

Jc1120 Jc997 U.S. PTO  
10/027872  
12/21/01

FEB 10 2004

PATENT NUMBER and  
ISSUE DATE  
**6688056**

U.S. UTILITY Patent Application



6688056

APPL NUM 19027872	FILING DATE 12/21/2001	CLASS 160	SUBCLASS 231	GAU 363	EXAMINER McDermott
**APPLICANTS: Von Hoyningen Huene Eberhard; Salzman Michael; Boyer Geoffrey;					
**CONTINUING DATA VERIFIED: NONE-KM					
** FOREIGN APPLICATIONS VERIFIED: CANADA: 2,329,591 12/22/2000 OYAM - KM					
PG-PUB DO NOT PUBLISH <input type="checkbox"/>		RESCIND <input type="checkbox"/>		ATTORNEY DOCKET NO 9680.190US01	
Foreign priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		35 USC 119 conditions met <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		Verified and Acknowledged Examiners's initials KM	
TITLE: Movable and demountable wall panel system					

U.S. DEPT. OF COMM./PAT. & TM.-PTO-136L (Rev. 12-94)

NOTICE OF ALLOWANCE MAILED		KEVIN McDERMOTT, KM Assistant Examiner 9/8/03	CLAIMS ALLOWED		
9/9/03			Total Claims 19	Print Claim for O.G 1	
ISSUE/FEE		Carl D. Friedman Supervisory Patent Examiner Primary Examiner	DRAWING		
Amount Due 1300	Date Paid 12-3-03		Sheets Drwg. 60	Figs. Drwg. 68	Print Fig. 1
<input type="checkbox"/> TERMINAL DISCLAIMER		PREPARED FOR ISSUE	Tanya McBride Application Examiner 9/10/03		
WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368, Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.					

ISSUE FEE IN FILE

FILED WITH:  DISK (CRF)  CD-ROM  
(Attached in pocket on right inside flap)

N-100-N-100-



10027872

jc997 U.S. PTO

10/027872



12/21/01

INITIALS



321 174002

### CONTENTS

Date Received (incl. C. of M.) or Date Mailed

Date Received (incl. C. of M.) or Date Mailed

	Date Received (incl. C. of M.) or Date Mailed		Date Received (incl. C. of M.) or Date Mailed
1. Application <u>60</u> papers.		31.	
2. <u>LP: Re: CP, Dec Unsigned</u>	<u>1-25-02</u>	32.	
3. <u>Doc drawing, data sk</u>	<u>03/23/02</u>	33.	
4. <u>Priority</u>	<u>03/22/02</u>	34.	
5. <u>I.D.S</u>	<u>3-22-02</u>	35.	
6. <u>Rej (3)</u>	<u>5-6-03</u>	36.	
7. <u>Amndt: a</u>	<u>8/10/03</u>	37.	
8. <u>Suppl. I.D.S.</u>	<u>8/10/03</u>	38.	
9. <u>Ex Amndt HB</u>	<u>9/9/03</u>	39.	
10. <u>Letter</u>	<u>9/11/03</u>	40.	
11. <u>Final Drawings (60 sheets)</u>	<u>3/22/02</u>	41.	
12.		42.	
13.		43.	
14.		44.	
15.		45.	
16.		46.	
17.		47.	
18.		48.	
19.		49.	
20.		50.	
21.		51.	
22.		52.	
23.		53.	
24.		54.	
25.		55.	
26.		56.	
27.		57.	
28.		58.	
29.		59.	
30.		60.	

ISSUE SLIP STAPLE AREA (for additional cross-references)

**ISSUING CLASSIFICATION**

ORIGINAL		CROSS REFERENCE(S)					
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
52	243.1	52	238.1				
INTERNATIONAL CLASSIFICATION							
E D	4 H						
	6 1 0 0						
	1						
	1						
	1						
	1						

^ Continued on Issue Slip Inside File Jacket

**INDEX OF CLAIMS**

✓ ..... Rejected - (Through numeral) ... Canceled N ..... Non-elected A ..... Appeal  
 = ..... Allowed + ..... Restricted I ..... Interference O ..... Objected

Claim	Final	Original	Date
1	1	✓	
2	3	0	
3	4	✓	
4	5	✓	
5	6	0	
6	7	0	
7	8	0	
8	9	✓	
9	10	0	
10	11	✓	
11	12	✓	
12	13	✓	
13	14	✓	
14	15	0	
15	16	0	
16	17	0	
17	18	0	
18	19	0	
19	20	0	
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

Claim	Final	Original	Date
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			
86			
87			
88			
89			
90			
91			
92			
93			
94			
95			
96			
97			
98			
99			
100			

Claim	Final	Original	Date
101			
102			
103			
104			
105			
106			
107			
108			
109			
110			
111			
112			
113			
114			
115			
116			
117			
118			
119			
120			
121			
122			
123			
124			
125			
126			
127			
128			
129			
130			
131			
132			
133			
134			
135			
136			
137			
138			
139			
140			
141			
142			
143			
144			
145			
146			
147			
148			
149			
150			

If more than 150 claims or 9 actions staple additional sheet here

Handwritten notes: JC 553 NL 1/25/02

### SEARCH

Class	Sub.	Date	Exmr.
52	243.1	4/11/03	KM
	230.1		
	468		
	469		
	511		
	126.1		
	220.7		
	290		
	481.2		

### SEARCH NOTES

(List databases searched. Attach search strategy inside.)

Date	Exmr.
4/10/03	KM

FIG 1  
 220.7  
 290  
 481.2  
 consulted  
 Fred Caspell  
 for search

### INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
52	243.1	9/8/03	KM
	230.1		
	468		
	469, 511		
	126.1, 220.7		
	290		
	481.2		

L Number	Hits	Search Text	DB	Time stamp
1	98	glide adj assembly	USPAT; US-PGPUB	2003/04/19 12:16



US006688056B2

(12) **United States Patent**  
**Von Hoyningen Huene et al.**

(10) **Patent No.:** **US 6,688,056 B2**  
(45) **Date of Patent:** **Feb. 10, 2004**

(54) **MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM**

(75) Inventors: **Eberhard Von Hoyningen Huene**, Hudson (CA); **Michael Salzman**, Dollard-des-Ormeaux (CA); **Geoffrey Boyer**, Pointe-Claire (CA)

(73) Assignee: **Eberhard von Huene & Associates**, Quebec (CA)

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

(21) Appl. No.: **10/027,872**

(22) Filed: **Dec. 21, 2001**

(65) **Prior Publication Data**

US 2002/0121056 A1 Sep. 5, 2002

(30) **Foreign Application Priority Data**

Dec. 22, 2000 (CA) ..... 2329591

(51) **Int. Cl.<sup>7</sup>** ..... **E04H 6/00**

(52) **U.S. Cl.** ..... **52/243.1; 52/238.1**

(58) **Field of Search** ..... 52/243.1, 238.1, 52/468, 469, 511, 126.1, 220.7, 290, 481.2

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,387,389 A	*	10/1945	Goldsmith	52/290
2,394,443 A	*	2/1946	Guignon	52/580
2,822,898 A	*	2/1958	Richards	52/471
3,040,847 A		6/1962	Webster	
3,057,444 A	*	10/1962	Walberg	52/461
3,228,160 A	*	1/1966	O'Brien	52/242

3,302,353 A	*	2/1967	Pradal	52/469
3,352,078 A		11/1967	Neal	
3,363,383 A		1/1968	La Barge	
3,381,436 A	*	5/1968	Elliot	52/468
3,411,252 A	*	11/1968	Boyle	52/126.4
3,585,768 A	*	6/1971	Klein	52/731.3
3,675,382 A		7/1972	Licklitter et al.	

(List continued on next page.)

**FOREIGN PATENT DOCUMENTS**

CA	2 002 674	3/1993
FR	1 450 017	11/1966
FR	1 526 637	5/1968

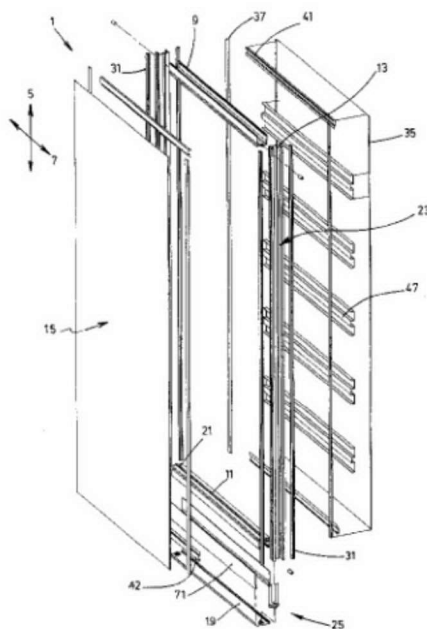
*Primary Examiner*—Carl D. Friedman  
*Assistant Examiner*—Kevin McDermott

(74) *Attorney, Agent, or Firm*—Merchant & Gould P.C.

(57) **ABSTRACT**

A moveable and demountable wall panel system including a plurality of panels each having opposite top and bottom distance channels, opposite left and right vertical posts, a panel covering, a ceiling rail, and an articulating floor channel. The distance channels and vertical posts are affixed to one another by connecting studs in order to form a rectangular support frame of the panel. The articulating floor channel is operatively connected to a bottom portion of the rectangular support frame by left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively. The articulating floor channel is used for operatively securing the rectangular support frame of the panel to a ground surface. Each vertical post has at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel.

**19 Claims, 60 Drawing Sheets**



U.S. PATENT DOCUMENTS			
3,697,028 A	* 10/1972	Nimmo .....	248/121
3,722,026 A	* 3/1973	Wilhelmi .....	16/42 T
4,027,714 A	* 6/1977	Dixon et al. ....	160/84.08
4,086,734 A	* 5/1978	Hayashi .....	52/126.4
4,167,084 A	9/1979	Brunton	
4,399,644 A	8/1983	Bright	
4,625,476 A	* 12/1986	Shimada .....	52/126.4
4,640,072 A	2/1987	Mühle	
4,703,598 A	* 11/1987	Wilson et al. ....	52/238.1
4,757,657 A	7/1988	Mitchell et al.	
4,825,610 A	5/1989	Gasteiger	
4,914,880 A	* 4/1990	Albertini .....	52/243
5,056,577 A	10/1991	DeLong et al.	
5,125,201 A	* 6/1992	Pieters et al. ....	52/238.1
5,159,793 A	11/1992	Deugo et al.	
5,207,037 A	5/1993	Giles et al.	
5,379,560 A	1/1995	Steller	
5,381,845 A	1/1995	Ruggie et al.	
5,491,943 A	2/1996	Vondrejs et al.	
5,603,192 A	* 2/1997	Dickson .....	52/238.1
5,644,878 A	7/1997	Wehrmann	
5,735,089 A	4/1998	Smith et al.	
5,875,596 A	3/1999	Muller	
5,881,979 A	* 3/1999	Rozier et al. ....	248/188.5
5,996,299 A	* 12/1999	Hsueh .....	52/481.2
6,047,508 A	* 4/2000	Goodman et al. ....	52/241
6,088,877 A	* 7/2000	Swy et al. ....	16/42 T
6,112,485 A	9/2000	Beyer et al.	
6,122,871 A	9/2000	Russell et al.	
6,170,213 B1	* 1/2001	Zarrelli et al. ....	52/509
6,176,054 B1	* 1/2001	Allen et al. ....	52/272
6,209,610 B1	* 4/2001	Davies et al. ....	160/26
6,329,591 B2	* 12/2001	Karst et al. ....	174/48
6,349,516 B1	* 2/2002	Powell et al. ....	52/239
6,405,781 B2	* 6/2002	Davies et al. ....	160/23.1
6,493,995 B2	* 12/2002	McKenzie .....	52/36.4
2002/0088188 A1	* 7/2002	Chang .....	52/238.1
2002/0157335 A1	* 10/2002	Vos .....	52/238.1

