaun R. Hurley. (3)_____.

(2) John M. Siragusa. (4)_____.

Date of Interview: 30 July 2014.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.
If Yes, brief description: _____.

Issues Discussed 101 112 102 103 Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: Of Record.

Identification of prior art discussed: 5231742.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)


Upon reviewing the claims as amended, Examiner had concerns as to whether 5231742 anticipated the language. Examiner contacted Applicant to go over what was seen as allowable and objected to, and Examiner proposed and amendment to the claims to place them in condition for allowance. Without agreeing the changes were necessary, Applicant agreed to the changes so as to place the claims in immediate condition for allowance.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment


/Shaun R Hurley/
Primary Examiner, Art Unit 3765

Issue Classification 	Application/Control No. 13626057	Applicant(s)/Patent Under Reexamination NG, CHEONG CHOON
	Examiner SHAUN R HURLEY	Art Unit 3765

CPC						
Symbol				Type	Version	
A44C		5		0069	F	2013-01-01
A44C		27		00	I	2013-01-01


CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
		24	
(Assistant Examiner)	(Date)		
/SHAUN R HURLEY/ Primary Examiner. Art Unit 3765	07/30/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification 	Application/Control No. 13626057	Applicant(s)/Patent Under Reexamination NG, CHEONG CHOON	
	Examiner SHAUN R HURLEY	Art Unit 3765	

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION												
CLASS			SUBCLASS			CLAIMED					NON-CLAIMED							
289			17			B	6	5	H	69 / 04 (2006.01.01)								
CROSS REFERENCE(S)																		
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																	

NONE			Total Claims Allowed:	
			24	
(Assistant Examiner)		(Date)	O.G. Print Claim(s)	O.G. Print Figure
/SHAUN R HURLEY/ Primary Examiner. Art Unit 3765		07/30/2014	1	1
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<input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input checked="" type="checkbox"/> T.D. <input type="checkbox"/> R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	24	
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