\* cited by examiner





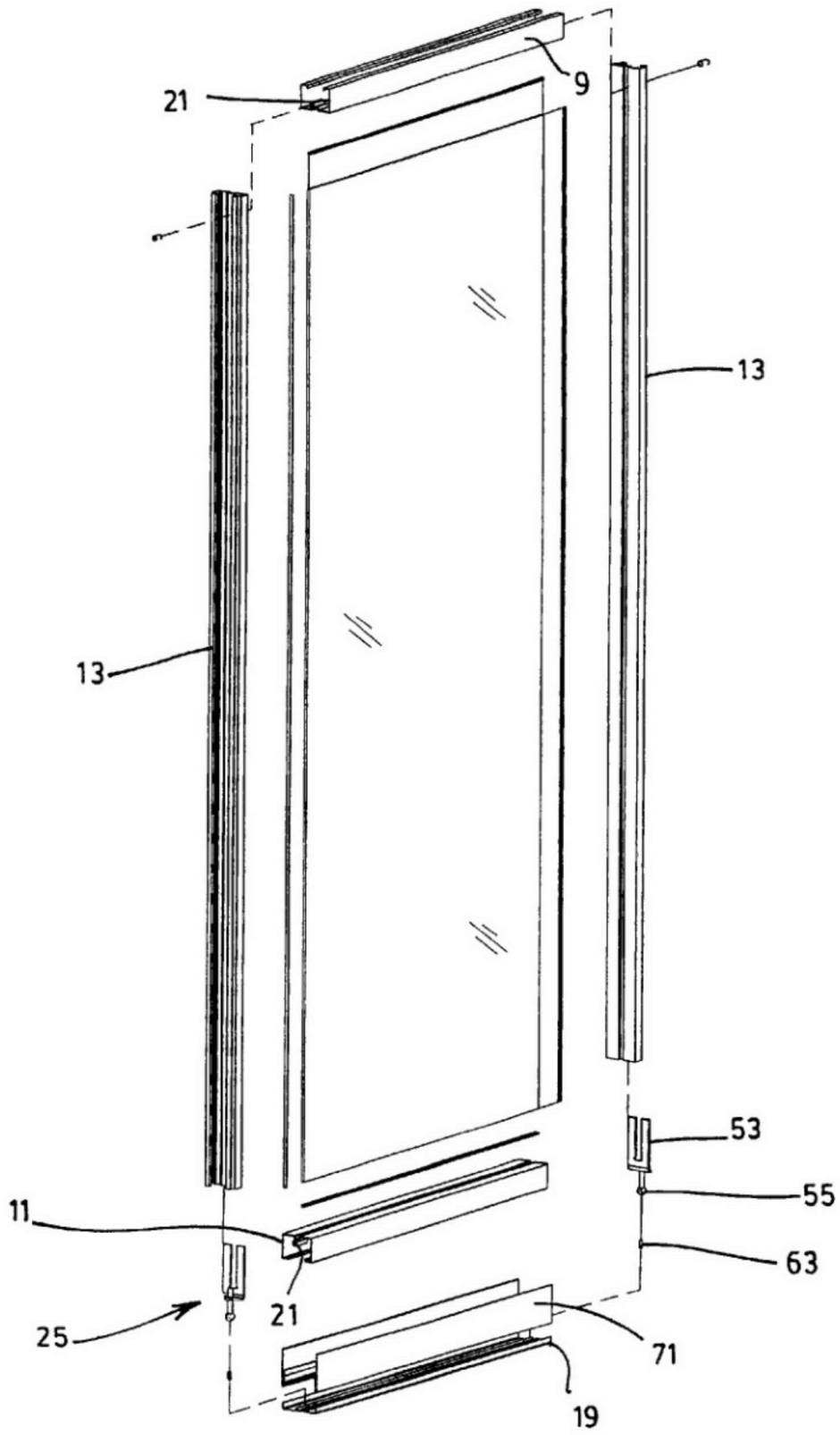


FIG. 2

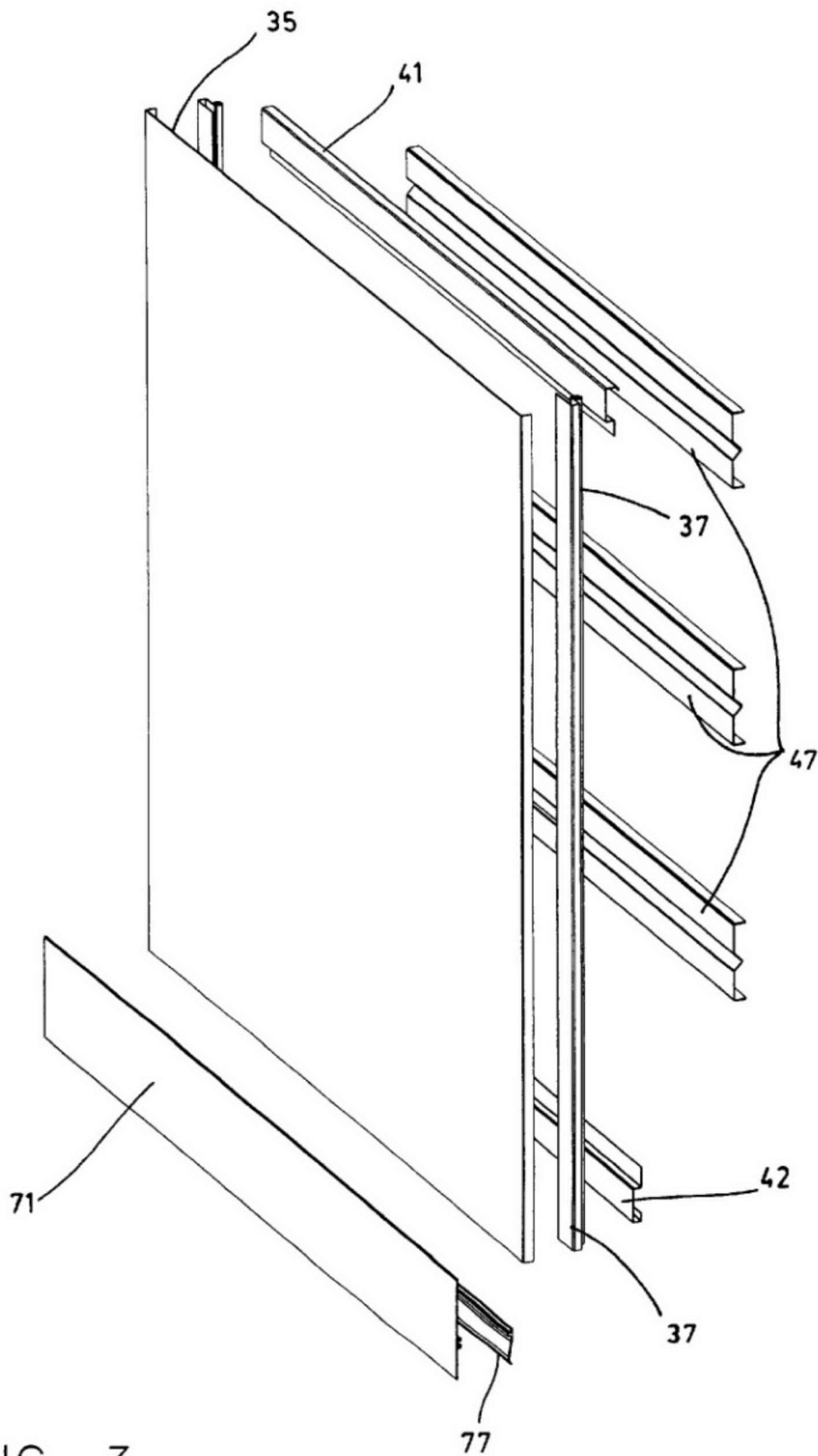


FIG. 3

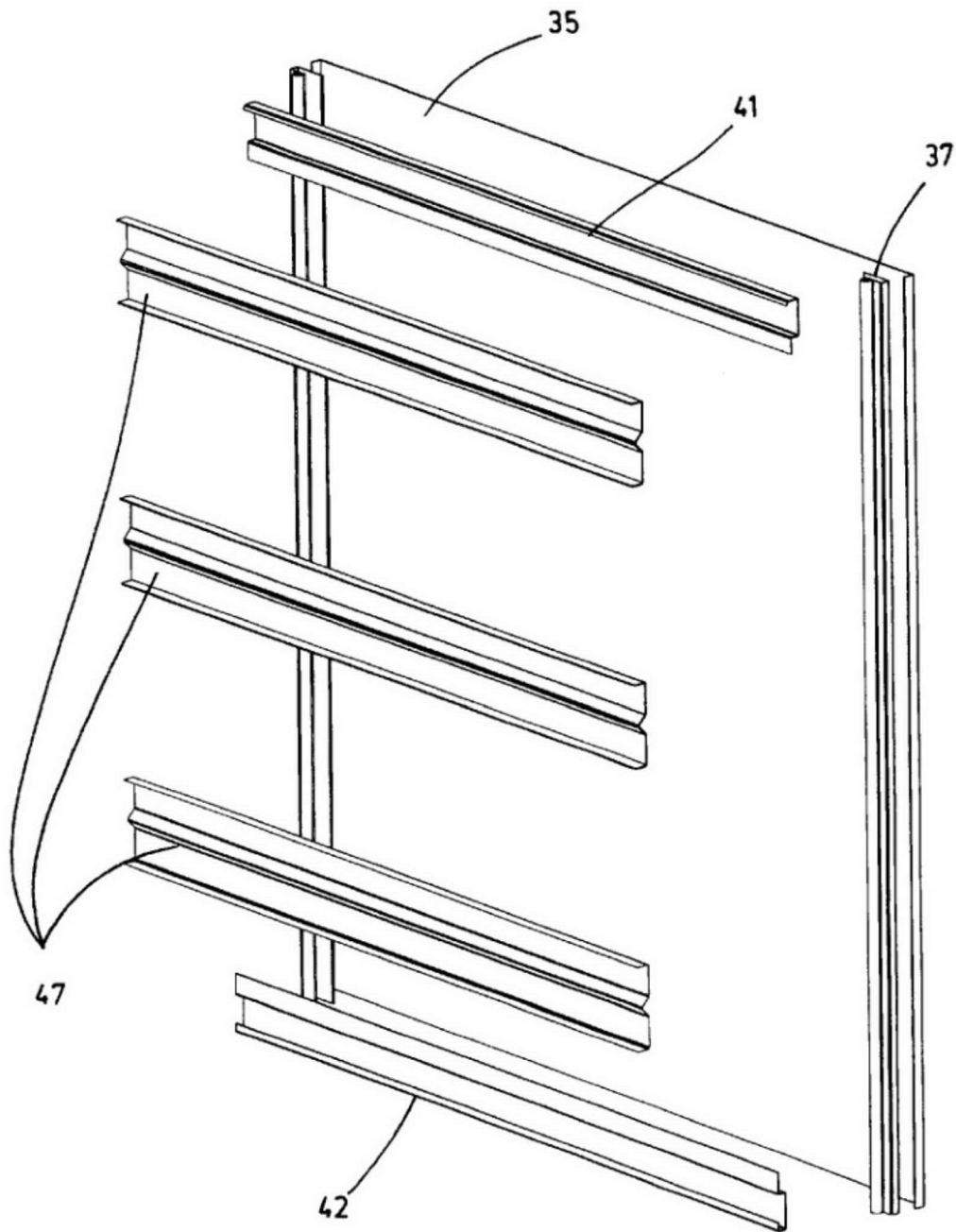


FIG. 4

FIG. 5

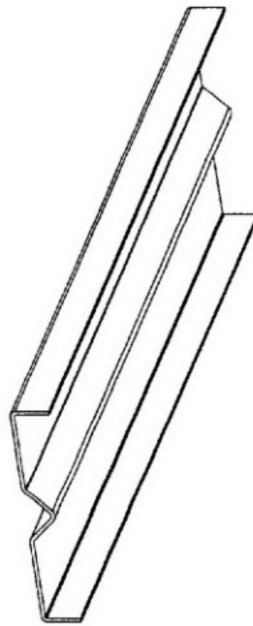


FIG. 6

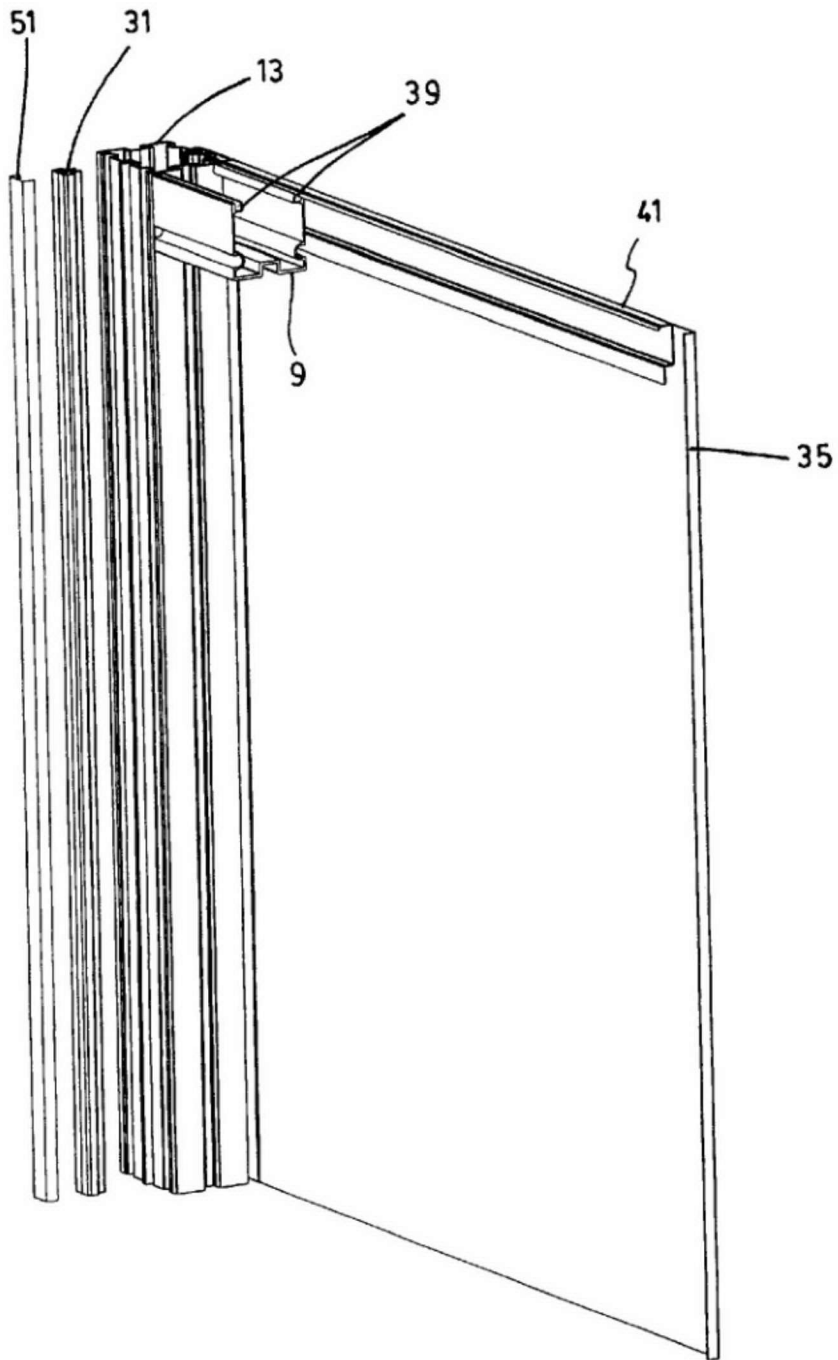


FIG. 7

FIG. 8

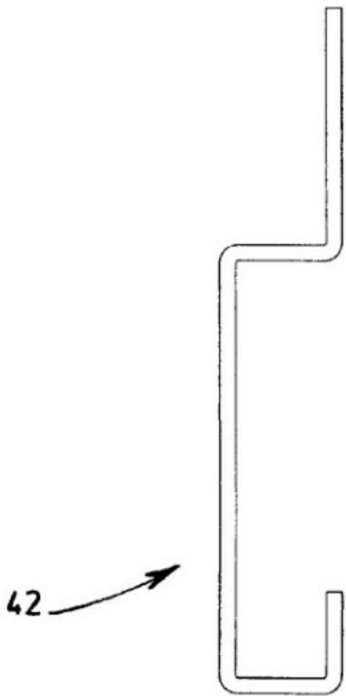
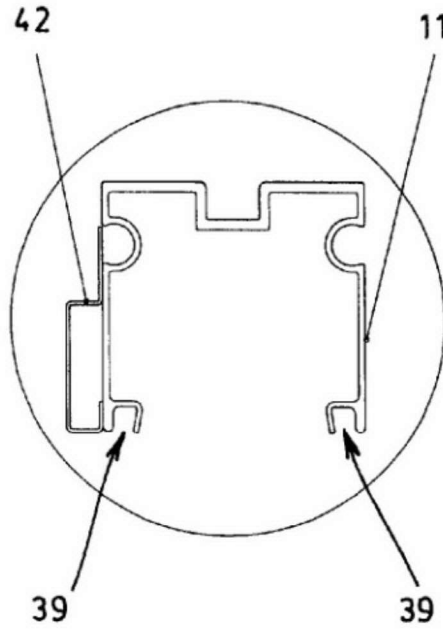


FIG. 9

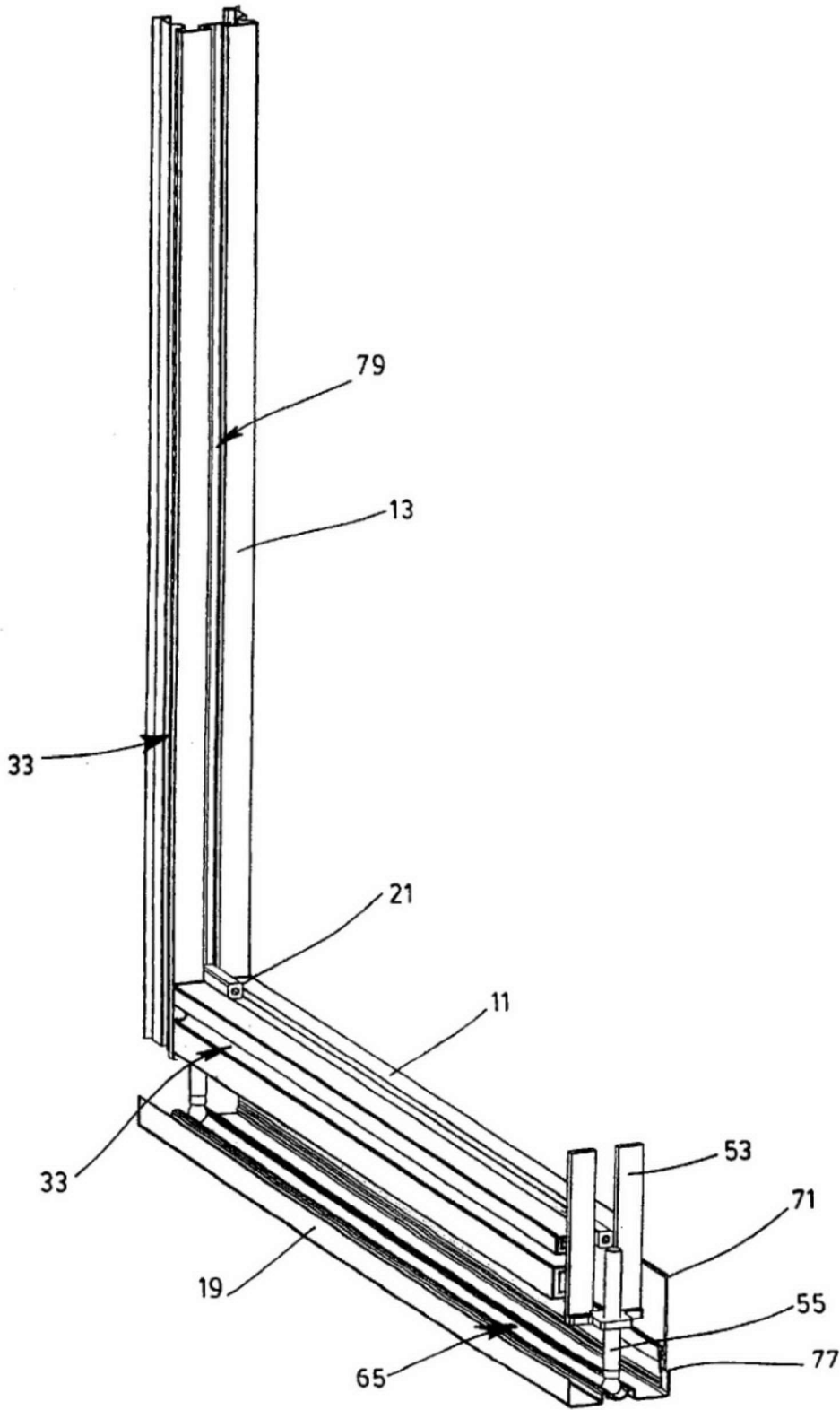


FIG. 10

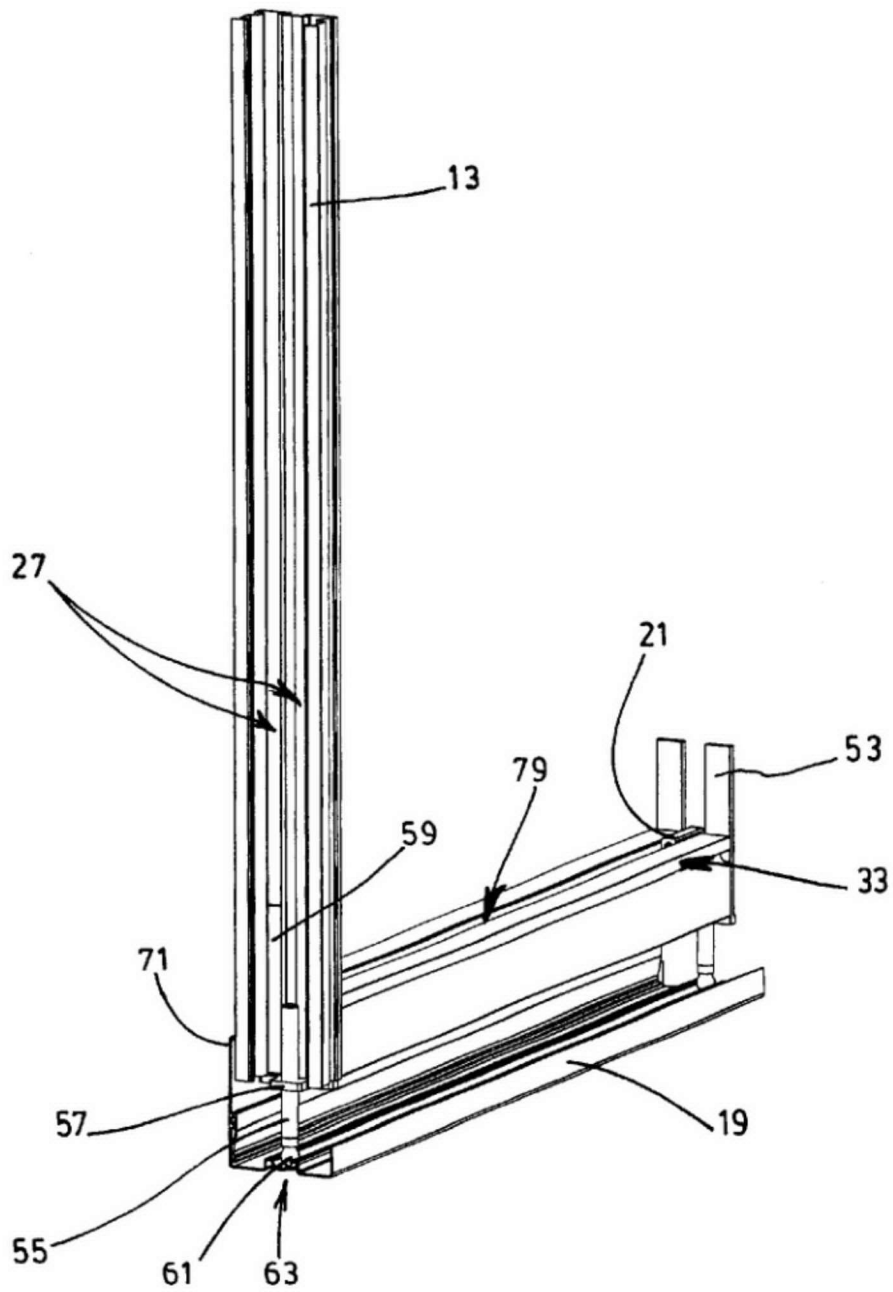


FIG. 11



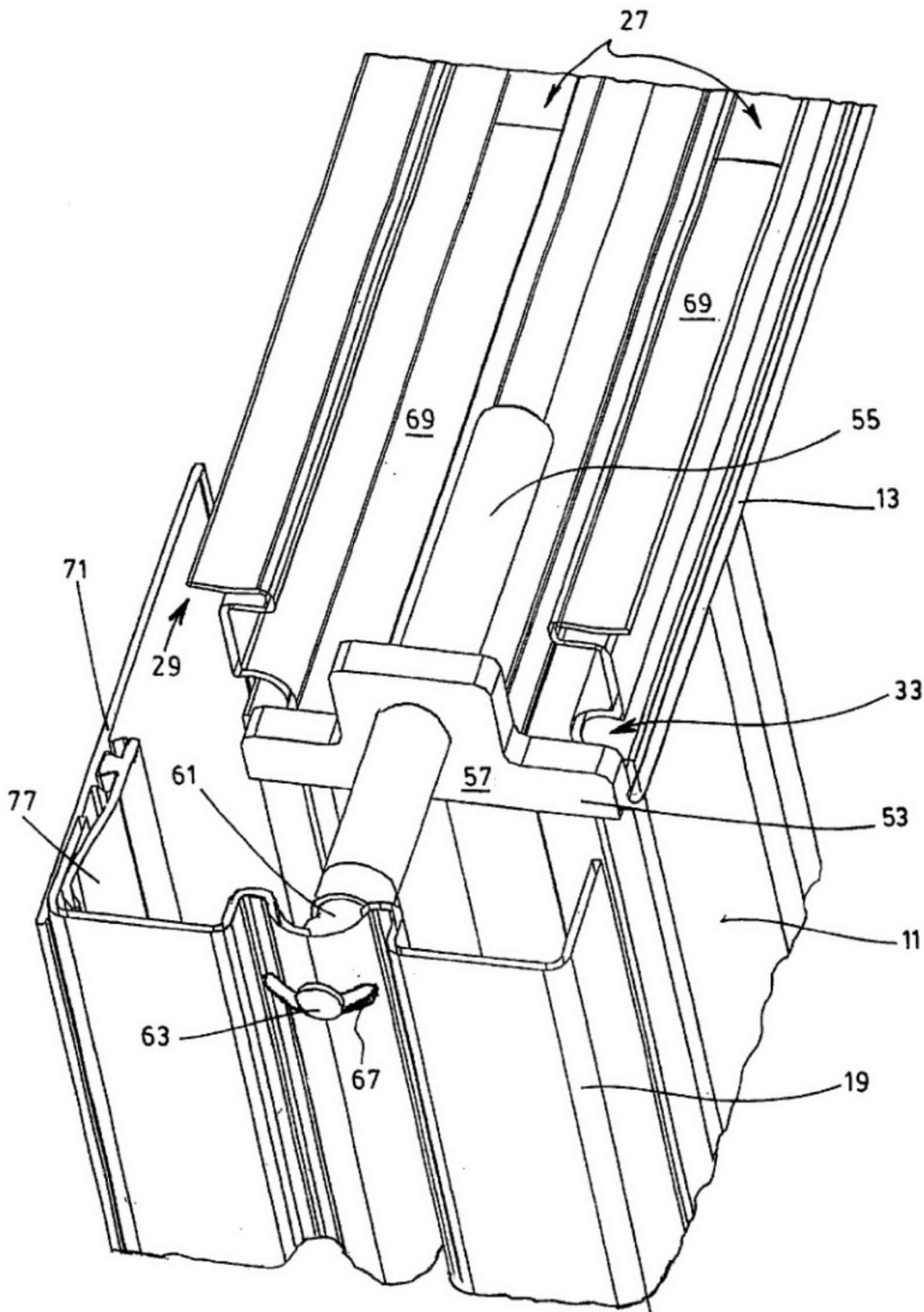


FIG. 12

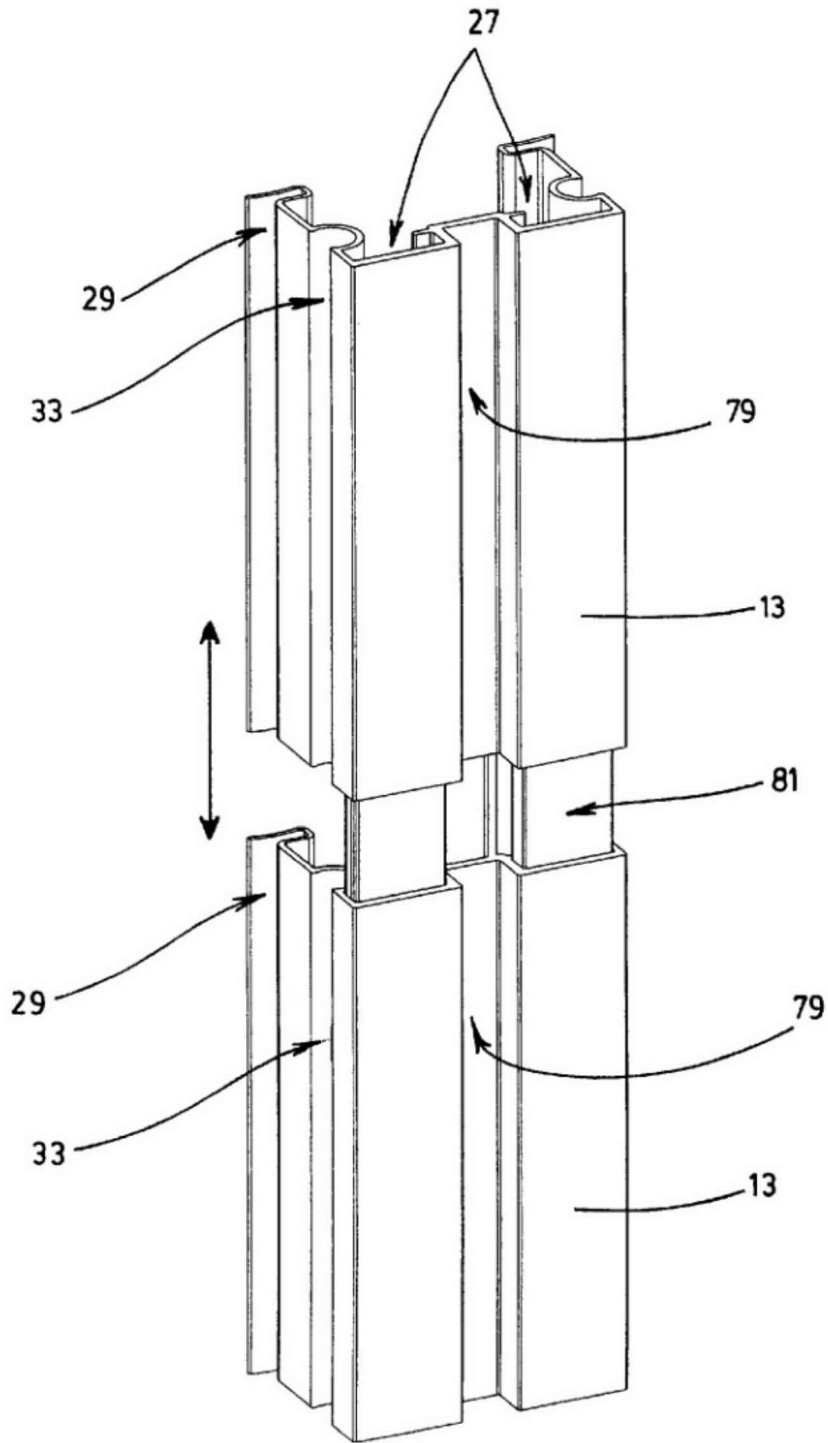


FIG. 13

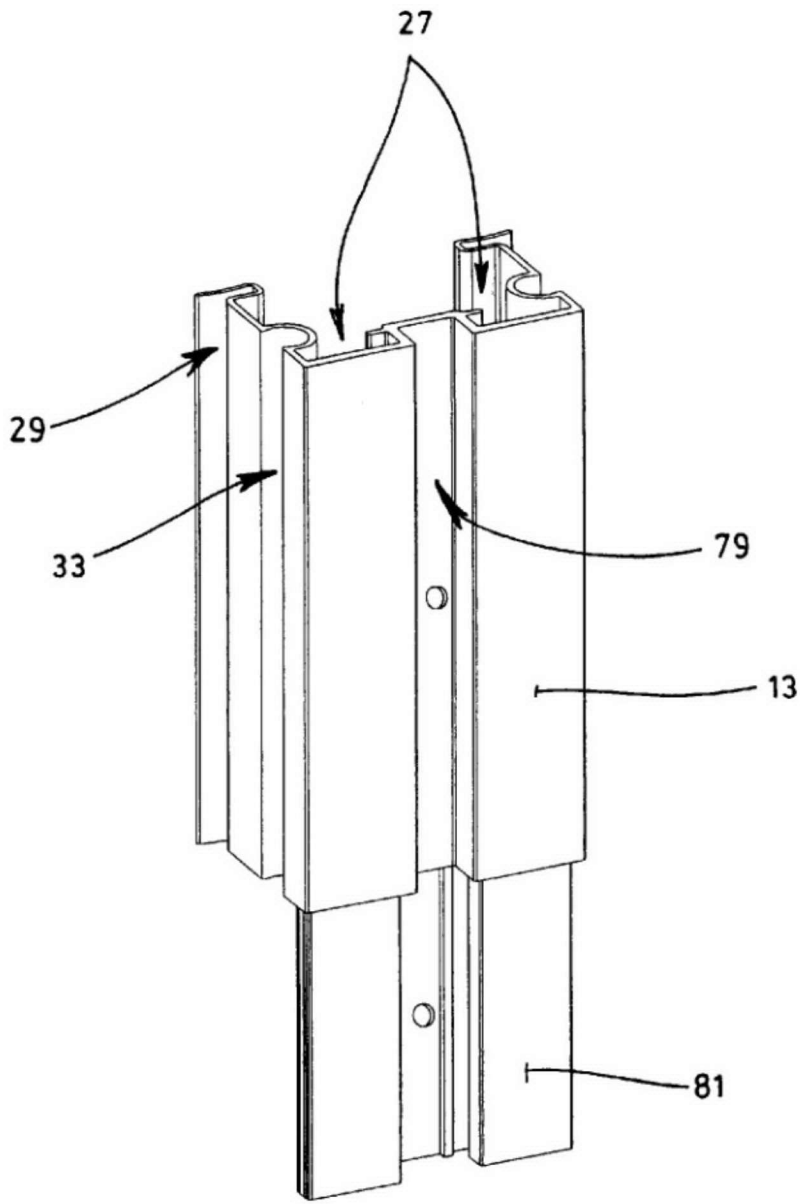


FIG. 14

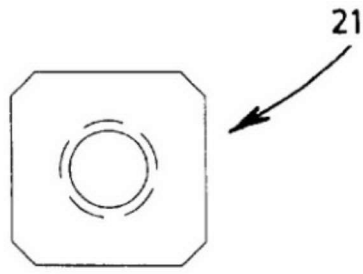


FIG. 15

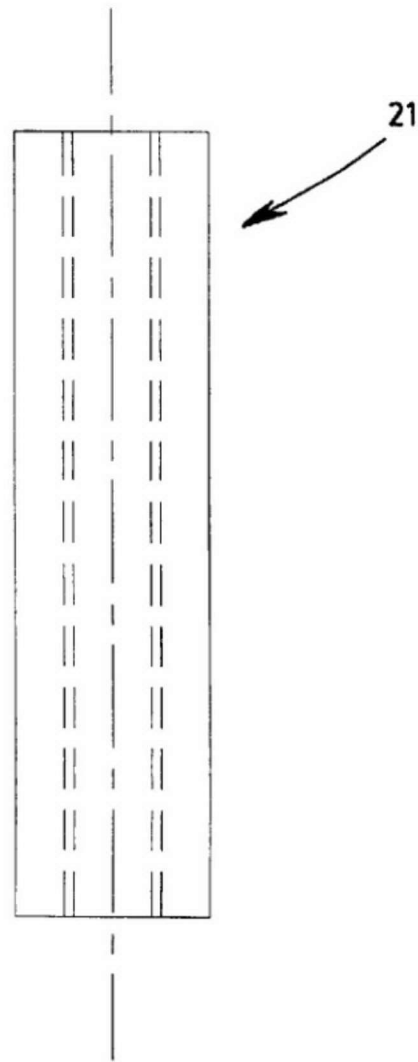


FIG. 16

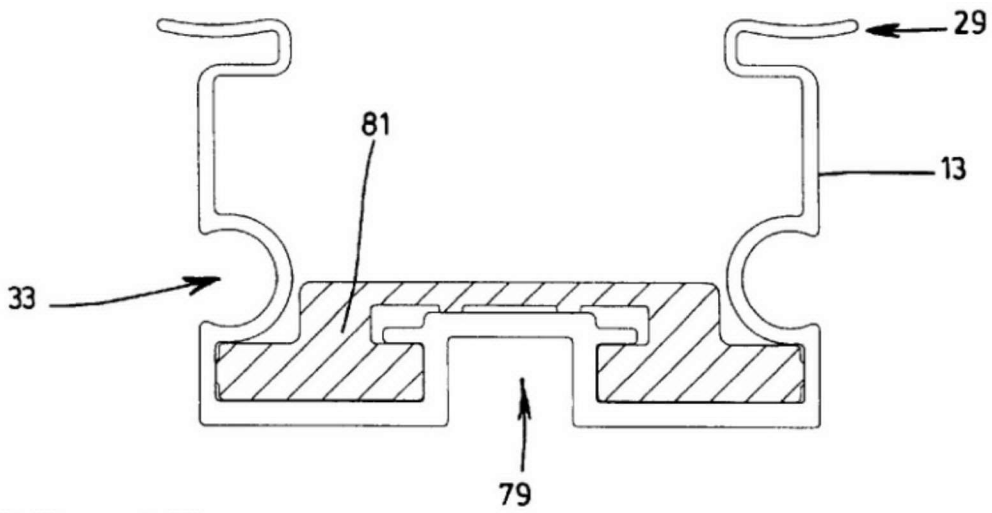


FIG. 17

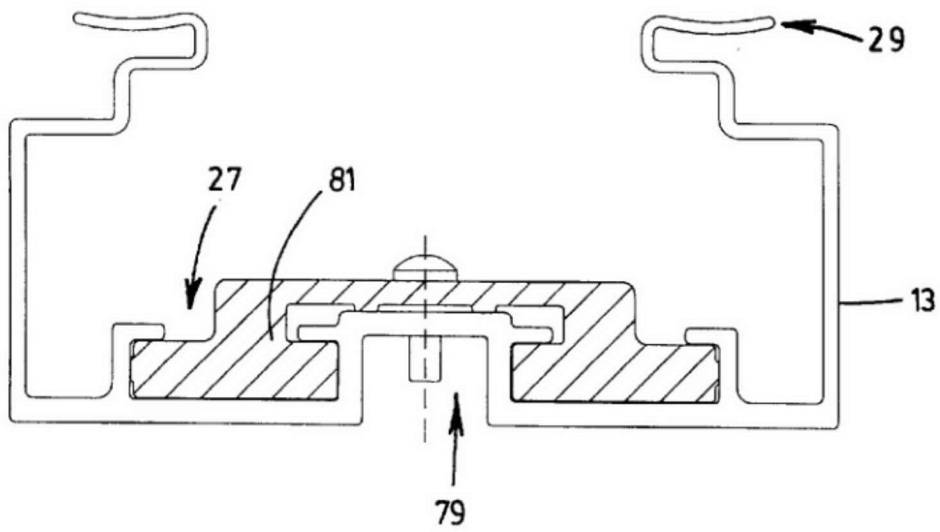


FIG. 18

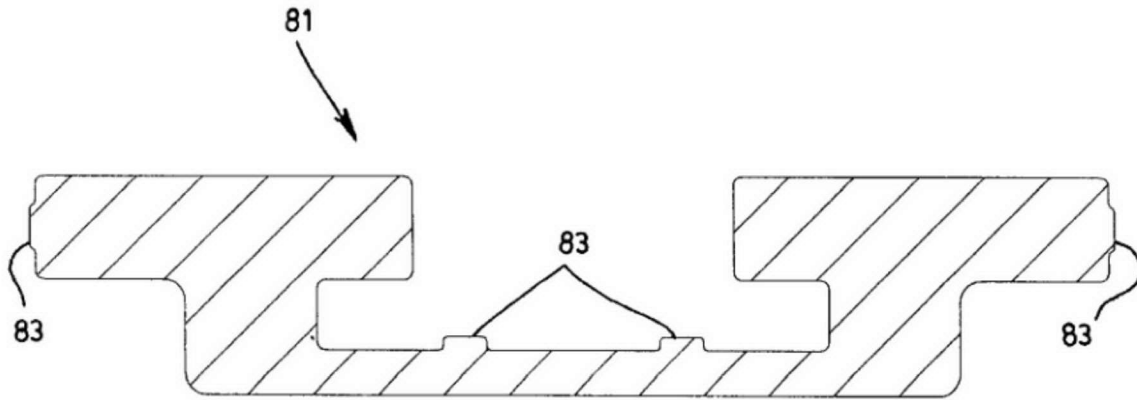


FIG. 19

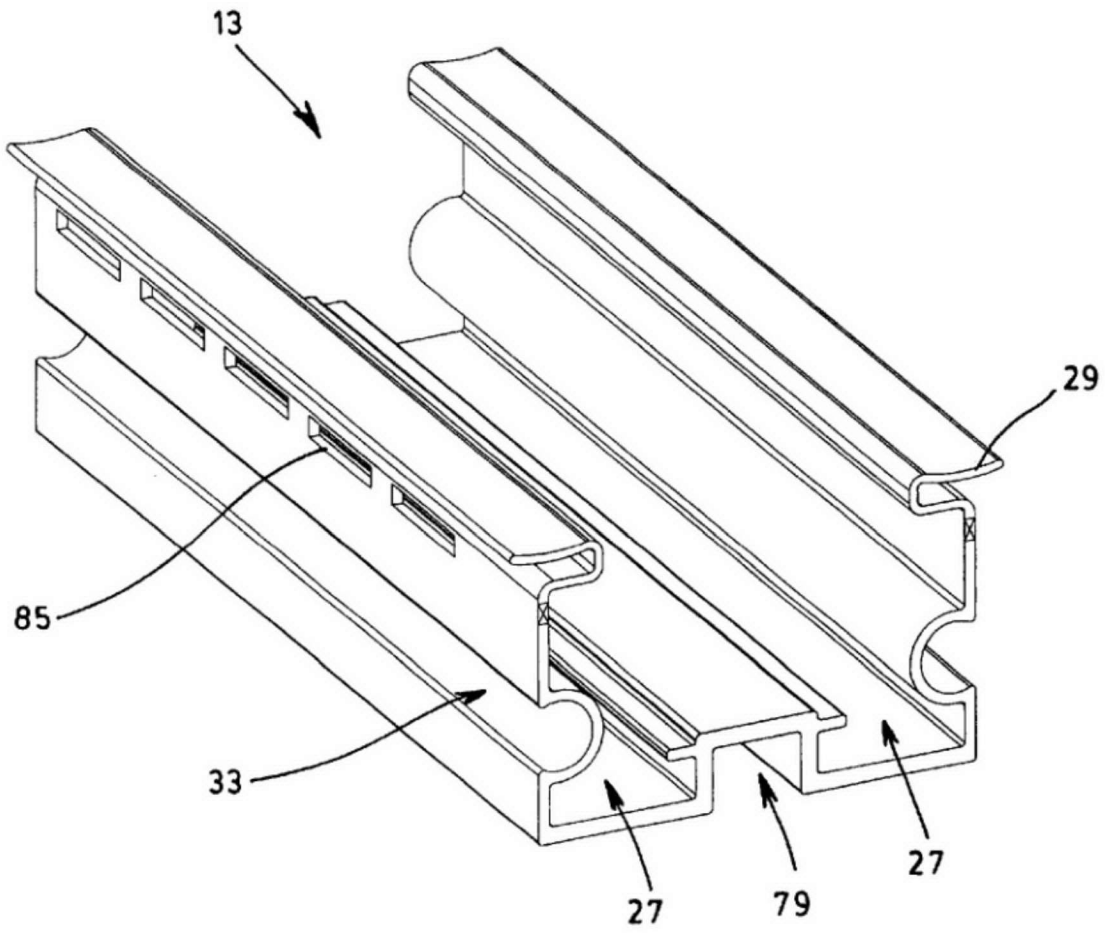


FIG. 20

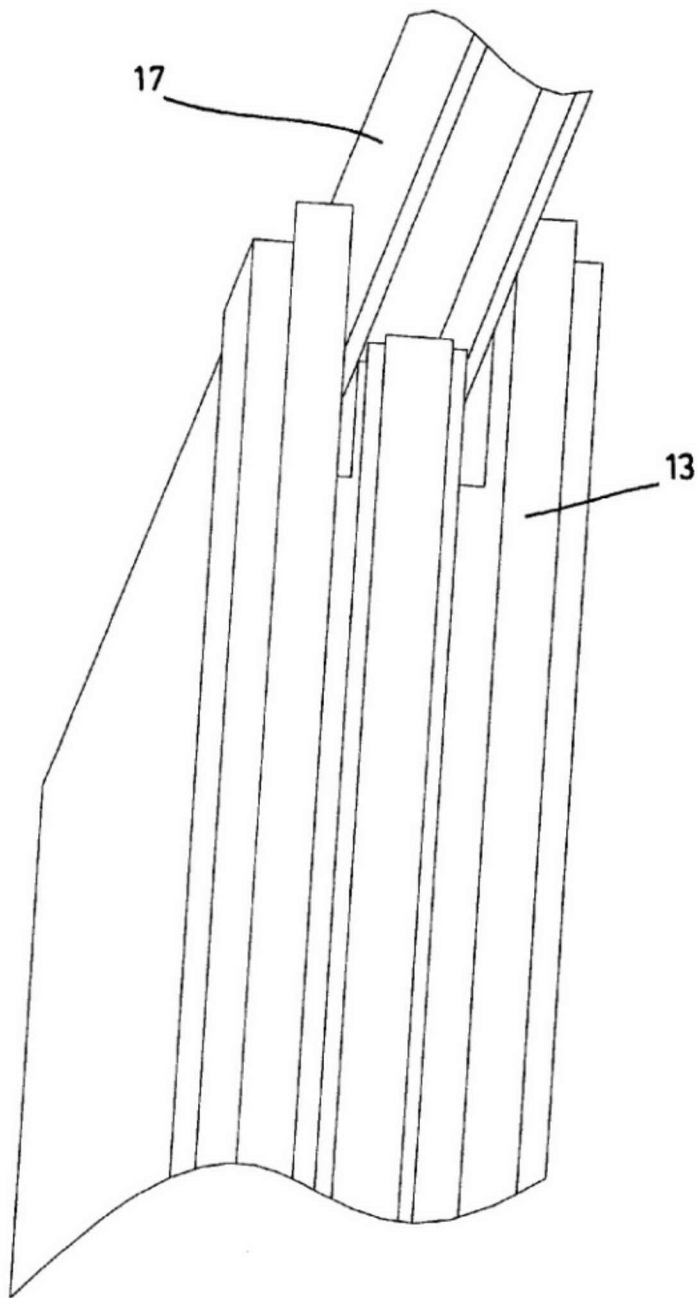


FIG. 21



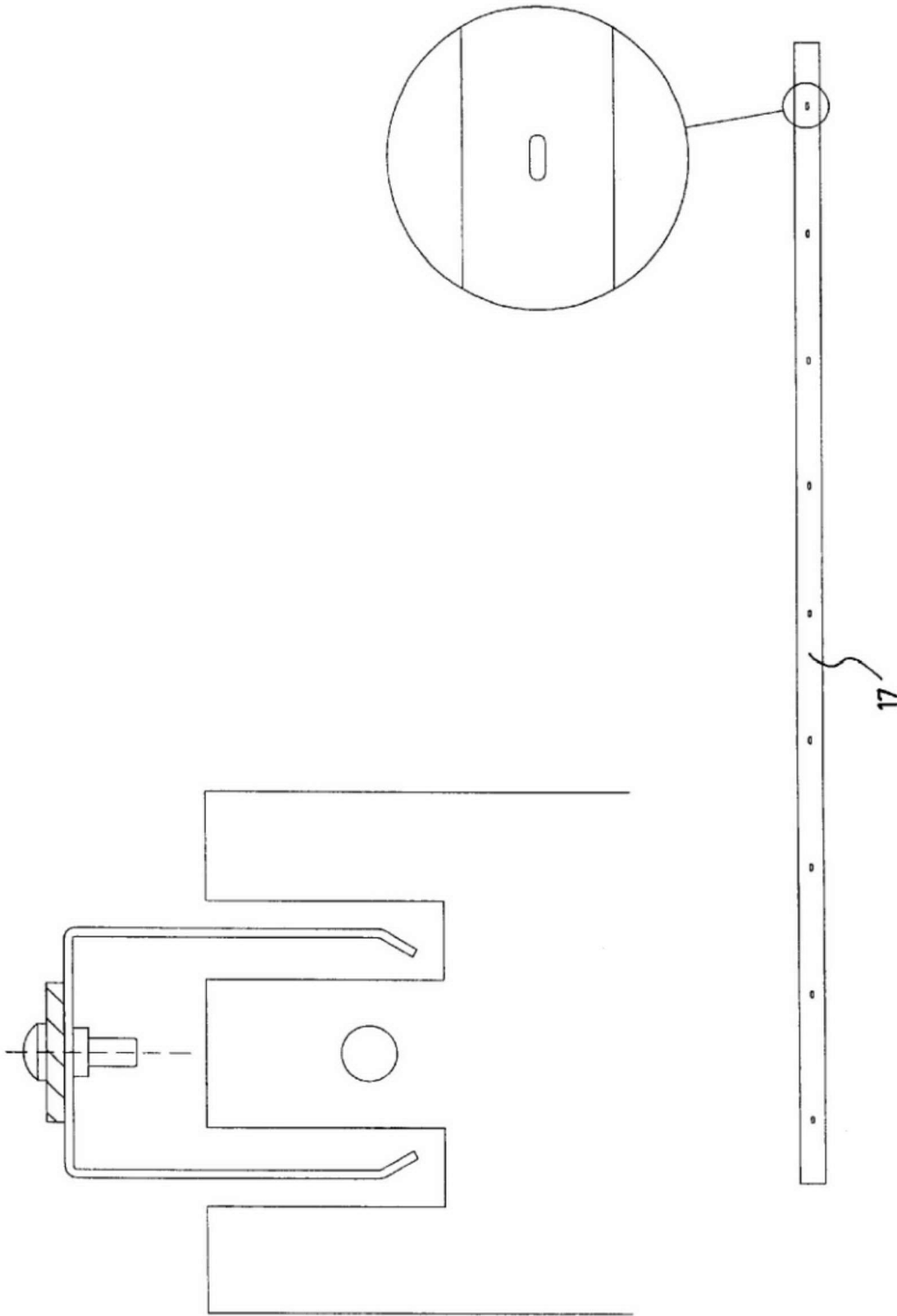


FIG. 22

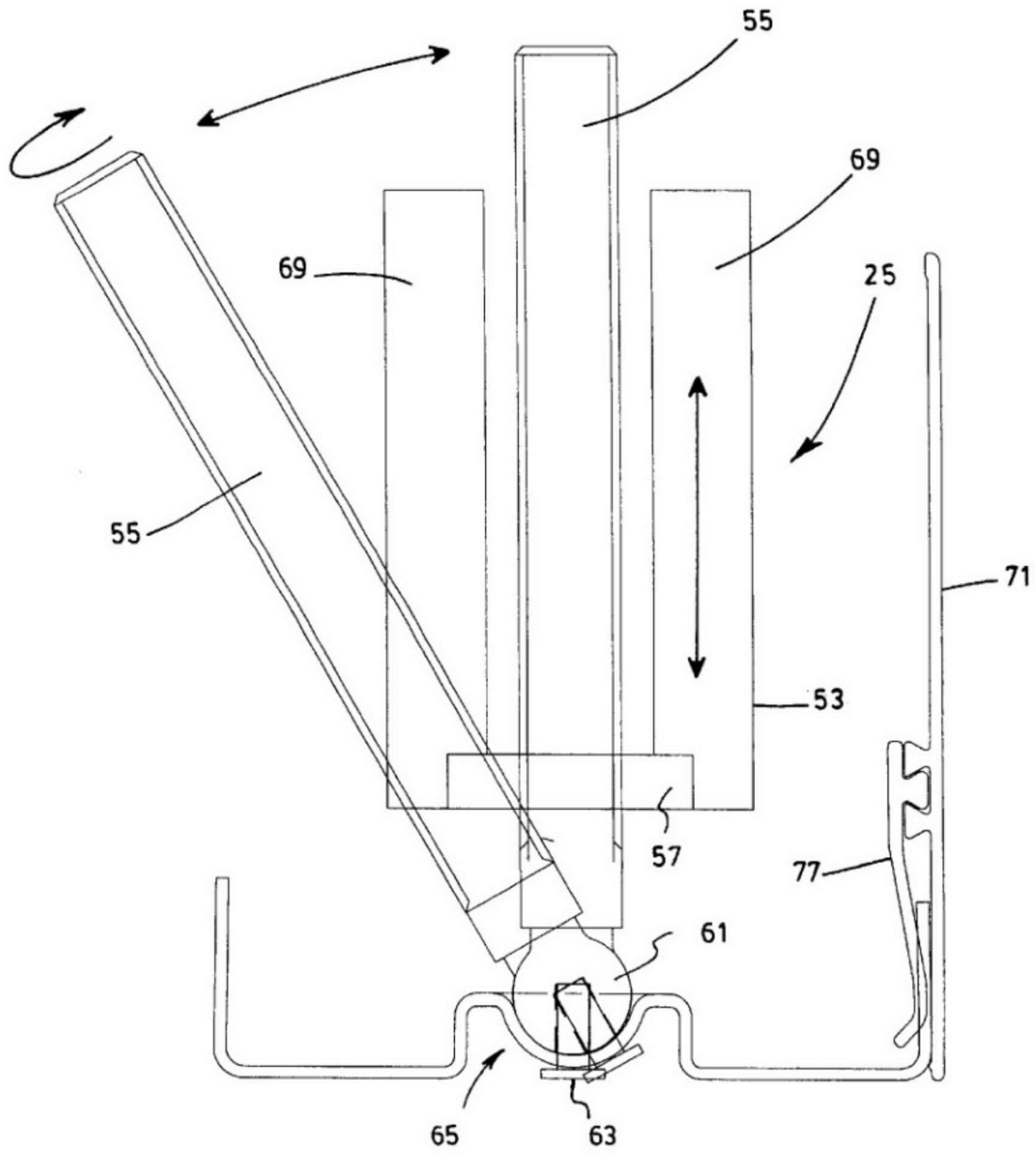


FIG. 23

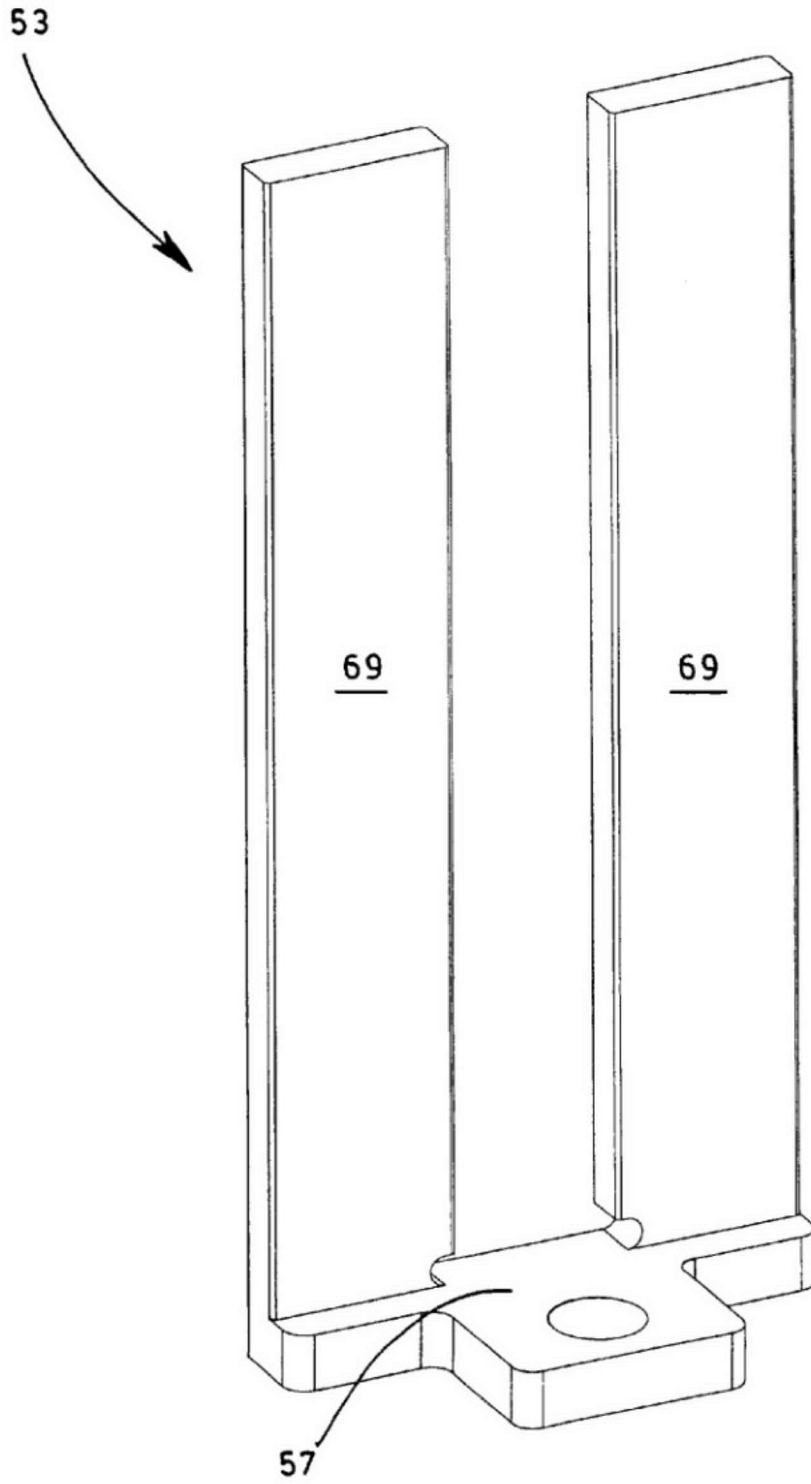


FIG. 24

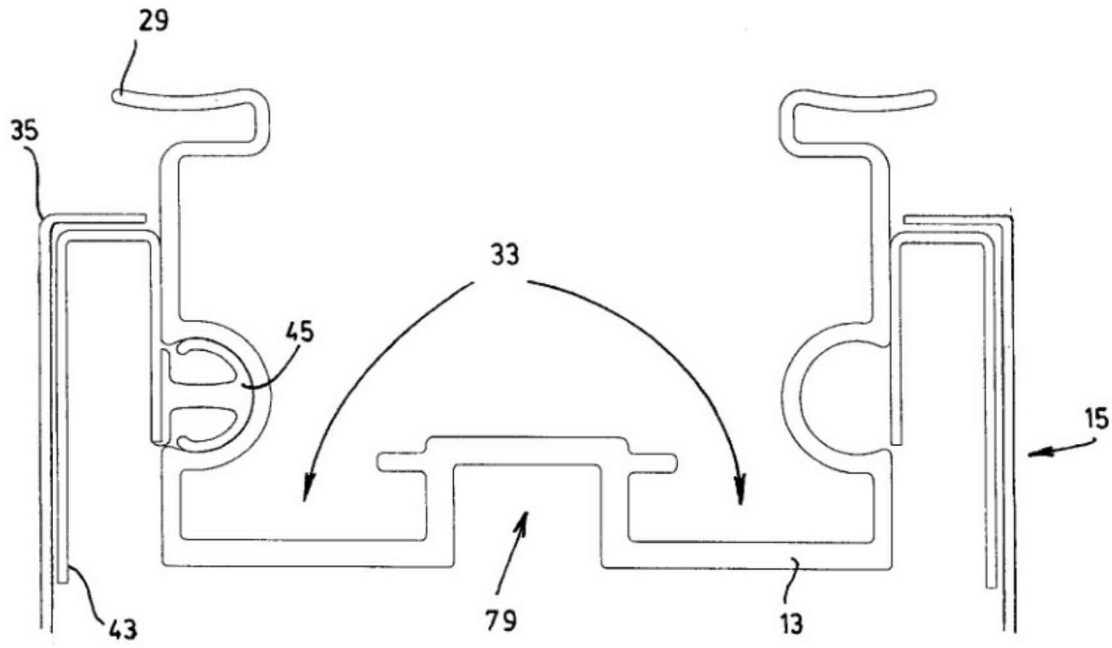


FIG. 25

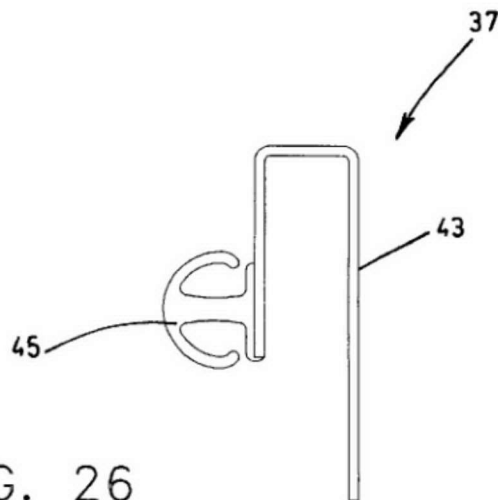


FIG. 26

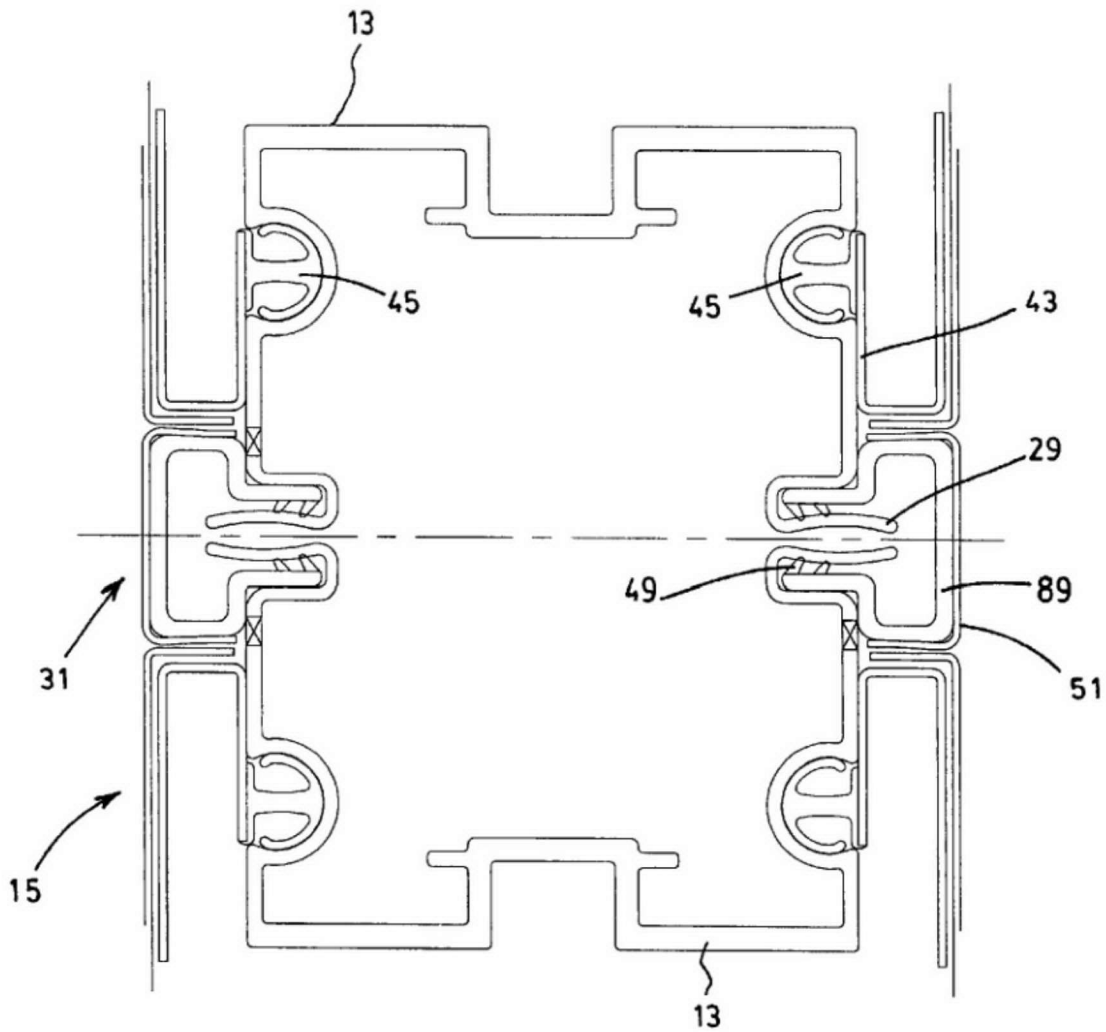


FIG. 27

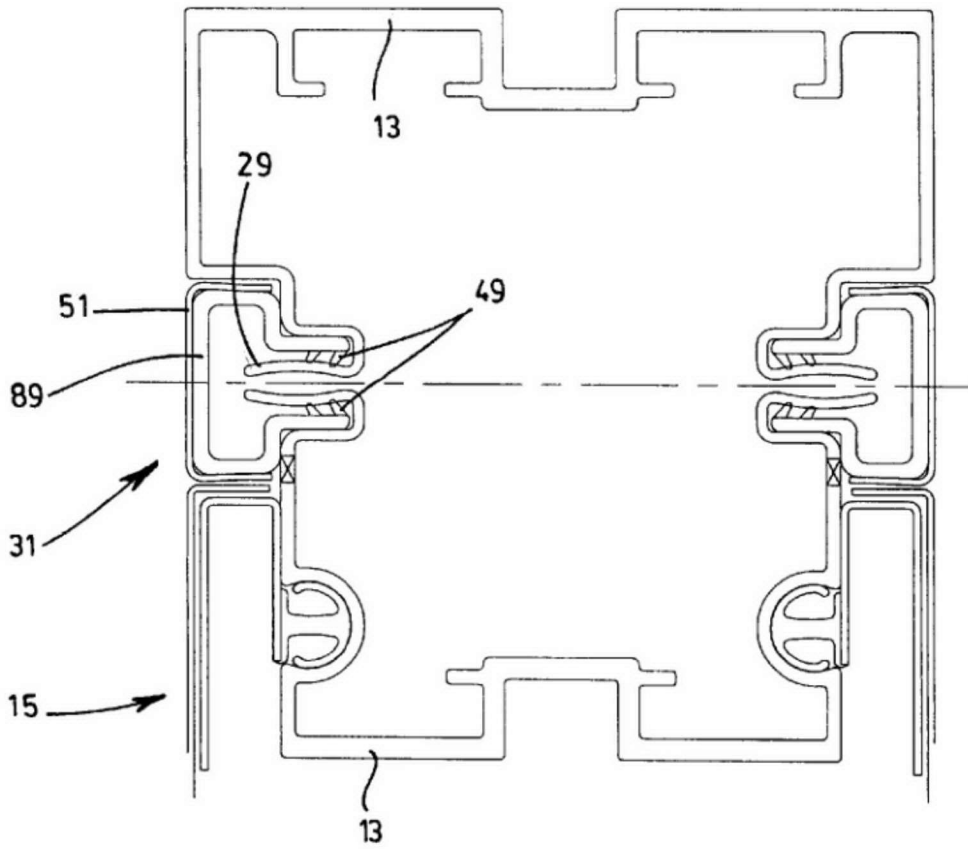


FIG. 28

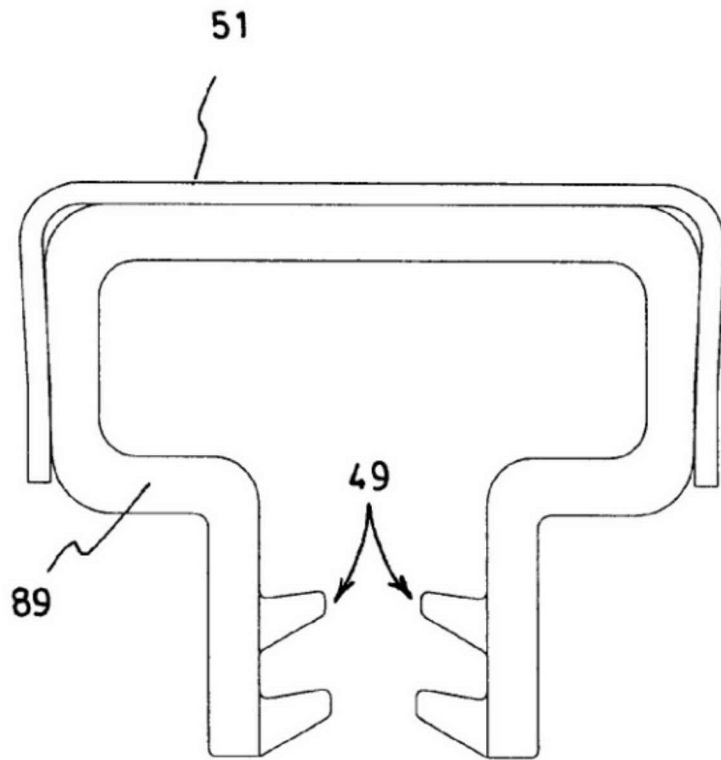


FIG. 29

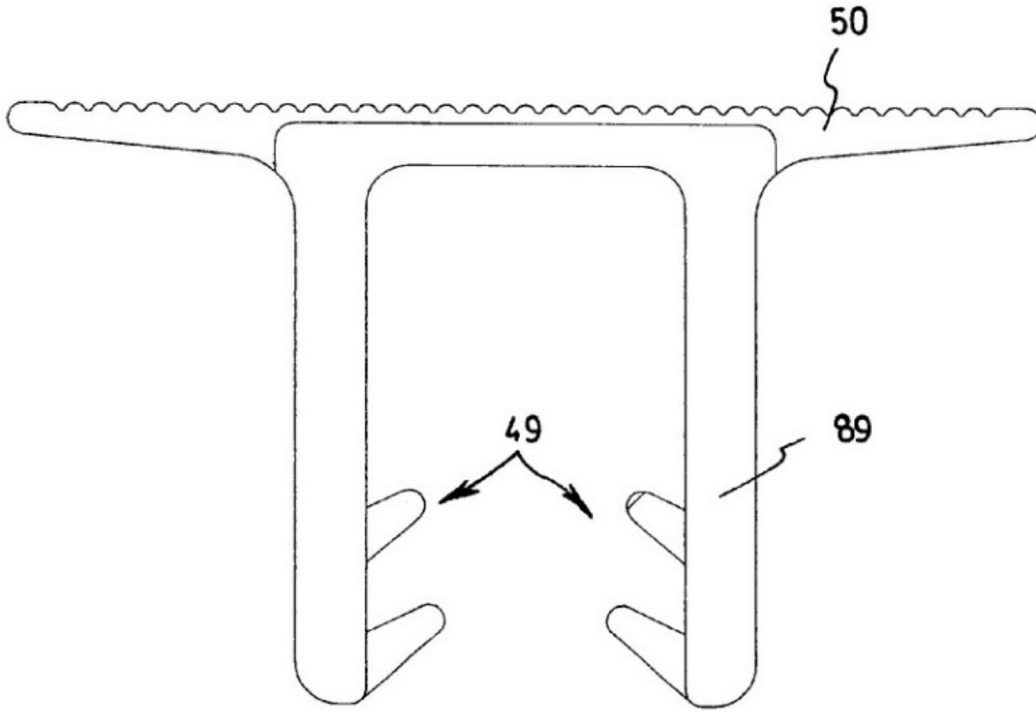


FIG. 30



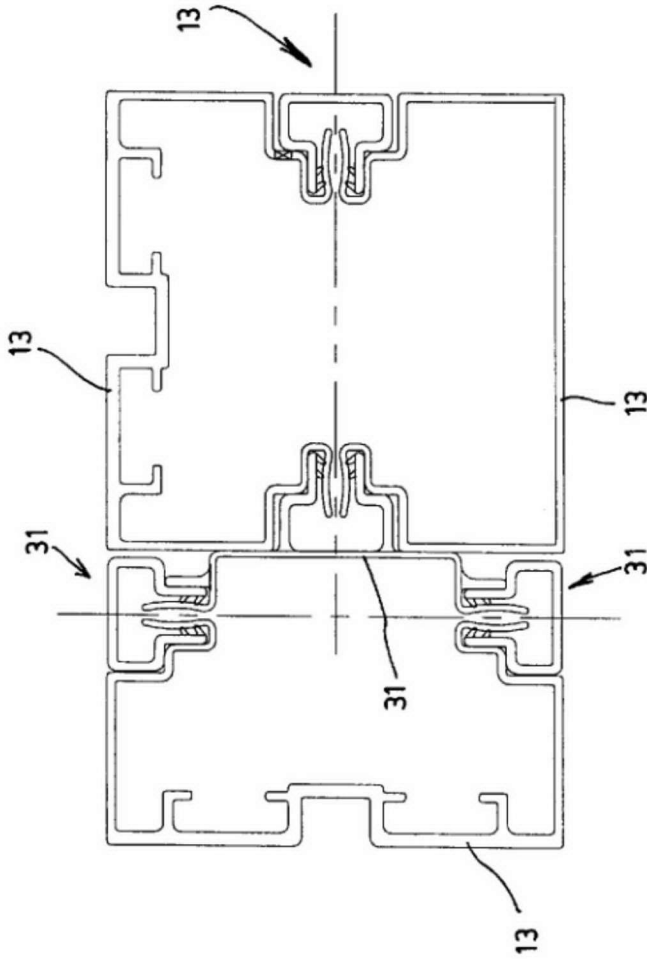


FIG. 31

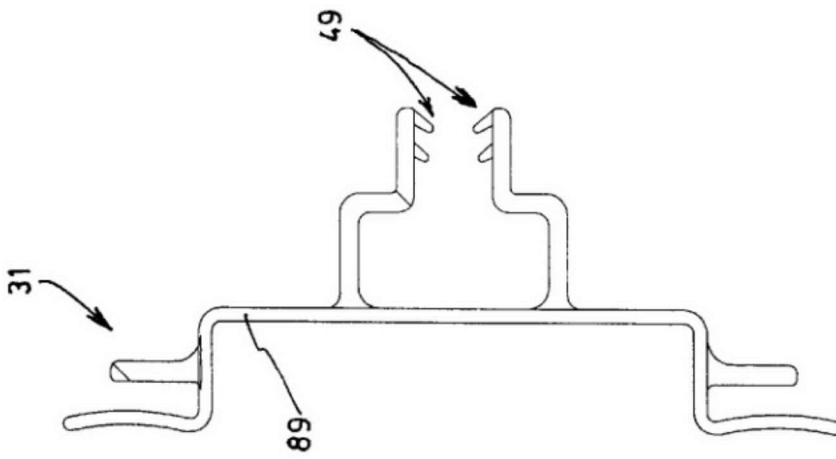


FIG. 32

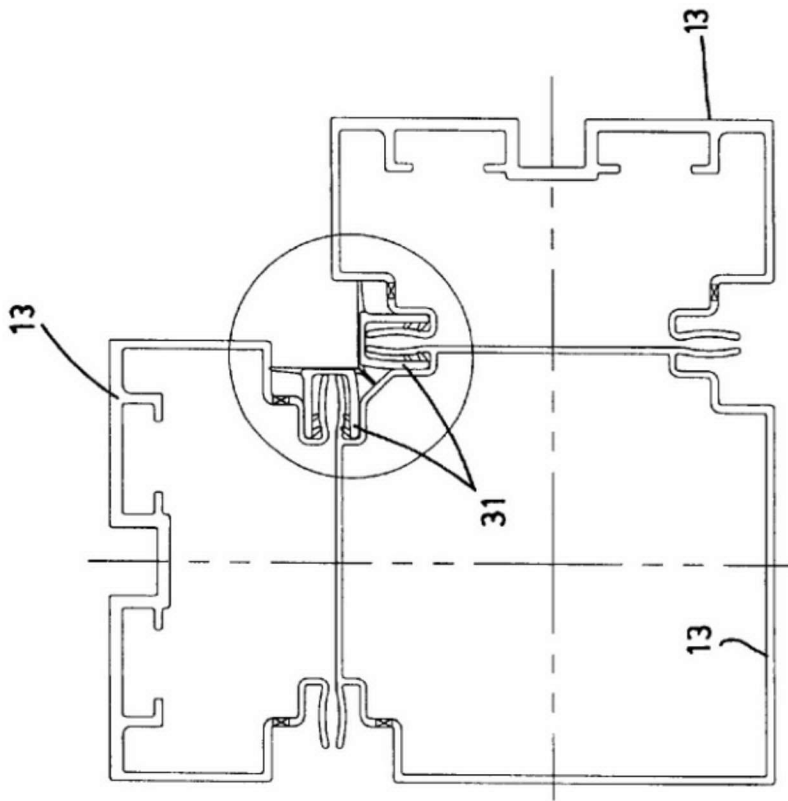


FIG. 33

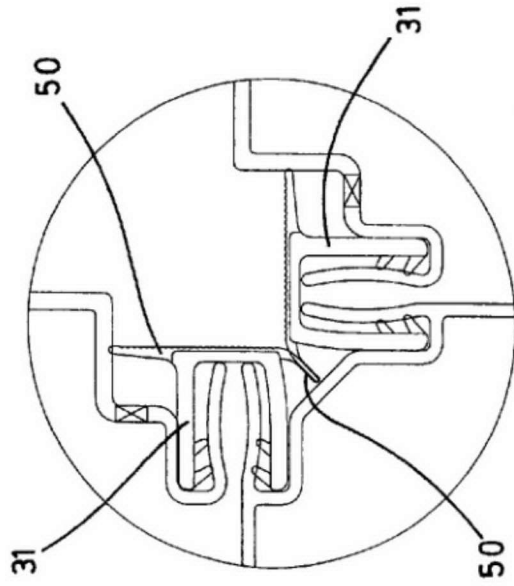


FIG. 34

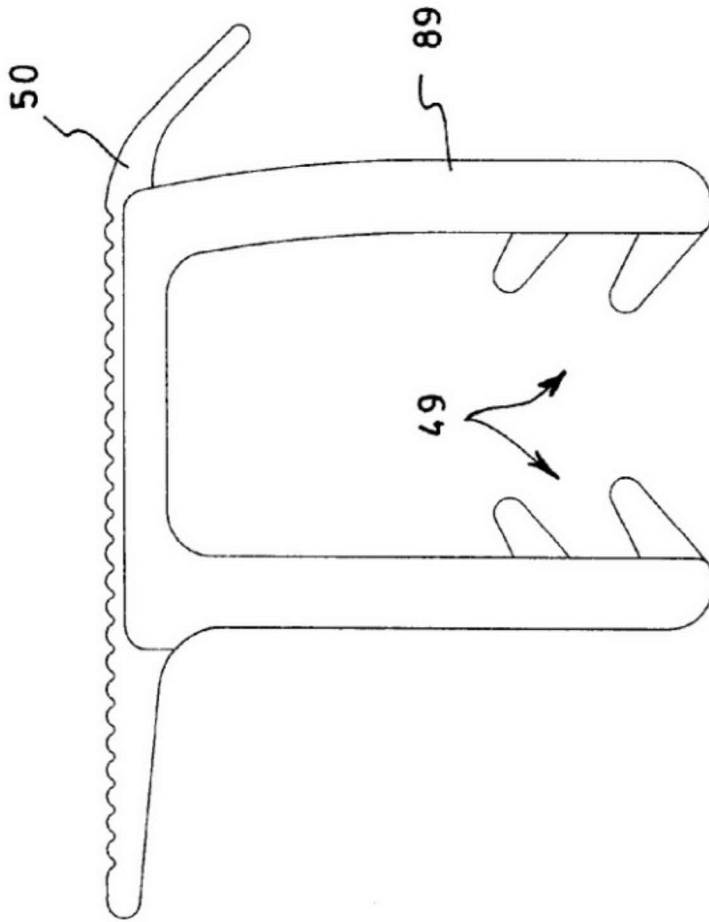


FIG. 35

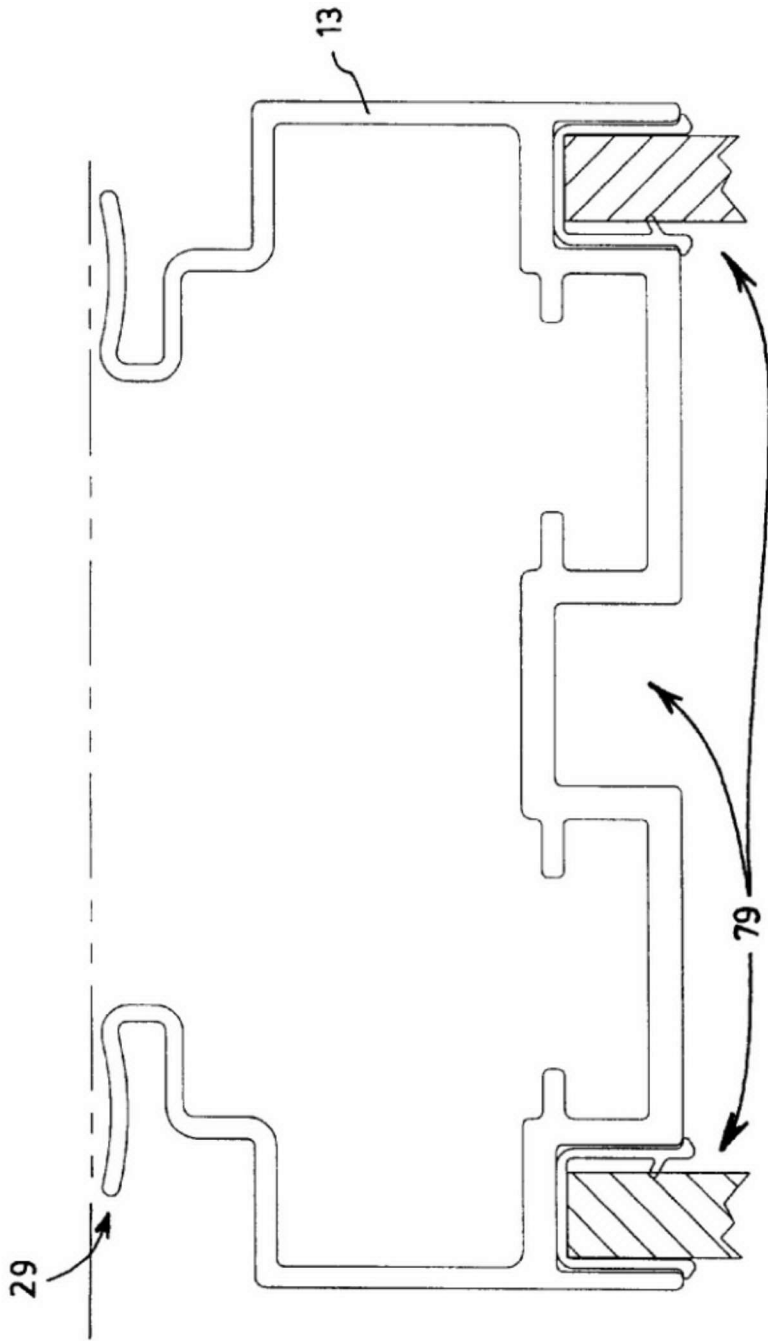


FIG. 36

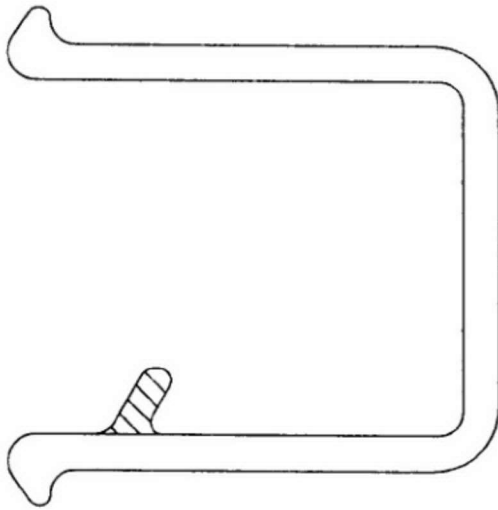


FIG. 37

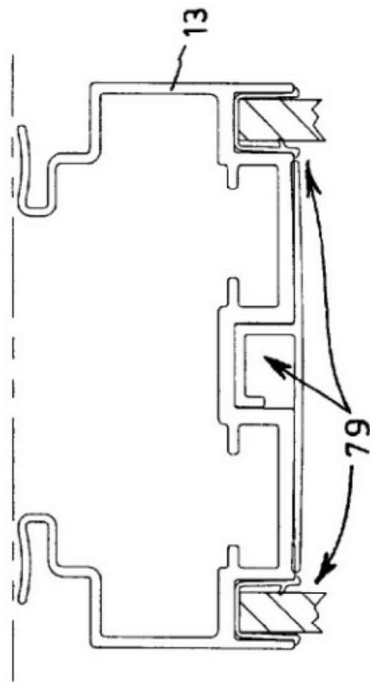


FIG. 38



FIG. 39

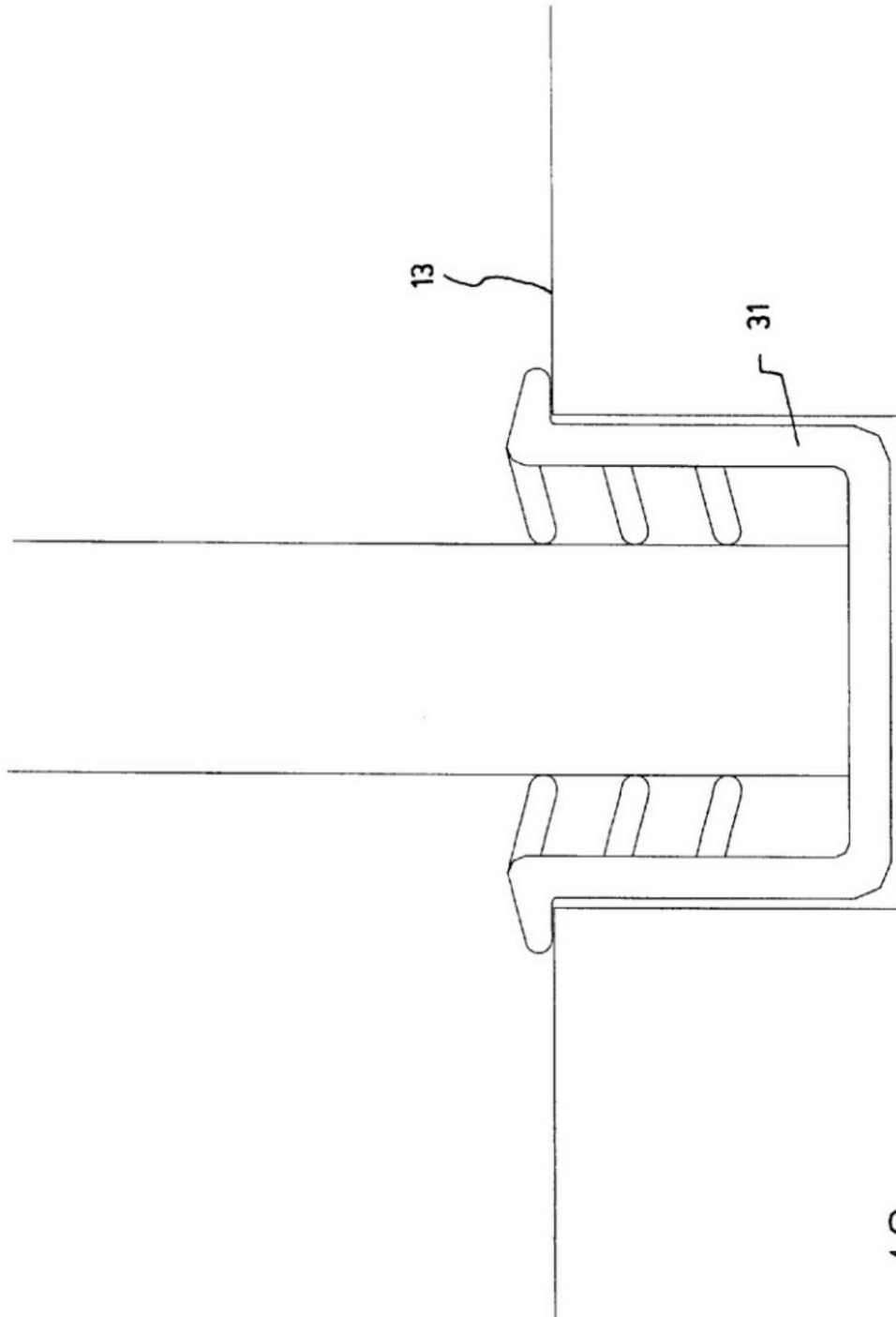


FIG. 40

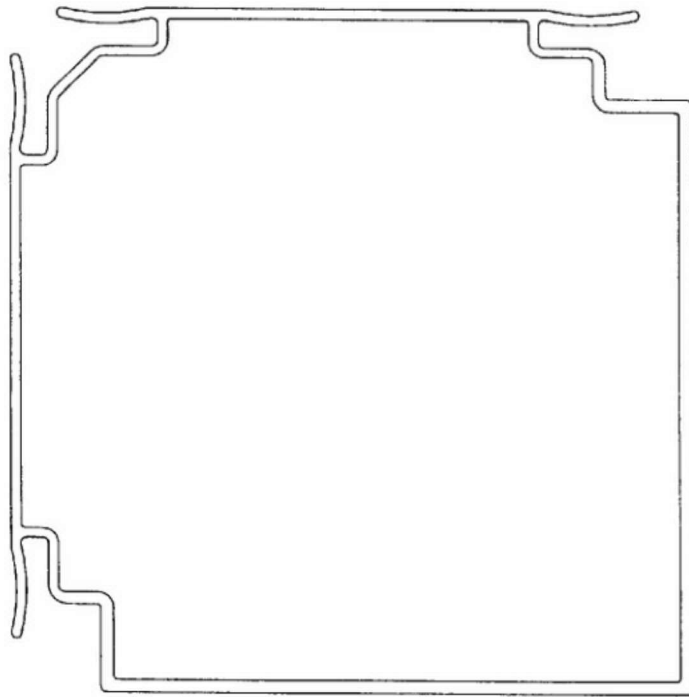


FIG. 41



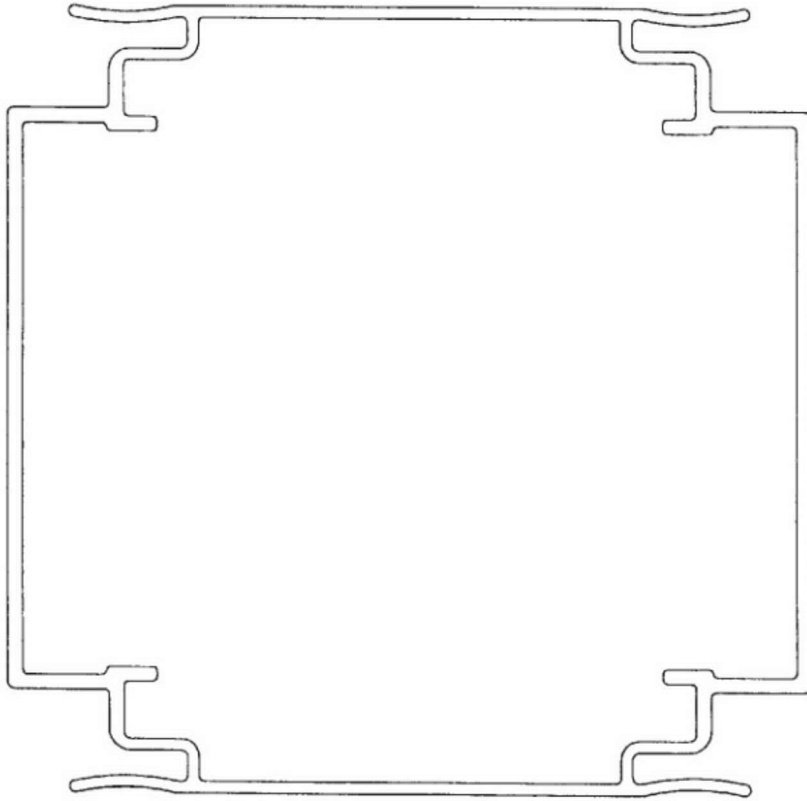


FIG. 42

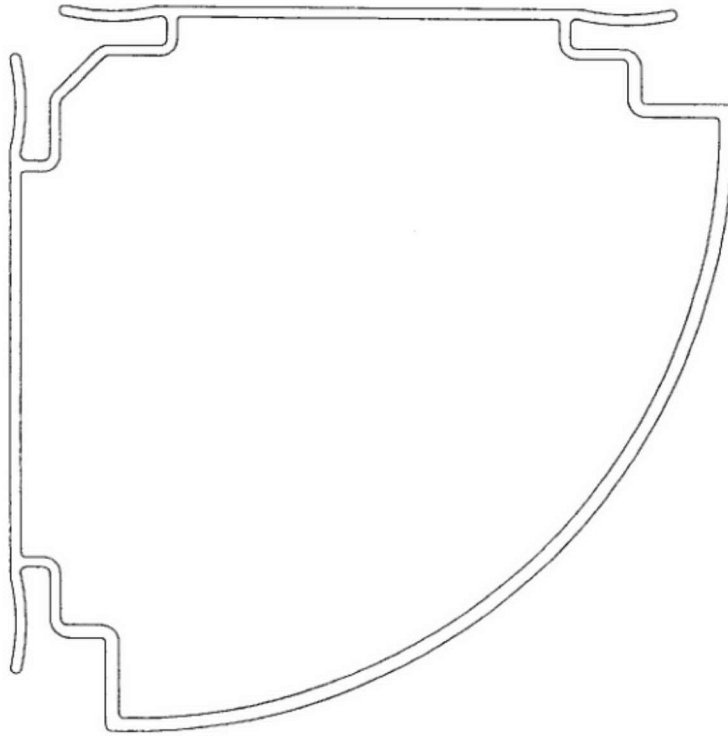


FIG. 43

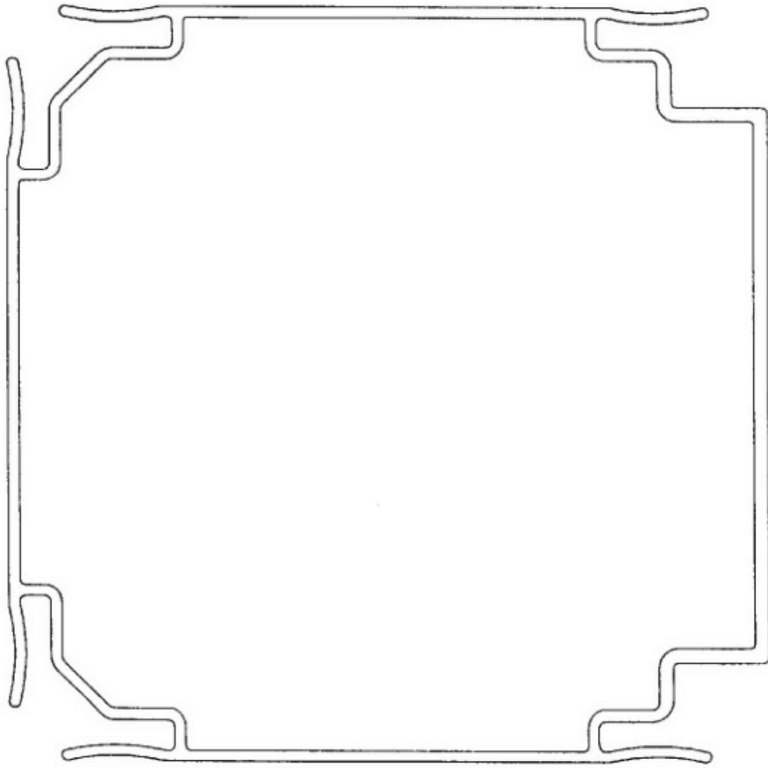


FIG. 44

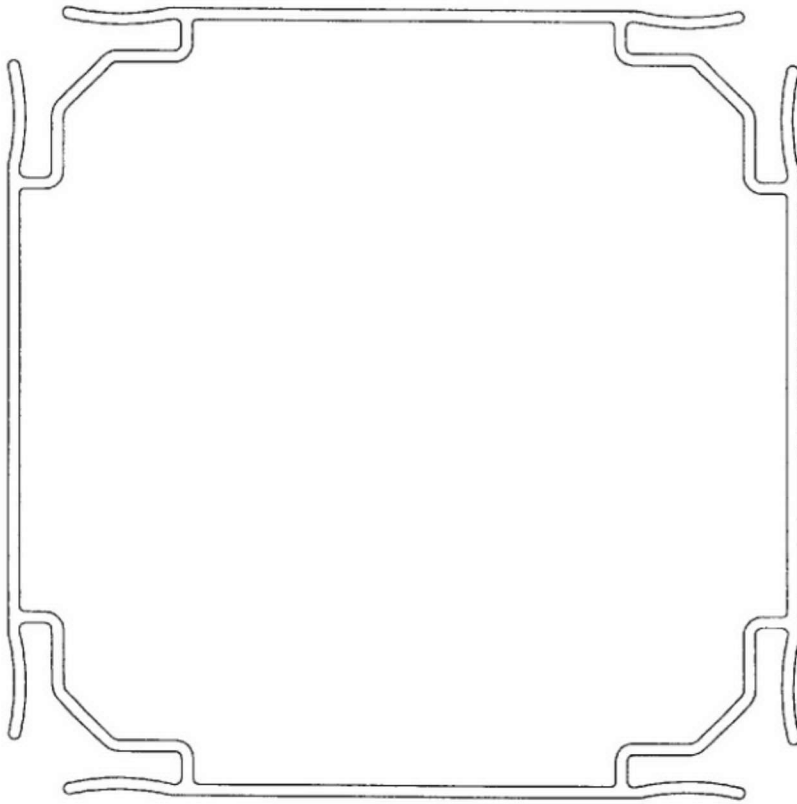


FIG. 45

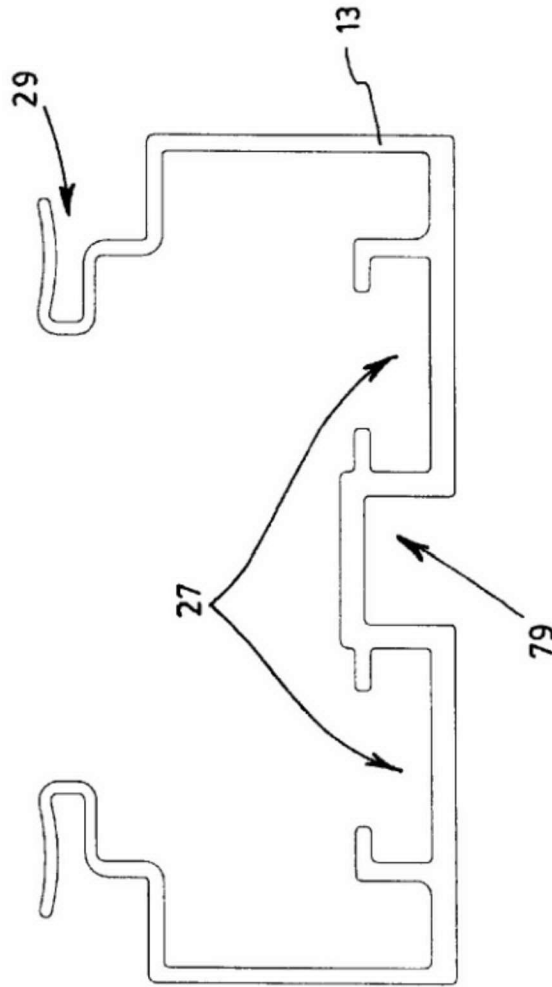


FIG. 46

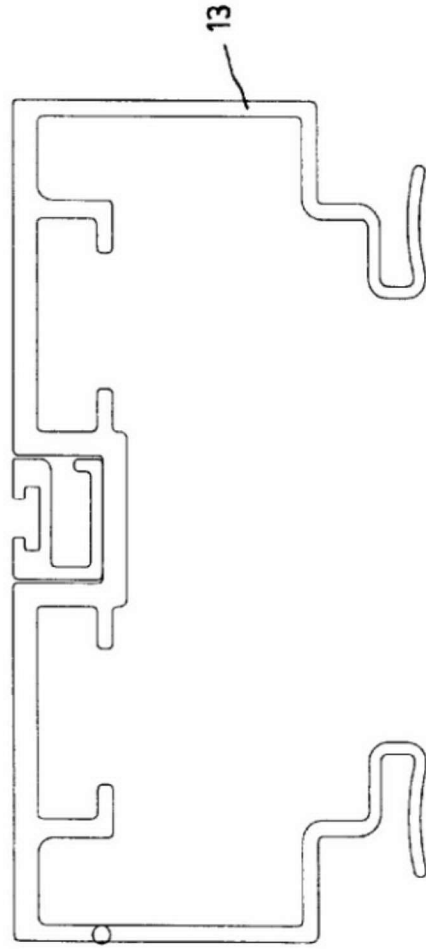


FIG. 47

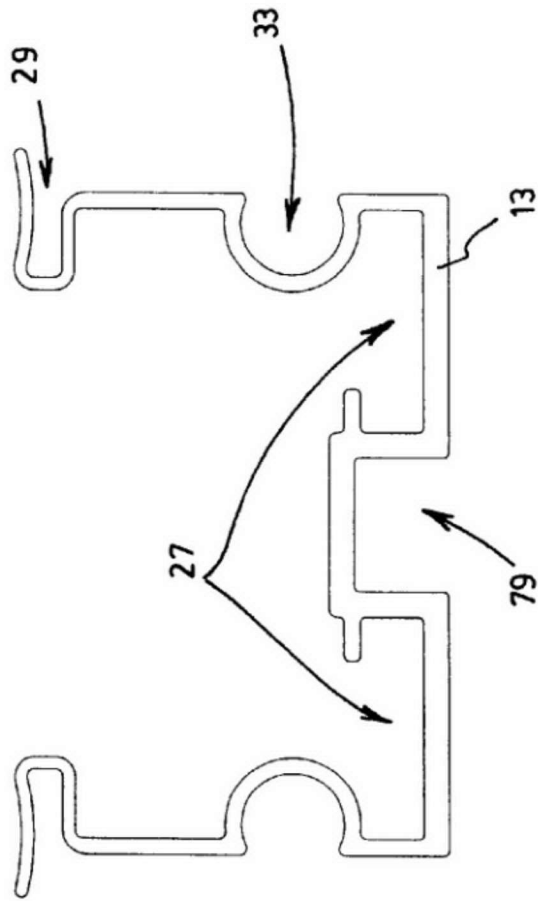


FIG. 48

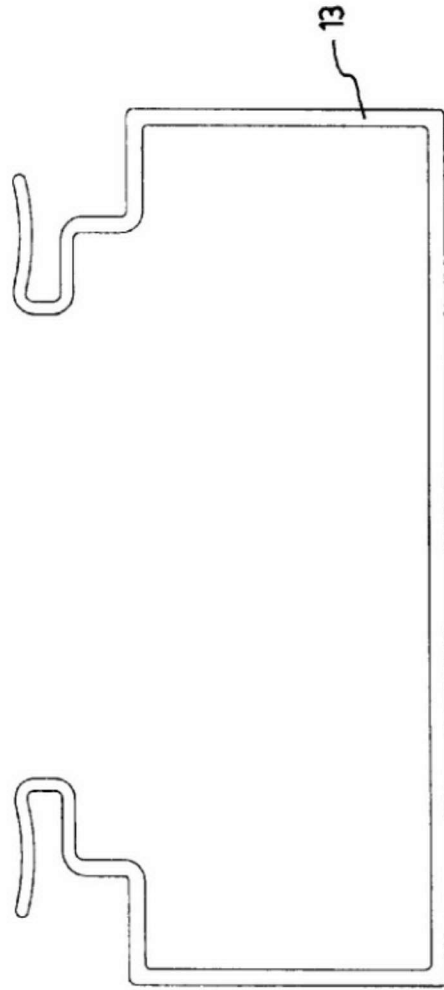


FIG. 49



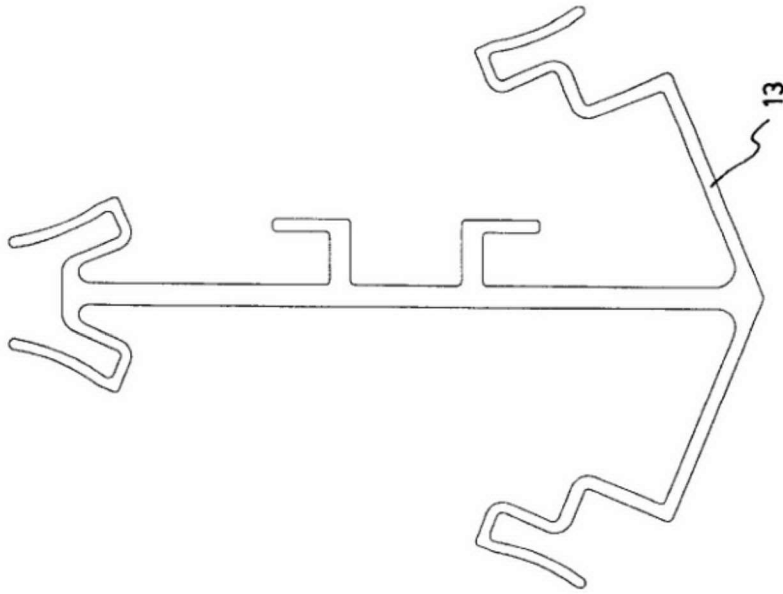


FIG. 50

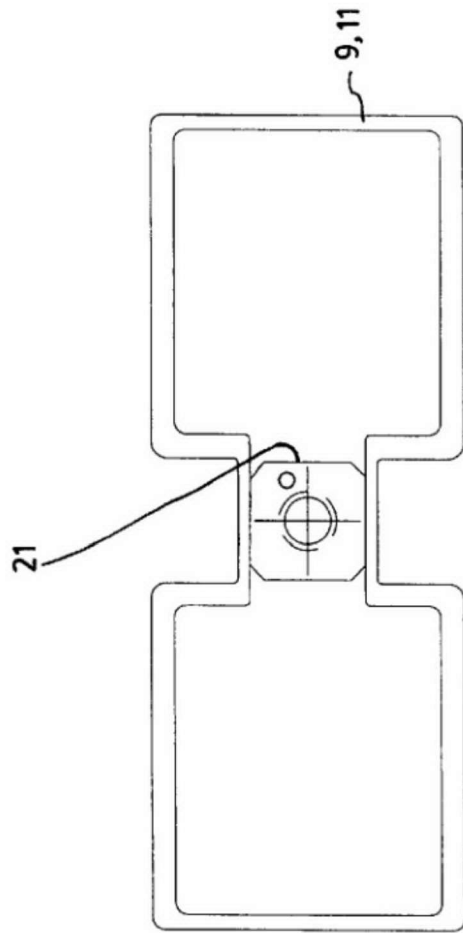


FIG. 51

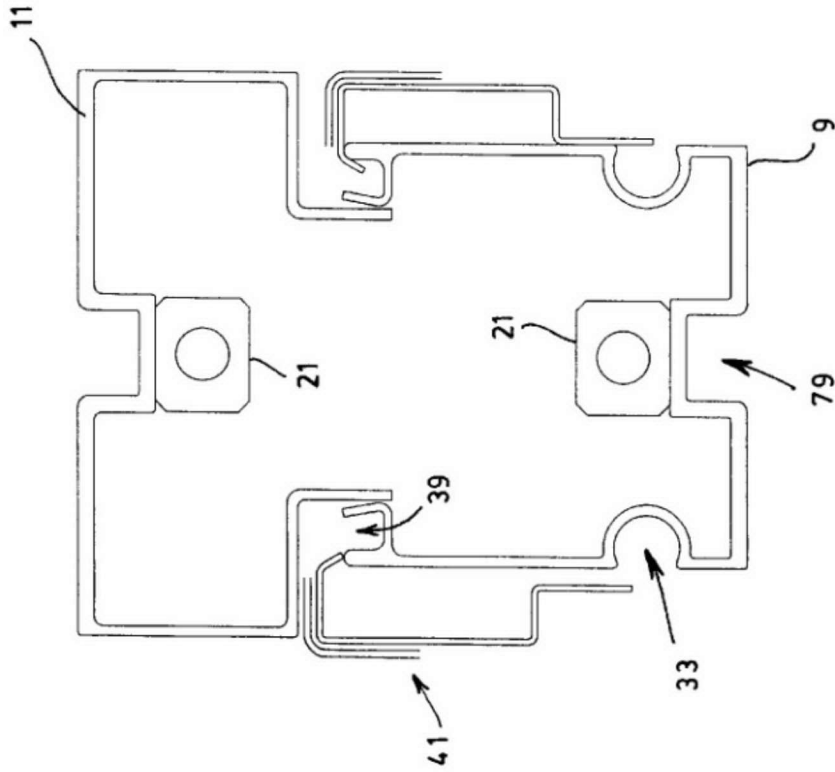


FIG. 52

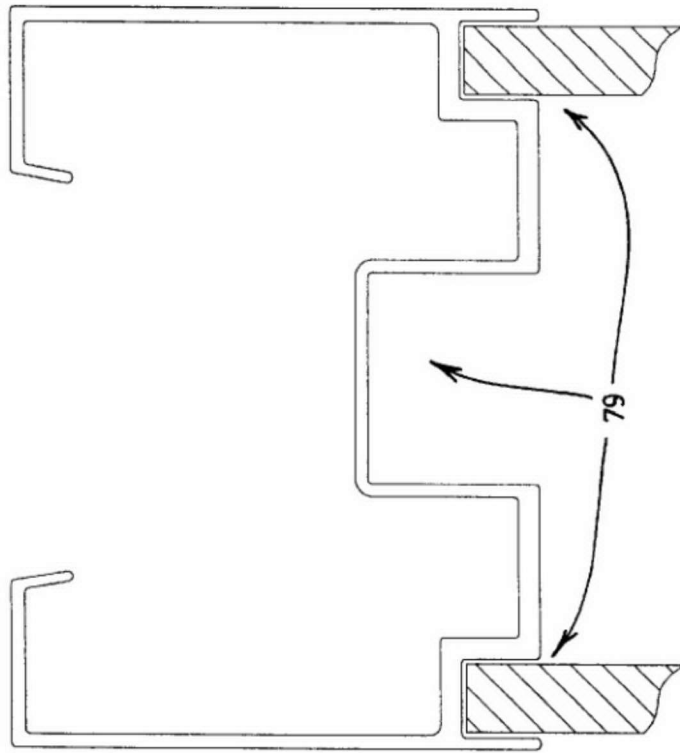


FIG. 53

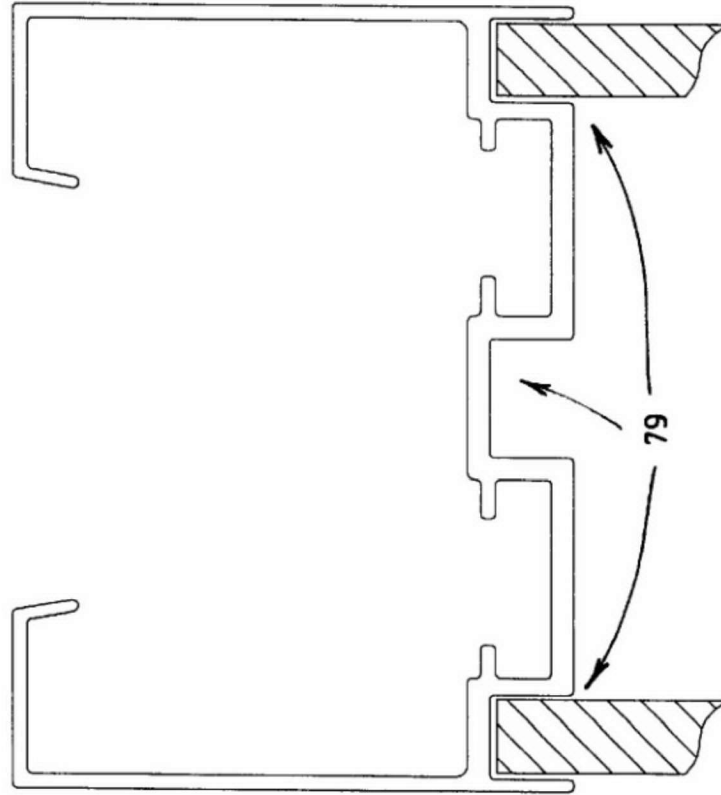


FIG. 54

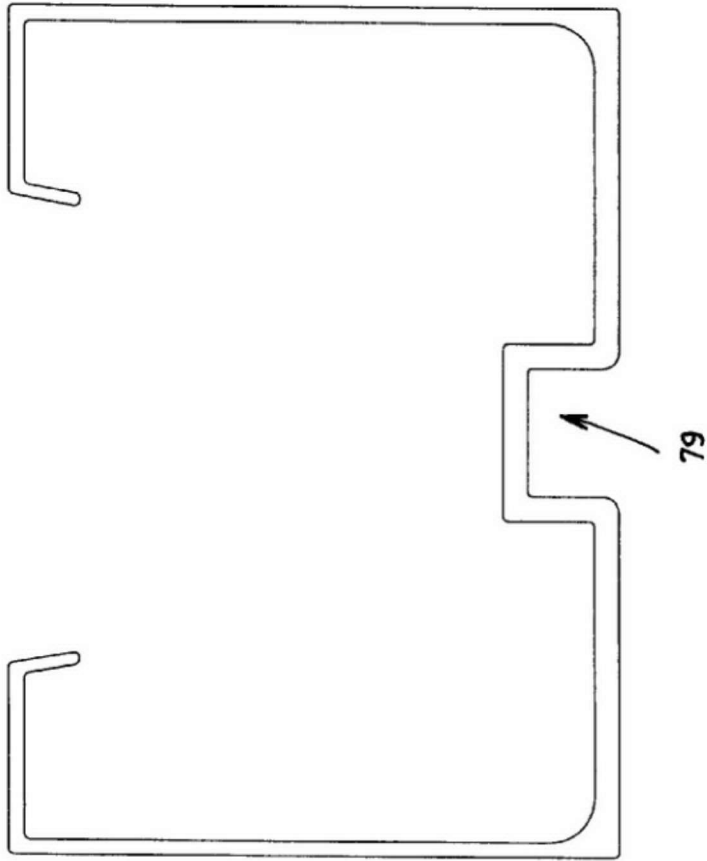


FIG. 55

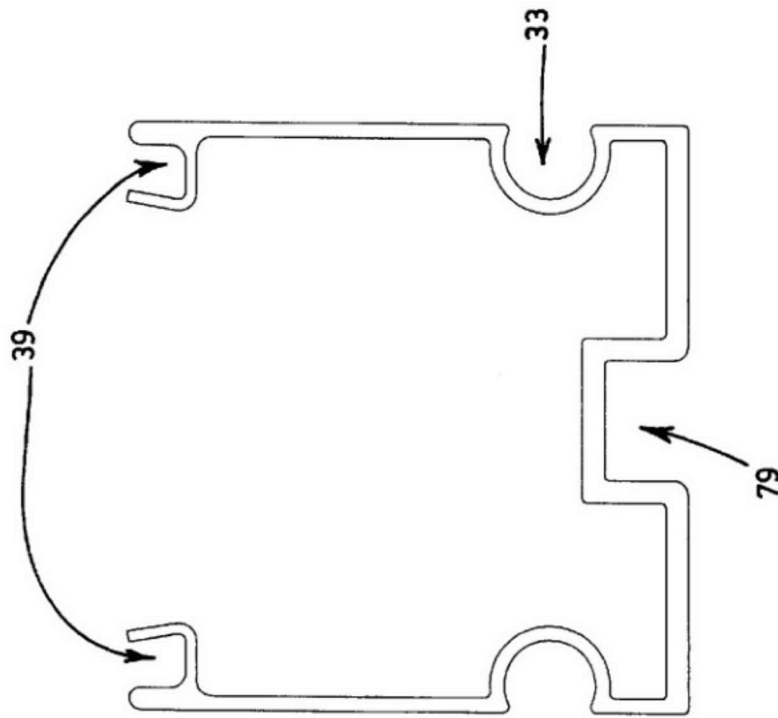


FIG. 56

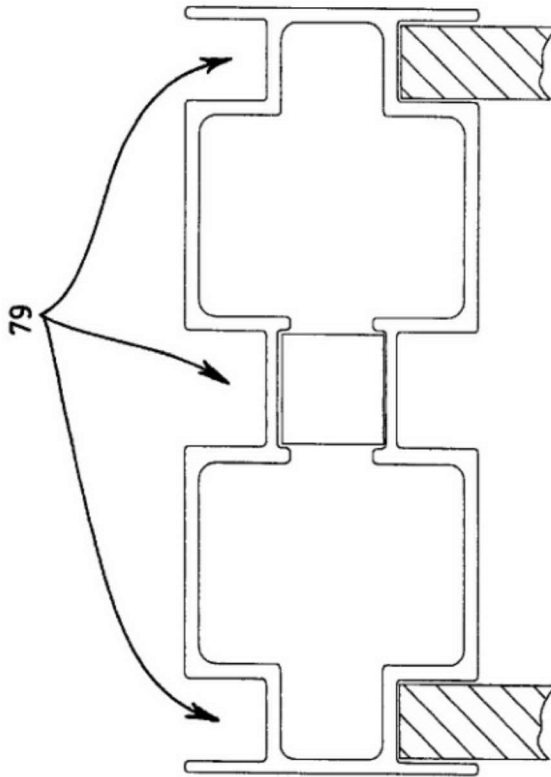


FIG. 57



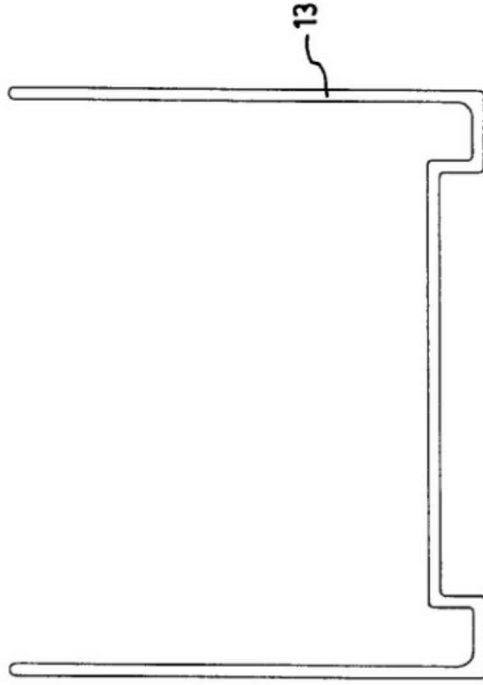


FIG. 58

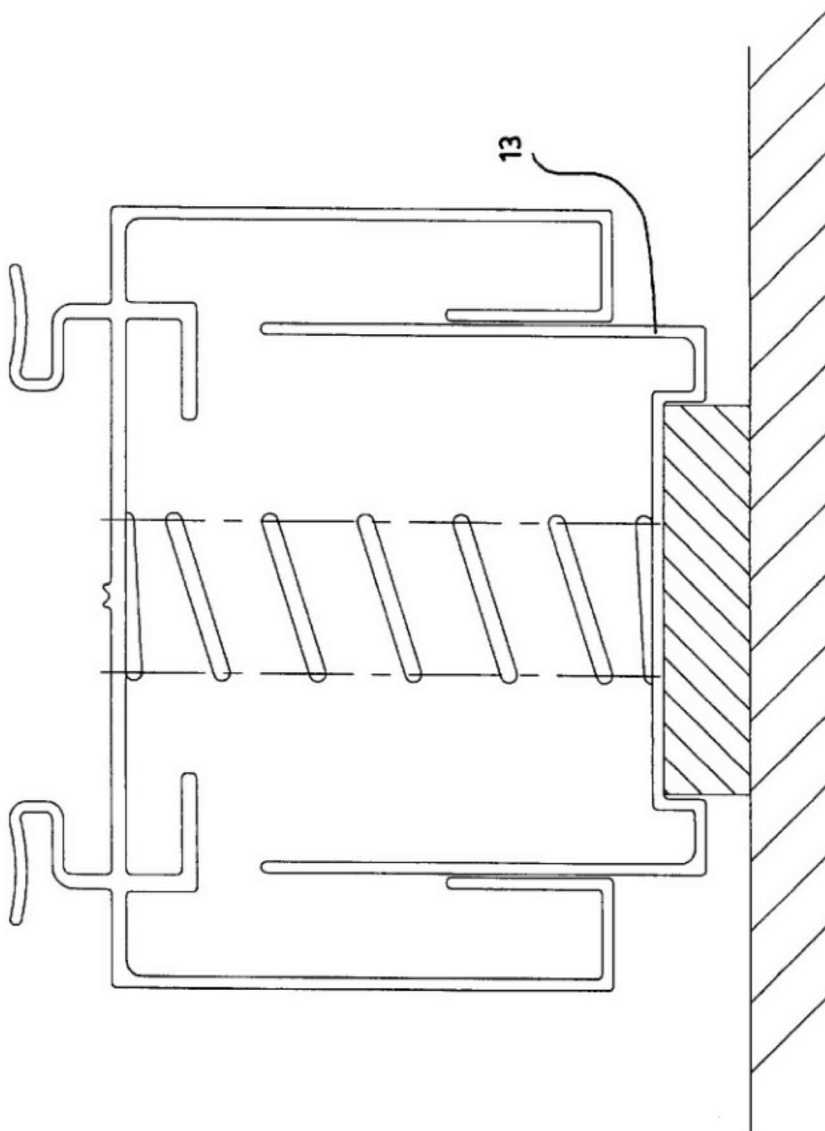


FIG. 59

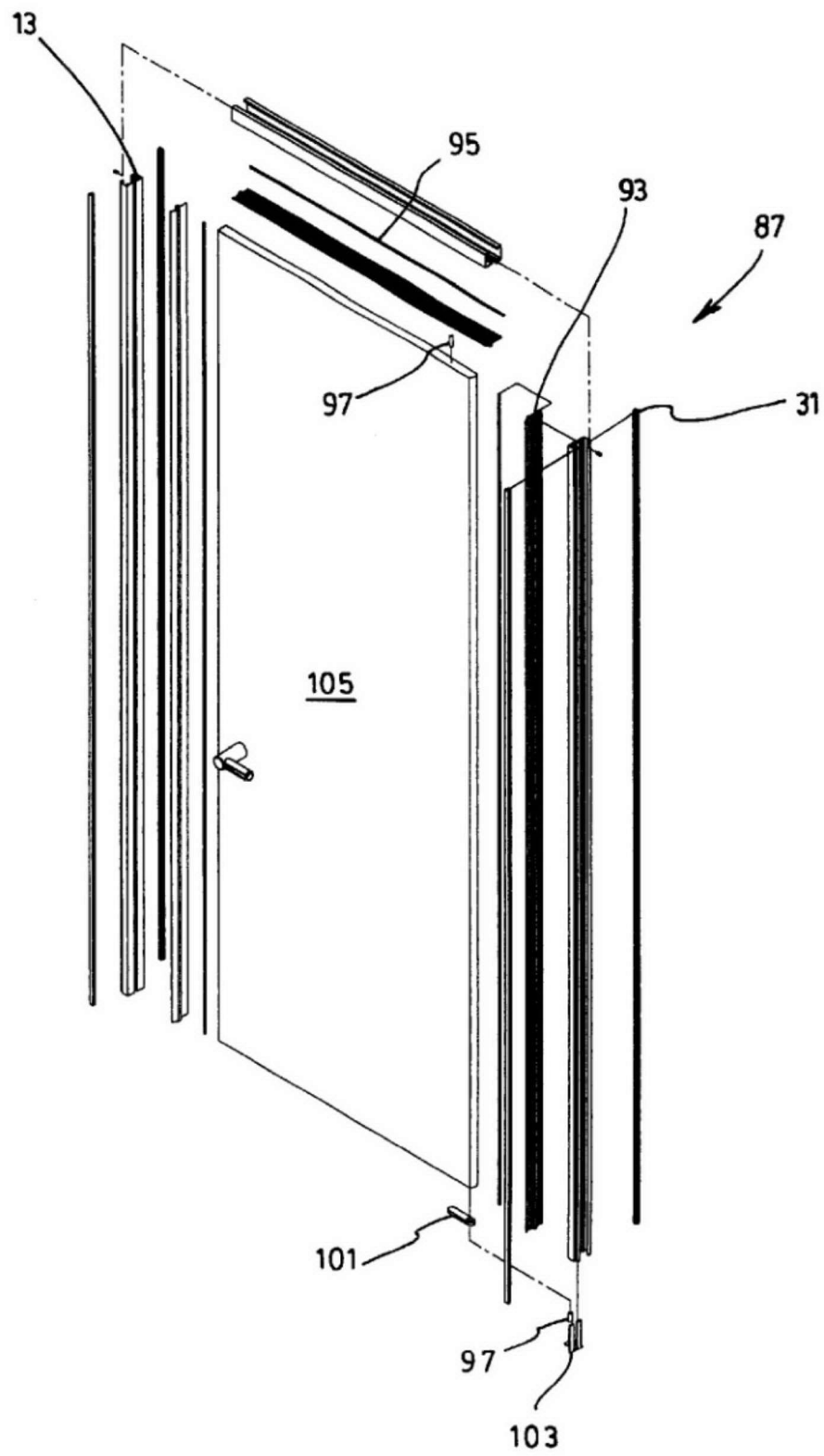


FIG. 60

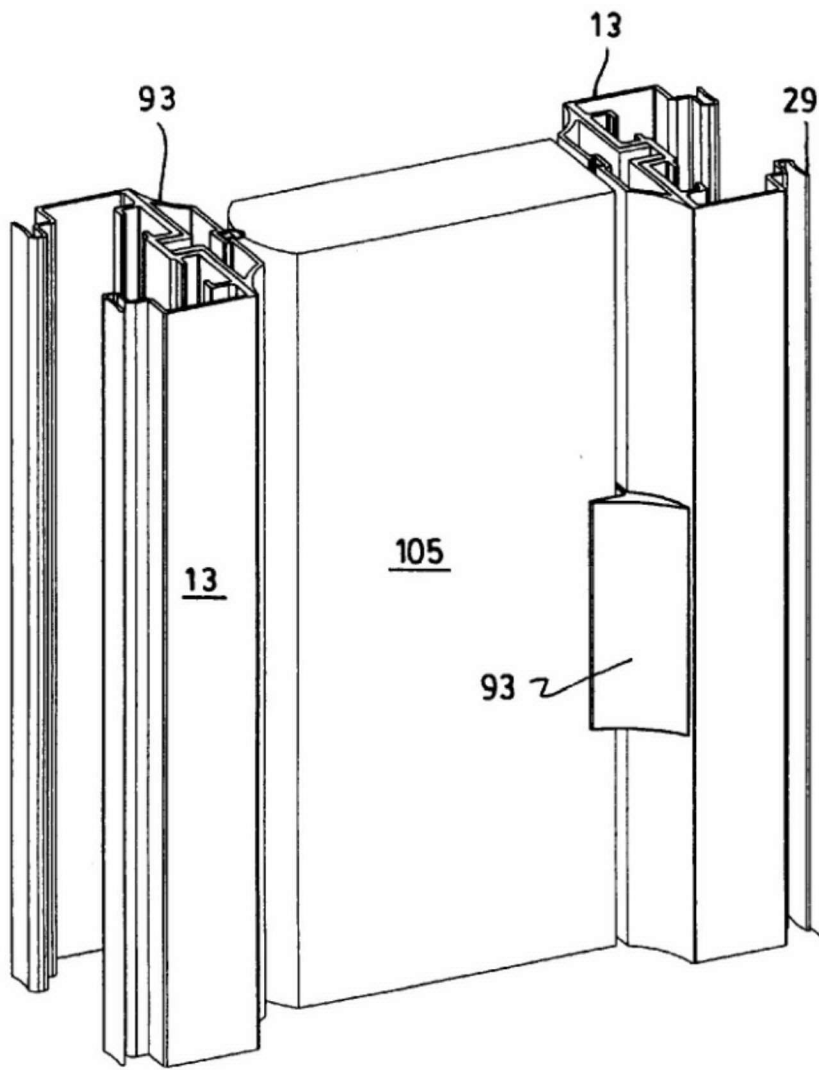


FIG. 61

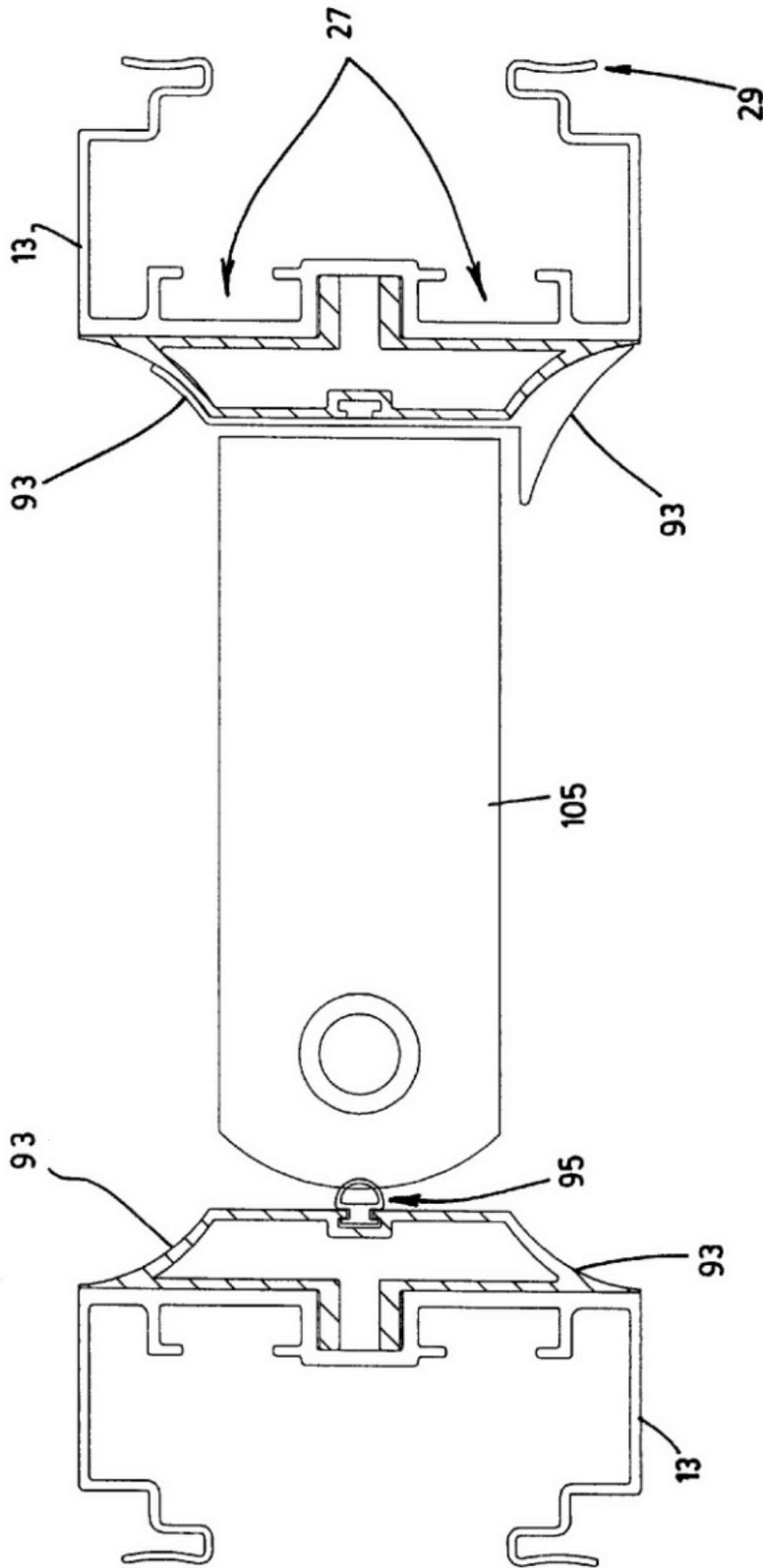


FIG. 62

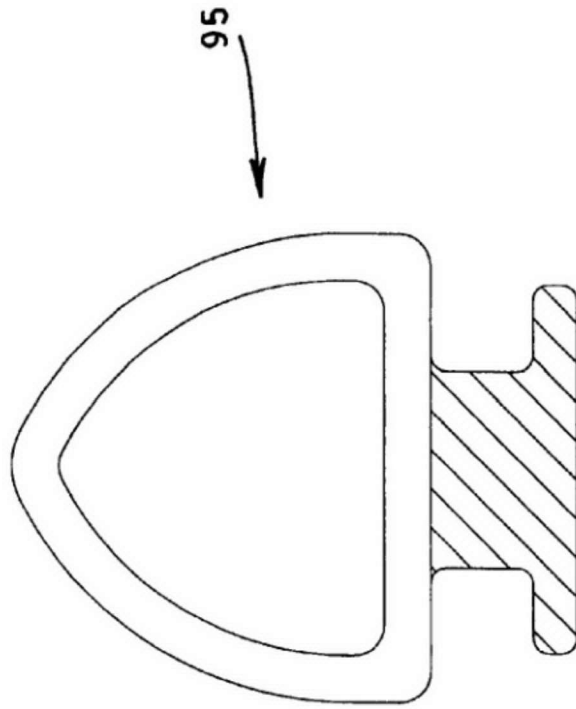


FIG. 63

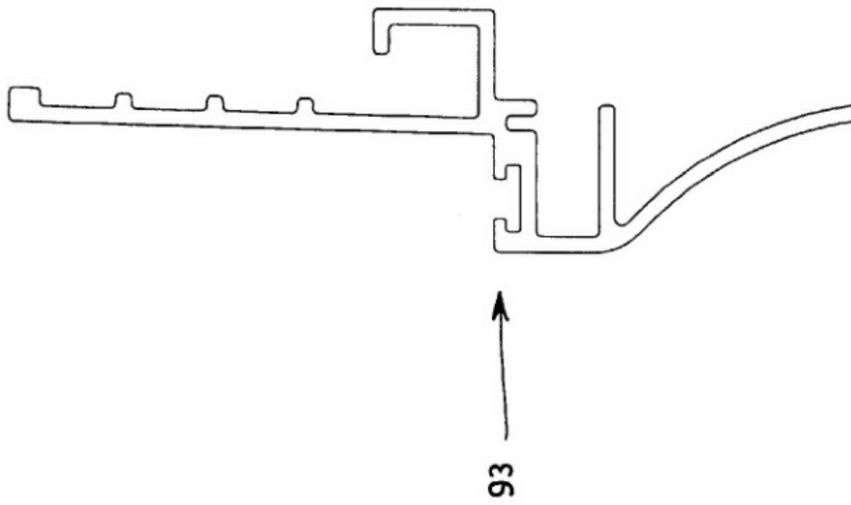


FIG. 64

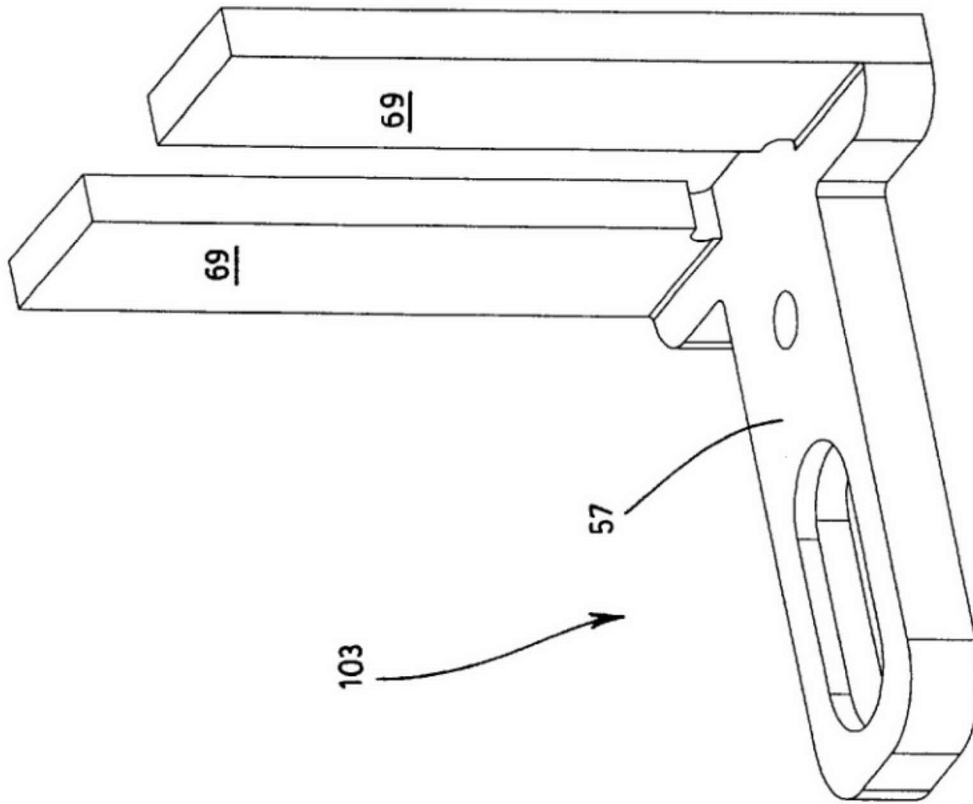


FIG. 65



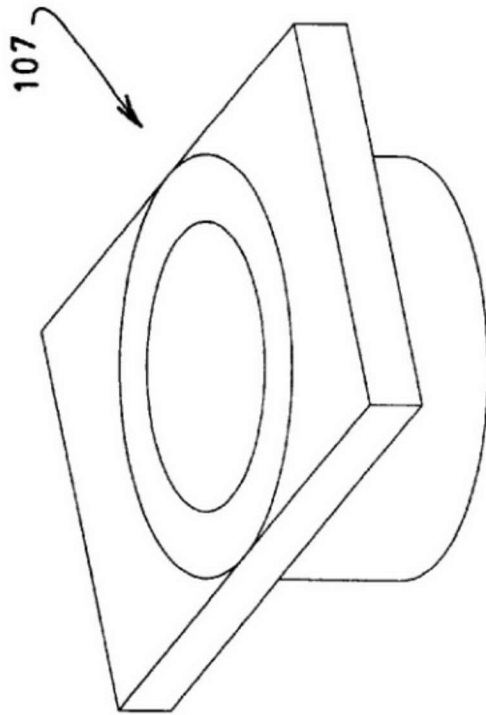


FIG. 66

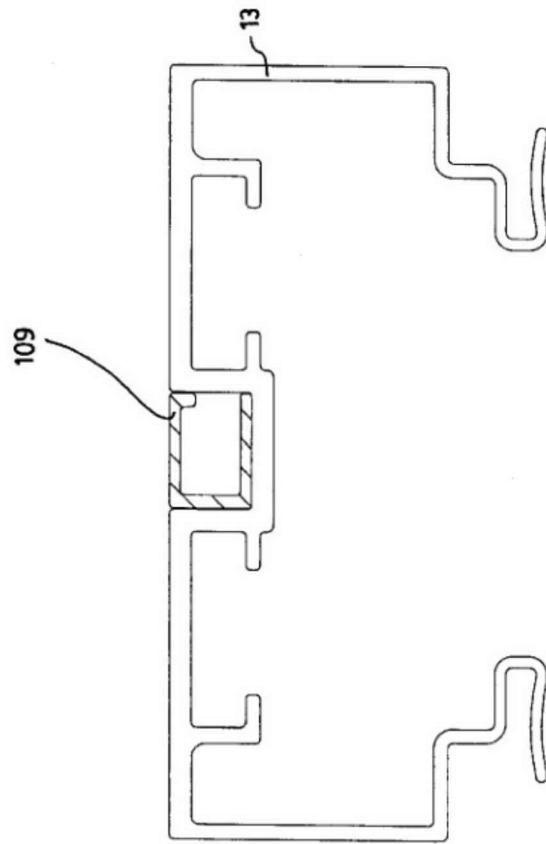


FIG. 67

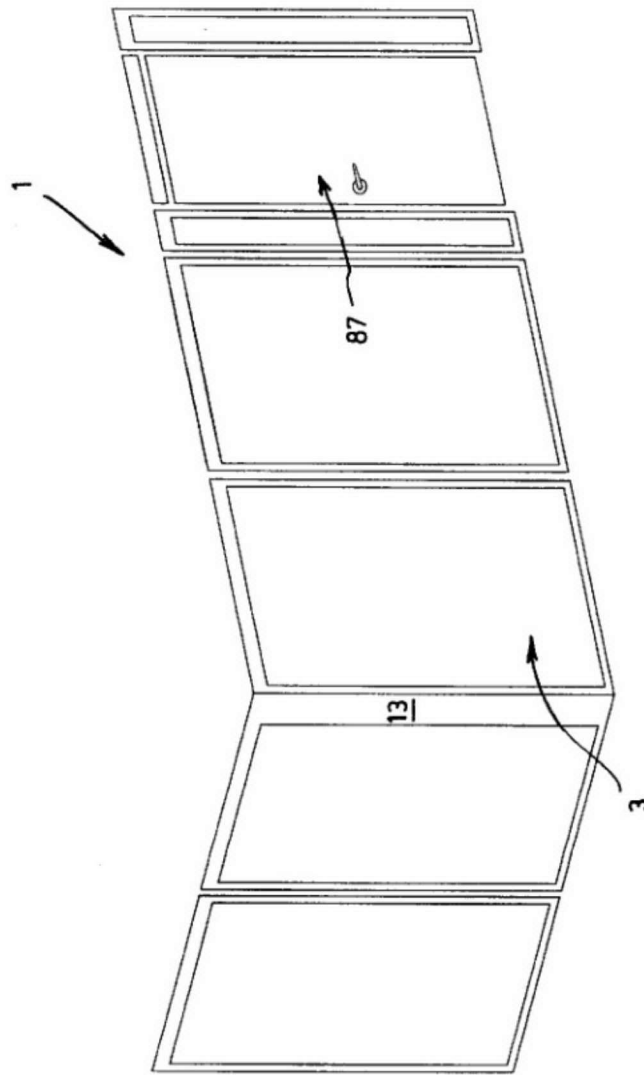


FIG. 68

**MOVEABLE AND DEMOUNTABLE WALL  
PANEL SYSTEM**

**FIELD OF THE INVENTION**

The present invention relates to a wall panel system. More particularly, the present invention relates to a moveable non-progressive mountable and demountable wall panel system.

**BACKGROUND OF THE INVENTION**

Fixed wall systems, moveable wall systems, and non-progressive wall systems are very well known in the art.

Some problems associated with fixed wall systems are the inability to displace and/or move the fixed wall systems once they are mounted; the inability to readily install passthrough components (wiring, etc.) after the fixed wall systems have been mounted; and the inability to readily change aspects and features of the fixed wall systems once they are installed. Furthermore, fixed wall systems are also disadvantageous because their installing is quite lengthy. For example, for conventional gyproc walls, one must first install supporting studs, then affix gyproc panels thereto, then plaster thereon, wait for drying of the plaster, sanding subsequently and then finishing the surfaces of the gyproc walls. It is well known in the art that the mounting of such fixed wall systems usually extends over several days and requires a great deal of manual labour, which is thus very inefficient and very cost ineffective.

Some of the problems associated with moveable wall systems are that, very often, their components are over-engineered (e.g. too heavy), different and specialized tooling is required for assembling such moveable wall systems, and the moveable wall systems generally comprise various different components which are not readily interchangeable. As a result of the above-mentioned, installation of such moveable wall systems is generally quite lengthy and cumbersome. Furthermore, it is well known in the art that such moveable wall systems, by virtue of their design, offer generally very poor sound proofing, light proofing and/or vibration proofing.

Some of the problems associated with non-progressive wall systems are the inability to independently change, move, and/or alter a particular component of the non-progressive wall system without affecting the other components operatively connected to said particular component. Indeed, by virtue of their design, non-progressive wall systems generally have several components which are intricately connected to one another and thus prevent one particular component thereof from being changed, moved, and/or altered without disturbing the other components of the non-progressive wall system.

Known to the Applicant are the following American patents which describe different wall panel systems: U.S. Pat. Nos. 3,040,847; 3,352,078; 3,363,383; 3,675,382; 4,167,084; 4,399,644; 4,640,072; 4,757,657; 4,825,610; 5,056,577; 5,159,793; 5,207,037; 5,379,560; 5,381,845; 5,491,943; 5,644,878; 5,735,089; 5,875,596; 6,112,485; and 6,122,871.

None of the above-mentioned patents seem to disclose or even suggest a movable non-progressive mountable and demountable wall panel system which would overcome several of the above-mentioned problems associated with the prior art.

**SUMMARY OF THE INVENTION**

An object of the present invention is to provide a wall panel system which would satisfy some of the above-

mentioned needs, and would thus be an improvement over the wall panel systems known in the art.

In accordance with the present invention, the above object is achieved by a moveable and demountable wall panel system comprising a plurality of panels used for defining an office space, each panel having a vertical axis and a horizontal axis, each panel comprising:

- opposite top and bottom distance channels, the distance channels extending along directions substantially parallel to the horizontal axis of the panel;
- opposite left and right vertical posts, the vertical posts extending along directions substantially parallel to the vertical axis of the panel, the distance channels and vertical posts being affixed to one another by means of connecting studs for forming a rectangular support frame of the panel;
- a panel covering removably mountable onto receiving means of the rectangular support frame;
- a ceiling rail operatively connected to a top portion of the rectangular support frame, the ceiling rail being used for operatively securing the rectangular support frame of the panel to a ceiling surface; and
- an articulating floor channel operatively connected to a bottom portion of the rectangular support frame by means of left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively, the articulating floor channel being used for operatively securing the rectangular support frame of the panel to a ground surface, the glide assemblies being further used for displacing the rectangular support frame with respect to the floor channel along a direction substantially parallel to the vertical axis of the panel;
- wherein each vertical post comprises at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel, each receiving lip being removably connectable to another receiving lip of a vertical post of a neighboring panel by means of a connector for selectively and removably connecting together a plurality of panels in order to define said office space.

Preferably, the receiving means comprise receiving grooves disposed along the vertical posts in a direction substantially parallel to the vertical axis of the panel and the panel covering comprises an outer panel shell and vertical stiffeners, the vertical stiffeners being securely affixed to lateral sides of the outer panel shell of the panel covering and being removably connectable onto the receiving grooves of the vertical posts for removably connecting the panel covering onto the rectangular support frame of the panel.

Preferably, the receiving means comprise a receiving groove disposed along the top distance channel in a direction substantially parallel to the horizontal axis of the panel and the panel covering comprises an outer panel shell and a top stiffener, the top stiffener being securely affixed to a lateral side of the outer panel shell of the panel covering and being removably hookable onto the receiving groove of the top distance channel for removably hooking the panel covering onto the rectangular support frame of the panel.

Preferably, the vertical stiffeners each comprise a bracket and a flexible clip securely affixed onto one another, the brackets being further securely affixed to the lateral sides of the outer panel shell of the panel covering and the flexible clips being removably connectable into the receiving grooves of the vertical posts.

Preferably, the panel covering comprises an outer panel shell and intermediate stiffeners, the intermediate stiffeners

being securely affixed transversely onto the outer panel shell of the panel covering in a direction substantially parallel to the horizontal axis of the panel.

Preferably, the connectors may comprise fins, may comprise flexible skirts, and may be provided with covering caps.

Preferably, floor channel is securely affixed to the ground surface by means of fasteners, and the ceiling rail is securely affixed to the ceiling surface by means of fasteners.

Preferably, each glide assembly comprises a substantially L-shaped glide and a glide bolt. The substantially L-shaped glide preferably has an abutment flange and an insert, the insert being removably insertable into a receiving channel of a corresponding vertical post. Preferably also, the glide bolt is threadedly mounted into the abutment flange of the glide and has a pivot head articulately mounted to the floor channel by means of a rivet.

Preferably also, the pivot head of the glide bolt is positioned inside a longitudinal groove of the floor channel, and the rivet of the pivot head is constrained to slide along a transversal slot of the longitudinal groove of the floor channel. The insert of the glide preferably comprises two tongues removably mountable into respective receiving channels of a corresponding vertical post.

The invention and its advantages would be better understood upon reading the following non-restrictive description of preferred embodiments thereof, made with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of a solid wall panel according to a preferred embodiment of the invention.

FIG. 2 is an exploded perspective view of a glass wall panel according to a preferred embodiment of the invention.

FIG. 3 is an exploded perspective view of some of the components of the wall panel shown in FIG. 1, said wall panel being shown in an exploded view with a base cover according to a preferred embodiment of the invention.

FIG. 4 is another exploded perspective view of what is shown in FIG. 4.

FIG. 5 is a perspective view of an intermediate stiffener of the wall panel shown in FIG. 1.

FIG. 6 is a cross-sectional view of the intermediate stiffener shown in FIG. 5.

FIG. 7 is a partial sectional exploded view of some of the components of the wall panel shown in FIG. 1.

FIG. 8 is a cross-sectional view of the bottom distance channel and the bottom stiffener of the wall panel shown in FIG. 1.

FIG. 9 is a cross-sectional view of the bottom stiffener shown in FIG. 8.

FIG. 10 is a partial sectional perspective view of some of the components of the wall panel shown in FIG. 1.

FIG. 11 is another perspective view of what is shown in FIG. 10.

FIG. 12 is yet another perspective view of what is shown in FIG. 10.

FIG. 13 is an exploded perspective view of a stackable flyover cooperating with two vertical posts according to a preferred embodiment of the invention.

FIG. 14 is a partial enlarged view of what is shown in FIG. 13.

FIG. 15 is a cross-sectional view of a connecting stud according to a preferred embodiment of the invention.

FIG. 16 is a side elevational view of the connecting stud shown in FIG. 15.

FIG. 17 is a cross-sectional view of what is shown in FIG. 14.

FIG. 18 is a cross-sectional view of what is shown in FIG. 17 according to another preferred embodiment of the invention.

FIG. 19 is a cross-sectional view of the stackable flyover shown in FIG. 17.

FIG. 20 is a perspective view of a punched solid panel vertical post according to a preferred embodiment of the invention.

FIG. 21 is a perspective view of a ceiling rail cooperating with a notched vertical post according to a preferred embodiment of the invention.

FIG. 22 is a top plan view of the ceiling rail shown in FIG. 21.

FIG. 23 is a sectional view of a glide assembly of the wall panel shown in FIG. 1, said glide assembly being shown cooperating with a floor channel according to a preferred embodiment of the invention.

FIG. 24 is a perspective view of the glide of the glide assembly shown in FIG. 23.

FIG. 25 is a partial sectional view of two panel coverings 15 mounted onto a vertical post by means of a vertical stiffener according to a preferred embodiment of the invention.

FIG. 26 is a cross-sectional view of one of the vertical stiffeners shown in FIG. 25.

FIG. 27 is a wall panel assembly according to a preferred embodiment of the invention.

FIG. 28 is a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 29 is a cross-sectional view of the connector shown in FIG. 28.

FIG. 30 is a cross-sectional view of a connector according to another preferred embodiment of the invention.

FIG. 31 is a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 32 is a cross-sectional view of the building module connector shown in FIG. 31.

FIG. 33 is a cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 34 is an enlarged cross-sectional view of a portion shown in FIG. 33.

FIG. 35 is a cross-sectional view of the furniture module connector shown in FIG. 34.

FIG. 36 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 37 is a cross-sectional view of the double glazing gasket shown in the wall panel assembly of FIG. 36.

FIG. 38 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 39 is a cross-sectional view of the center cap shown in the wall panel of FIG. 38.

FIG. 40 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 41 is a cross-sectional view of a furniture module according to a preferred embodiment of the invention.

5

FIG. 42 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

FIG. 43 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

FIG. 44 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

FIG. 45 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

FIG. 46 is a cross-sectional view of a glass vertical post according to a preferred embodiment of the invention.

FIG. 47 is a cross-sectional view of a vertical post according to yet another preferred embodiment of the invention, said vertical post being shown with a weatherstrip holder mounted into the interseptum thereof.

FIG. 48 is a cross-sectional view of a solid vertical post according to yet another preferred embodiment of the invention.

FIG. 49 is a cross-sectional view of a building module according to a preferred embodiment of the invention.

FIG. 50 is a cross-sectional view of a corner post according to a preferred embodiment of the invention.

FIG. 51 is a cross-sectional view of a distance channel according to a preferred embodiment of the invention, said distance channel being shown provided with a connecting stud.

FIG. 52 is a partial cross-sectional view of a wall panel assembly according to a preferred embodiment of the invention.

FIG. 53 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

FIG. 54 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

FIG. 55 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

FIG. 56 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

FIG. 57 is a cross-sectional view of a transition channel according to a preferred embodiment of the invention.

FIG. 58 is a cross-sectional view of a wall post according to a preferred embodiment of the invention.

FIG. 59 is a cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

FIG. 60 is an exploded view of a door panel assembly according to a preferred embodiment of the invention.

FIG. 61 is a partial sectional perspective view of the door assembly shown in FIG. 60.

FIG. 62 is a cross-sectional view of the wall assembly shown in FIG. 61.

FIG. 63 is a cross-sectional view of the door bumper shown in FIG. 62.

FIG. 64 is a cross-sectional view of the door strike shown in FIG. 62.

FIG. 65 is a perspective view of the door pivot shown in FIG. 60.

6

FIG. 66 is a perspective view of the top pivot bushing shown in FIG. 60.

FIG. 67 is a cross-sectional view of a vertical post according to yet another preferred embodiment of the invention, said vertical post being shown with an opening filler strip mounted into the interseptum of the vertical post.

FIG. 68 is a perspective view of an assembled wall panel system according to a preferred embodiment of the invention, said assembled wall panel system being shown with glass panels and a door assembly such as the one of FIG. 60.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

In the following description, the same numerical references refer to similar elements. The embodiments shown in the figures are preferred only.

Moreover, the present invention as exemplified hereinafter was primarily designed for wall systems, it could be used with other objects and for other purposes, such as with furniture applications, for example, as apparent to a person skilled in the art. For this reason, expressions such as "wall" and any other references and/or other expressions equivalent thereto should not be taken as to limit the scope of the present invention and include all other objects and all other applications with which the present invention could be used and may be useful.

Similarly, expressions such as "wall" and "panel", as well as any mutually equivalent expressions and/or compound words thereof, may be used interchangeably in the context of the present description. The same applies for any other mutually equivalent expressions, such as "covering" and "shell" and "screw" and "bolt" for example, as also apparent to a person skilled in the art.

In addition, although the preferred embodiment of the wall panel system 1 as disclosed hereinafter comprises various components such as intermediate stiffeners 47, gaskets, connecting studs 21, transition channels 9, 11, glide assemblies 25, solid panels 3, glass panels 3, stackable flyovers 81, etc., which are useful and present several substantial advantages, not all of these components are essential to the invention and thus should not be taken in their restrictive sense, i.e. should not be taken as to limit the scope of the present invention. It is to be understood, as also apparent to a person skilled in the art, that other suitable components and cooperations thereinbetween may be used for the wall panel system 1 according to the present invention, as will be explained hereinafter, without departing from the scope of the invention.

Broadly described, the wall panel system 1 according to the preferred embodiment of the invention as it is illustrated in the accompanying drawings, is a wall panel system 1 comprising a plurality of panels 3 used for defining an office space. Each panel 3 has a vertical axis 5 and a horizontal axis 7. Each panel 3 has opposite top and bottom distance channels 9, 11, opposite left and right vertical posts 13, a panel covering 15, a ceiling rail 17, and an articulating floor channel 19. The top and bottom distance channels 9, 11 extend along a direction substantially parallel to the horizontal axis 7 of the panel 3. The left and right vertical posts 13 extend along a direction substantially parallel to the vertical axis 5 of the panel 3. The distance channels 9, 11 and vertical posts 13 are affixed to one another by means of connecting studs 21 so as to form a rectangular support frame 23 of the panel 3. The panel covering 15 is removably mountable onto receiving means of the rectangular support

frame 23. The ceiling rail 17 is operatively connected to a top portion of the rectangular support frame 23 and is used for operatively securing the rectangular support frame 23 of the panel 3 to a ceiling surface. The articulating floor channel 19 is operatively connected to a bottom portion of the rectangular support frame 23 by means of left and right glide assemblies 25 mounted into receiving channels 27 of the left and right vertical posts 13 respectively. The articulating floor channel 19 is used for operatively securing the rectangular support frame 23 of the panel 3 to a ground surface. The glide assemblies 25 are also used for displacing the rectangular support frame 23 with respect to the floor channel 19 along a direction substantially parallel to the vertical axis 5 of the panel 3. Each vertical post 13 has at least one receiving lip 29 extending along a direction substantially parallel to the vertical axis 5 of the panel 3. Each receiving lip 29 is removably connectable to another receiving lip 29 of a vertical post 13 of a neighboring panel 3 by means of a connector 31 for selectively and removably connecting together a plurality of panels 3 in order to define the office space. By virtue of its design and its components, the present wall panel system 1 is a moveable non-progressive mountable and demountable wall panel system 1.

Preferably, the receiving means comprise receiving grooves 33 disposed along the vertical posts 13 in a direction substantially parallel to the vertical axis 5 of the panel 3 and the panel covering 15 comprises an outer panel shell 35 and vertical stiffeners 37, the vertical stiffeners 37 being securely affixed to lateral sides of the outer panel shell 35 of the panel covering 15 and being removably connectable onto the receiving grooves 33 of the vertical posts 13 for removably connecting the panel covering 15 onto the rectangular support frame 23 of the panel 3, as better shown in FIGS. 1, 3, 4, 7 and 12.

Preferably, the receiving means comprise a receiving groove 39 disposed along the top distance channel 9 in a direction substantially parallel to the horizontal axis 7 of the panel 3 and the panel covering 15 comprises an outer panel shell 35 and a top stiffener 41, the top stiffener 41 being securely affixed to a lateral side of the outer panel shell 35 of the panel covering 15 and being removably hookable onto the receiving groove 39 of the top distance channel 9 for removably hooking the panel covering 15 onto the rectangular support frame 23 of the panel 3, as better shown in FIGS. 1, 3, 4, and 7.

Preferably, the vertical stiffeners 37 each comprise a bracket 43 and a flexible clip 45 securely affixed onto one another, the brackets 43 being further securely affixed to the lateral sides of the outer panel shell 35 of the panel covering 15 and the flexible clips 45 being removably connectable into the receiving grooves 33 of the vertical posts 13, as better shown in FIGS. 25-27.

Preferably, the panel covering 15 comprises an outer panel shell 35 and intermediate stiffeners 47, the intermediate stiffeners 47 being securely affixed transversely onto the outer panel shell 35 of the panel covering 15 in a direction substantially parallel to the horizontal axis 7 of the panel 3, as better shown in FIGS. 1, 3 and 4.

Preferably, the connectors 31 may comprise fins 49, may comprise flexible skirts 50, and may be provided with covering caps 51, as better shown in FIGS. 7 and 27-35. The connectors 31 are preferably shaped and sized to provide proper sound proofing, light proofing and vibration proofing to the wall panel system 1.

Preferably, the floor channel 19 is securely affixed to the ground surface by means of fasteners, and the ceiling rail 17

is securely affixed to the ceiling surface by means of fasteners, as better shown in FIGS. 21 and 22.

Preferably, each glide assembly 25 comprises a substantially L-shaped glide 53 and a glide bolt 55. The substantially L-shaped glide 53 preferably has an abutment flange 57 and an insert 59, the insert 59 being removably insertable into a receiving channel 27 of a corresponding vertical post 13. Preferably also, the glide bolt 55 is threadedly mounted into the abutment flange 57 of the glide 53 and has a pivot head 61 articulately mounted to the floor channel 19 by means of a rivet 63, as better shown in FIGS. 10-12 and 23.

Preferably also, the pivot head 61 of the glide bolt 55 is positioned inside a longitudinal groove 65 of the floor channel 19, and the rivet 63 of the pivot head 61 is constrained to slide along a transversal slot 67 of the longitudinal groove 65 of the floor channel 19, as better shown in FIG. 12. The insert 59 of the glide 53 preferably comprises two tongues 69 removably mountable into respective receiving channels 27 of a corresponding vertical post 13, as better shown in FIGS. 11, 12 and 24.

Preferably, the wall panel system 1 further comprises a base cover 71 and the base cover 71 preferably comprises a base cover insert 73 for removably mounting the base cover 71 onto the floor channel 19 of the panel 3, as better shown in FIGS. 3, 10-12, and 23.

Preferably also, at least two connecting studs 21 are respectively and securely affixed at opposite ends of each of the top and bottom distance channels 9, 11, as better shown in FIGS. 1, 2, 10, 11, 15 and 16.

Preferably, each distance channel 9, 11 and each vertical post 13 comprise at least one interseptum 79, so that accessories of the panel system 1 can be removably mounted onto said intersepta 79, as shown in several of the accompanying drawings.

Preferably, each panel 3 is stackable onto another panel 3 by means of stackable flyovers 81 inserted and fastened into the receiving channels 27 of the vertical posts 13 of the stacked panels 3, as better shown in FIGS. 13, 14, 17 and 18. Preferably also, the stackable flyovers 81 comprise interference ribs 83, as better shown in FIG. 19.

Preferably, the vertical posts 13 may comprise punched marks 85 extending longitudinally along the vertical posts 13, the punched marks 85 being used for hooking accessories onto the vertical posts 13 of the panel system 1, as better shown in FIG. 20.

Preferably also, the moveable and demountable wall panel system 1 according to the present invention may also comprise a door assembly 87, as better shown in FIGS. 60-67.

Referring now to FIG. 1, there is shown an exploded perspective view of a solid wall panel 3 according to a preferred embodiment of the invention. As can be seen, the wall panel 3 preferably comprises two vertical members, known as "vertical posts" 13, which are connected to two horizontal members, known as "distance channels" 9, 11. The left and right vertical posts 13 are connected to the top and bottom distance channels 9, 11 to form a rectangular structural support frame 23. The vertical posts 13 are preferably connected to the distance channels 9, 11 by appropriate fasteners drilled into the sides of the vertical posts 13 and inserted into corresponding connecting studs 21 which are preferably securely affixed to the respective distance channels 9, 11, as better shown in FIGS. 1 and 2. The solid wall panel 3 preferably comprises also an outer panel covering 15 which is removably mounted onto the rectangular support frame 23 formed by the vertical posts 13 and

the distance channels 9, 11. The outer panel covering 15 preferably comprises an outer panel shell 35, vertical stiffeners 37 securely mounted to the outer panel shell 35 for allowing the same to be removably fastened onto receiving grooves 33 of the vertical posts 13 of the panel 3, and intermediate and top and bottom stiffeners 41, 42, 47 mounted transversely to the outer panel shell 35. The intermediate stiffeners 47 are primarily used for providing the outer panel shell 35 with structural rigidity whereas the top stiffener 41 may be used for hooking and sustaining the outer panel shell 35 onto a corresponding receiving groove 39 of the top distance channel 9. Although the bottom stiffener 42 is preferably not hooked onto a similar groove 39 of the bottom distance channel 11, it nevertheless rests there against so as to ensure proper positioning of the outer panel covering 15 with respect to the bottom distance channel 11, as better shown in FIG. 8.

As also shown in FIG. 1, the wall panel 3 preferably also comprises a floor channel 19 which is destined to be securely affixed to the ground floor by means of suitable fasteners, such as carpet grippers for example. The wall panel 3 preferably also comprises left and right glide assemblies 25 for adjusting vertical positioning of the rectangular support frame 23 with respect to the articulating floor channel 19. Preferably also, the wall panel 3 comprises connectors 31 for connecting two neighboring vertical posts 13 and thus adjoining two vertical wall panels 3 together. As better shown in FIG. 21, the top portion of the vertical post 13 is preferably notched to allow the guiding rail 17 to pass therethrough. As it can be easily understood, once an appropriate wall panel 3 is assembled, it may be installed into the ceiling rail 17 at an angle and then swiveled towards the vertical axis 5 in order to properly secure the articulating floor channel 19 to the ground floor and then adjust positioning of the rectangular support frame 23 with respect to the ceiling rail 17 by means of the glide assemblies 25. Once the wall panel 3 is properly positioned in a vertical upright position, it is preferably provided with a base cover 71 so as to conceal the floor channel 19, the bottom distance channel 11 and the glide assemblies 25. The connectors 31, panel coverings 15, and base covers 71 are preferably shaped and sized so as to provide to the wall panel system 1 with a very sleek and clean look, as shown in the accompanying drawings.

Referring now to FIG. 2, there is shown an exploded perspective view of a glass wall panel 3 according to a preferred embodiment of the invention. Similarly to the wall panel 3 shown in FIG. 1, the glass panel 3 shown in FIG. 2 comprises left and right vertical posts 13, top and bottom distance channels 9, 11, a floor channel 19 and glide assemblies 25. Once again, the vertical posts 13 and the distance channels 9, 11 are connected to one another so as to form a rectangular support frame 23 and the glide assemblies 25 cooperate with such rectangular support frame 23 so as to be able to displace it vertically in order to adjust the positioning of the wall panel 3 with respect to the ceiling. As shown in FIG. 2, a glass panel 3 is inserted into respective grooves of the vertical posts 13 and distance channels 9, 11, these grooves are commonly known as "interseptum" 79, or "intersepta" (plural). Preferably, appropriate glazing gaskets are used between these grooves and the glass panels 3 so as to provide the wall panel 3 with appropriate sound proofing, light proofing and vibration proofing. The glass panel 3 also preferably comprises a floor channel 19 which is devised to be securely affixed to the ground floor and also preferably comprises a base cover 71 with functions similar to the ones described for FIG. 1. Similarly to the above-mentioned, the

vertical posts 13 are connected to the horizontal distance channels 9, 11 by appropriate fasteners which are inserted into the side portions of the vertical posts 13 and into corresponding connecting studs 21 which are preferably securely affixed to the top and bottom distance channels 9, 11, as explained and illustrated hereinabove.

As better shown in FIG. 3, the intermediate stiffeners 47 are devised to be securely affixed onto the outer panel shell 35 in order to, among other things, provide the same with increased rigidity. Preferably also, the top stiffener 41 is to be securely affixed to a top lateral side of the outer panel shell 35 and is to be used for hooking the outer panel covering 15 onto a corresponding groove 39 provided to that effect on the top distance channel 11 of the panel 3. As also shown, the horizontal bottom stiffener 42 is intended to be securely affixed to the bottom portion of the outer panel shell 35 and to cooperate with the bottom distance channel 11 in the preferred manner better illustrated in FIG. 9. As better shown in FIG. 3, the outer panel covering 15 of a solid panel 3 preferably comprises an outer panel shell 35, intermediate stiffeners 47, top and bottom stiffeners 41, 42, and vertical stiffeners 37. As mentioned hereinabove, the vertical stiffeners 37 are preferably securely affixed to the outer panel shell 35 along the left and right internal sides thereof and are intended primarily to removably fasten the outer panel covering 15 onto the corresponding receiving grooves 33 of the vertical posts 13 of the panel 3, as better shown in FIG. 1.

Referring now to FIG. 7, there is shown a partial sectional exploded view of some of the components of the wall panel 3 shown in FIG. 1. More particularly, there is shown a cross-sectional configuration of the top distance channel 9 according to a preferred embodiment of the invention. Indeed, the distance channel 9 comprises grooves 33 for removably receiving optional horizontal stiffeners (not shown) of the outer panel coverings 15. The distance channel 9 also preferably comprises a corresponding groove 39 for receiving a top stiffener 41 of the outer panel covering 15. Preferably also, the distance channel 9 also comprises a longitudinal interseptum 79 for receiving different modular components of the wall panel system 1, such as a glass panel 3, as in the case of FIG. 2. It is worth mentioning here that other shaped and sized intersepta 79 may be used for mounting different accessories thereon, such as blinds for example. As also shown in FIG. 7, two vertical posts 13 are preferably adjoined to one another so as to connect two neighboring wall panels 3 by means of a connector 31 which may or may not be provided with a covering cap 51. The covering cap 51 of the connector 31 is preferably selected to match the outer surface of the outer panel covering 15 (i.e. the outer panel shell 35). It is worth mentioning that different finishes and textures may be used for the covering cap 51 of the connector 31 as well as for the outer panel shell 35 of the panel covering 15, depending on the particulars of a user of the wall panel system 1, as apparent to a person skilled in the art. For example, the covering cap 51 and the outer panel shell 35 may have a wood finish, a metallic finish, an upholstery finish, etc., and may be similar to one another or different from each other, depending on the particular wants and needs of a user of the wall panel system 1. Advantageously, because all of the above-mentioned components of the wall panel system 1 are removably mountable and demountable onto the wall panel 3, one may mix and match different configurations, as need may be.

Referring now to FIG. 10, there is shown a partial sectional perspective view of some of the components of the wall panel 3 shown in FIG. 1. As illustrated in this figure,



11

and as can be easily understood, the glide assemblies 25 enable to adjust vertically the rectangular structural support frame 23 formed by the vertical posts 13 and horizontal top and bottom distance channels 9, 11 with respect to the floor channel 19, and consequently with respect to the ceiling, or the ceiling rail 17 which is preferably affixed thereto according to the present invention. Caddy™ clips are preferably used for affixing the ceiling rail 17 to the ceiling surface, although other suitable fasteners may be used, as apparent to a person skilled in the art.

As better shown in FIGS. 11 and 12, the glide assemblies 25 preferably comprise a glide bolt 55, a glide 53, and a fastener. The glide 53 preferably comprises two tongues 69 which are insertable into corresponding grooves 33 of the vertical posts 13 and an abutment flange 57 which preferably extends perpendicularly with respect to the tongues 69 so as to form an abutment with the vertical post 13, as better shown in FIG. 12. The abutment flange 57 is preferably threadedly mounted onto the glide bolt 55 so as to enable a relative movement between the glide 53 and the glide bolt 55 by rotation of the glide bolt 55. Preferably, as also shown in FIGS. 11 and 12, the glide bolt 55 preferably comprises a pivot head 61 which is operatively connected to the floor channel 19 by means of a suitable fastener, the latter guiding the sliding of the glide bolt 55 along a corresponding slot 67 of the floor channel 19, as better shown in FIG. 12. Preferably also, the fastener connecting the glide bolt 55 to the floor channel 19 is a rivet 63, although other suitable means may be used, as apparent to a person skilled in the art. Preferably also and as better shown in FIG. 23, the glide bolt 55 has a square cross-sectional portion so as to facilitate rotation thereof by suitable means, such as a conventional wrench for example.

As can be easily understood, since the floor channel 19 is securely affixed to the floor, when the glide 53 is moved with respect to the glide bolt 55 vertically, then so will the vertical post 13 with respect to the floor because of the abutment of the flange 57 against the bottom portion of the vertical post 13, as better shown in FIG. 12.

FIG. 11 also shows how the connecting stud 21 is preferably securely affixed to the bottom distance channel 11.

Referring now to FIGS. 13–19, and particularly to FIG. 13, there is shown a perspective view of a stackable flyover 81 cooperating with two vertical posts 13 of two wall panels 3 intended to be stacked onto one another. As can be easily understood, the stackable flyover 81 is used to connect adjoining vertical posts 13, i.e. stacked them together, so as to enable to stack wall panels 3 onto one another. Among many other functions, the stackable flyover 81 is intended to impart to the vertical posts 13 with a sound structural integrity, as well as to provide both wall panels 3 stacked together with sound structural stability. The stackable flyover 81 is preferably devised to be snugly inserted into the receiving channels 33 of the vertical posts 13 so as to enable quick and easy assembling of the same, by light taping for example. Preferably also, the stackable flyover 81 is made of a suitable material, so as to not allow jigger and so as to sustain the loads of the vertical posts 13 connected thereto, as apparent to a person skilled in the art.

According to the preferred embodiment of the invention, holes are drilled through the assembled vertical posts 13 and through the stackable flyovers 81 at predetermined ranges, as better shown in FIG. 14, and then suitable connecting fasteners are preferably passed therethrough, and into the connecting studs 21, as can be inferred from in FIGS. 1 and 2, so as to hold the entire wall panel, formed of stacked

12

panels 3, together. Therefore, the vertical posts 13 are operatively connected to the connecting studs 21 of the horizontal distance channels 9, 11, whether simple or transition distance channels 9, 11, by means of the stackable flyovers 81 and appropriate connecting fasteners, as apparent to a person skilled in the art.

Preferably, the connecting stud 21 is a threaded metal receptacle that allows the connecting fasteners, such as screws for example, to be affixed to the distance channels 9, 11.

As can be easily understood, by inserting the connecting screws into the connecting studs 21, one is able to align both stackable panels 3 and keep them in position with respect to one another.

As better shown in FIGS. 13, 14 and 17, the vertical post 13 preferably comprises a receiving groove 33 for receiving the vertical stiffeners 37 of the panel coverings 15. Preferably, these receiving grooves 33 are a half-round arc of about 270° sweep. The vertical post 13 also preferably comprises a longitudinal groove, known as an “interseptum” 79 and panel-to-panel receiving lips 29, said panel-to-panel receiving lips 29 being used for receiving the panel-to-panel connectors 31, as explained hereinabove. Preferably, the receiving lips 29 and the connectors 31 are preferably devised to be removably insertable and connectable onto one another.

In general, the vertical post 13 is one of the main vertical structural members of the wall panel support frame 23 and as a result thereof, may also be provided with punch marks 85, as shown in FIG. 20, to receive slotted standards that could be used to hold shelf brackets or even hang other suitable accessories, such as overhead cabinets for example, as apparent to a person skilled in the art.

Preferably, as better shown in FIG. 19, the stackable flyover 81 comprises interference ribs 83 which are used to decrease to an appropriate extent surface contact between the stackable flyover 81 and the corresponding receiving channels 33 of the vertical posts 13 so as to ensure a proper cooperation between the latter two.

Referring now to FIGS. 21 and 22, one can see a preferred embodiment of the ceiling rail 17 according to the present invention. As better shown in FIG. 21, the ceiling rail 17 is preferably connected to the ceiling by means of suitable fasteners, such as caddy™ clips for example, and is preferably provided with a closed cell gasket to ensure once again, sound proofing, light proofing, and vibration proofing of the wall panel system 1. The ceiling rail 17 has two projecting members which are preferably designed to be inserted into corresponding notched grooves of the vertical posts 13, and into the inside of the top distance channel 9. The ceiling rail 17 is preferably provided with oblong orifices provided at appropriate locations along the rail 17 so as to properly fasten the rail 17 to the ceiling surface, as apparent to a person skilled in the art.

Referring now to FIG. 23, there is shown a sectional view of the glide 53, glide bolt 55, articulating floor channel 19, and base cover 71 of the wall panel 3 shown in FIG. 1. As explained hereinabove, the glide 53 of the glide assembly 25 preferably comprises two tongues 69 which are to be inserted into corresponding receiving channels 33 of the vertical posts 13 and preferably also comprises an abutment flange 57 for sustaining the vertical post 13 into which the tongues 69 have been inserted. Preferably also, the glide bolt 55 is provided with an appropriate threading therealong so that the glide 53 may be threadedly engaged with the same so as to ensure proper relative displacement between the

two. Preferably also, the glide bolt 55 comprises a pivot head 61 which is connected to a corresponding groove 65 of the floor channel 19 by means of a fastener, such as a rivet 63 for example. The pivot head and rivet assembly of the glide bolt 55 enable the same to rotate about the groove 65 of the floor channel 19 along a slot 67 provided to that effect, as better shown in FIG. 12. Preferably also, the glide bolt 55 is provided with a square cross-sectional section so as to enable suitable rotating means, such as a ratchet or a wrench for example, to rotate the glide bolt 55 so as to displace the glide 53 with respect to the glide bolt 55, as apparent to a person skilled in the art. By doing so, since the glide 53 is in an abutment relationship with the vertical post 13, one may adjust vertical displacement of the wall panel 3 with respect to the ceiling and/or ground floor by appropriately turning the glide bolt 55 with respect to the glide 53 of the glide assembly 25. Preferably, as also shown in FIG. 3, the wall panel 3 comprises a base cover 71 which comprises a covering, and a cover insert 77 which is preferably removably connectable to the covering, so as to define a slit enabling sliding of the base cover 71 onto a projecting member of the floor channel 19. Preferably, suitable foam tapes are provided between the floor channel 19 and the ground in order to further provide the wall panel system 1 with light proofing, sound proofing, and vibration proofing.

Referring now to FIG. 25, there is shown a partial sectional view of two panel coverings 15 mounted onto a vertical post 13 by means of vertical stiffeners 37. As shown in this figure, the outer panel coverings 15 are preferably mounted to the vertical post 13 by means of vertical stiffeners 37, which are intended to be removably mountable into corresponding grooves 33 of the vertical posts 13. As better shown in FIG. 26, the vertical stiffeners 37 preferably comprise a bracket 43 which is intended to be securely affixed to the outer panel shell 35 of the panel covering 15 and further comprise a flexible clip 45 which is removably insertable into the corresponding grooves 33 shown in FIG. 25. The vertical clip 45 according to the preferred embodiment shown in FIG. 26 is advantageous in that it offers a circular configuration and comprises two compressible wings which enable the panel coverings 15 to be mounted onto the vertical posts 13 with a certain slack and play.

FIG. 27 is a partial cross-sectional view of a wall assembly according to a preferred embodiment of the invention. FIG. 27 shows two vertical posts 13 which are connected to one another by means of connectors 31. Furthermore, panel coverings 15 are mounted onto the vertical posts 13 by means of their vertical stiffeners 37. Furthermore, according to this particular embodiment of the invention, the connectors 31 are preferably devised to ensure a flush surface with the outer panel shells 35 of the panel coverings 15.

As better shown in FIG. 29, the flush connector 31 which is used to connect two neighboring vertical posts 13, such as in the case of FIGS. 27 and 28, preferably comprises a connecting portion 89, and a covering cap 51. The connecting portion 89 is preferably made of a suitable material, such as PVC for example, and preferably comprises fins 49 which are intended to further increase gripping and mounting of the connector 31 onto the receiving lips 29 of the vertical posts 13, and to further increase sound proofing, light proofing, and vibration proofing of the wall panel system 1. The different components of the connecting portion 89 are preferably made integral to each other, that is are preferably made into one single piece from one single material. Preferably also, the covering cap 51 of the connector 31 is preferably connected to the connecting portion 89 by suitable means, as apparent to a person skilled in the art.

FIG. 30 illustrates a recessed connector 31 which may be used to adjoin neighboring vertical posts 13, similarly to the connector 31 shown in FIG. 29, while enabling a recessed cavity between two neighboring vertical posts 13. Indeed, it is worth mentioning here that different types of connectors 31, such as the one shown in FIGS. 29 and 30, may be used to provided the outer part of the wall panel system 1 with different esthetic configurations.

FIG. 32 shows a preferred embodiment of a building module connector 31 allowing adjacent 90° corners to be connected in a non-progressive manner, such as in the case of FIG. 31.

FIGS. 33 to 59 illustrate different embodiments of the components discussed hereinabove.

More particularly, FIGS. 33 and 34 describe embodiments used for a furniture module connection in the case of a 90° corner. A furniture module connector 31 such as the one in FIG. 35, may be used. This type of connector 31 preferably comprises fins 49 for ensuring proper mounting of the connector 31 onto the receiving lips 29 of the different vertical posts 13 and also preferably comprises a flexible skirt 50 to ensure light proofing, sound proofing, and to some extent, vibration proofing, as apparent to a person skilled in the art.

FIG. 37 illustrates a double glazing gasket to be used in different possible wall assemblies, such as the one illustrated in FIG. 36, which corresponds to a double glaze vertical post assembly.

FIG. 38 shows another wall assembly comprising a center cap which is mounted onto the interseptum 79 of the vertical post 13 to provide a smooth finish between two glass panels 3 of a double glaze condition wall panel 3.

A single glazing gasket such as the one shown in FIG. 40 may be used for a glass panel 3 such as the one illustrated in FIG. 2.

FIG. 41 illustrates a two-way square profile of a furniture module according to a preferred embodiment of the invention. FIG. 42 illustrates a 180° post furniture module according to a preferred embodiment of the invention. FIG. 43 illustrates a half-round two-way post corner furniture module according to a preferred embodiment of the invention. FIGS. 44 and 45 illustrate respectively three-way corner and four-way corner furniture modules.

FIGS. 46 to 59 illustrate different cross-sectional embodiments of the above-discussed various components of the wall panel system 1 according to the present invention. Indeed, FIG. 46 illustrates a glass vertical post 13. FIG. 47 shows a vertical post 13 mounted with a weatherstrip holder 91. FIG. 48 illustrates a solid panel vertical post 13. FIG. 49 illustrates a corner profile building module. FIG. 50 illustrates a 135° corner post 13. FIG. 51 illustrates a glass—glass transition distance channel 9, 11 comprising a connecting stud 21. FIG. 52 illustrates a glass-solid transition distance channel 9, 11. FIG. 53 illustrates a double glaze distance channel 9, 11. FIG. 54 illustrates another double glaze distance channel 9, 11. FIG. 55 illustrates a top-bottom distance channel 9, 11 of a glass panel 3. FIG. 56 illustrates a top-bottom distance channel 9, 11 of a solid panel 3. FIG. 57 illustrates a double glass transition channel 9, 11. FIG. 58 illustrates an inner telescopic channel 9, 11 of a wall post 13. FIG. 59 illustrates the wall post 13 of FIG. 58 cooperating with different components of the panel system 1.

Referring now to FIG. 60, there is shown an exploded view of a door assembly 87 according to a preferred embodiment of the invention. Similarly to the wall panels 3 of the wall panel system 1 according to the present invention as

explained hereinabove, the door assembly 87 comprises vertical posts 13 and a top distance channel 9. The door assembly 87 preferably further comprises left and right center strikes 93, suitable bumpers 95, a top door pivot 97, a bottom door pivot 99, a bottom pivot plate 101, and a bottom pivot base 103. As better shown in FIGS. 61 and 62, the center strikes 93 are preferably mounted to the vertical posts 13 by means of projecting members which are removably insertable into the intersepta 79 of the vertical posts 13, as better shown in FIG. 62. The center strikes 93 preferably also each comprise an interseptum 79 onto which may be removably mounted a door bumper 95, such as the one shown in FIG. 63, or other components explained herein and illustrated in the accompanying drawings.

Other suitable door strikes 93 and other embodiments of such, may be used, such as the one shown in FIG. 64. The bottom pivot plate 101 is preferably inserted into a corresponding recessed cavity of the door 105 and is operatively connected by means of the bottom pivot 99 to the bottom pivot plate 101 which, similarly to the glide 53, comprises corresponding tongues 69 which are removably insertable into the receiving channels 33 of the vertical posts 13. As better shown in FIG. 65, the bottom pivot base 103 preferably comprises an abutment flange 57 having a hole into which a suitable fastener is inserted to connect the pivot base 103 onto the ground floor. The abutment flange 57 of the pivot base 103 is operatively connected to the door 105 by means of the bottom pivot 99 and other suitable connecting means, as apparent to a person skilled in the art.

FIG. 66 illustrates a preferred embodiment of the top pivot bushing 107 as used in the door assembly 87 of FIG. 60.

FIG. 67 illustrates an opening filler strip 109 which may be used to close up the interseptum 79 of the vertical post 13 of the door assembly shown in FIG. 60.

FIG. 68 is a perspective view of an assembled wall panel system 1 according to a preferred embodiment of the invention, the assembled wall panel system 1 being shown with glass panels 3 and a door assembly 87.

As may now be appreciated, the wall panel system 1 according to the present invention is an improvement over the prior art in that it provides variable sized, prefabricated panels 3 available in both furniture and building module, ceiling height (either flush or recessed base and ceiling conditions), clear story and/or free standing options. Furthermore, the present invention is an improvement over the prior art in that the wall thickness of a wall panel 3 is preferably 3/2" thus allowing for superior sound rating, as well as passthrough components, i.e. electrical wires, communication and network cables, air conditioning, fiber optic cables, and the like. The present invention is also advantageous in that the outer panel shells 35 are removable by means of specially designed connecting strips, i.e. connectors 31. These connecting strips and the shells 35 are designed in such a way as to achieve on sight demountability. Moreover, they allow for field installation of electrical, communication and fiber optic wires. According to the present invention, the wall panel system 1 is also advantageous in that the adjustability at the ceiling is preferably ±1". As explained hereinabove, the present invention is also advantageous in that the panels 3 are stackable onto one another. Indeed, the unique splice connector, i.e. flyover 81, allows panels 3 to be stacked on top of each other, thereby allowing the stacked panels 3 to exceed a preferred 120" in height. Furthermore, the panel wall system 1 according to the present invention is also advantageous in that the panel-

to-panel connectors 31 gives both the ability to adjust for "panel creep" and, using the flush version, allows the system 1 to be used in "clean room" and fire-rated corridor environments. As explained hereinabove, the vertical and horizontal shapes of the wall panel system 1 are designed so that it can accommodate both single or double glazing, and a variety of blinds and privacy screens. Furthermore, the unique design of the lower glide assembly 25 allows for an adjustability of over a preferred 3". Moreover, the panels 3 may be attached to drywalls by means of a telescopic wall connector 31, as shown in the accompanying drawings. Furthermore, the specially designed glazing posts 13 allow for electrical and communication wiring to be housed inside these posts 13. Additionally, the outer panel shells 35 according to the present invention may be manufactured from a variety of materials, i.e. steel, wood, gypsum, plastic, fiberglass, etc., in a variety of finishes (fabric, vinyl, veneer, paint, laminates, for example). Furthermore, the wall panel system 1 according to the present invention is also advantageous in that it has the capacity to allow for pocket doors, pivot doors, and hinged doors. Furthermore, according to the present invention, there is a minimal number of "loose" components on the job site which allows for an easy and clean installation. Moreover, as explained hereinabove, the present invention is also advantageous in that it also allows for hanging componentry, i.e. worksurfaces, light accessories, and the like.

Of course, numerous modifications can be made to the above-described embodiments without departing from the scope of the invention as described in the appended claims.

What is claimed is:

1. A moveable and demountable wall panel system comprising a plurality of panels used for defining an office space, each panel having a vertical axis and a horizontal axis, each panel comprising:

- opposite top and bottom distance channels, the distance channels extending along directions substantially parallel to the horizontal axis of the panel;
- opposite left and right vertical posts, the vertical posts extending along directions substantially parallel to the vertical axis of the panel, the distance channels and vertical posts being affixed to one another by means of connecting studs for forming a rectangular support frame of the panel;
- a panel covering removably mountable onto receiving means of the rectangular support frame;
- a ceiling rail operatively connected to a top portion of the rectangular support frame, the ceiling rail being used for operatively securing the rectangular support frame of the panel to a ceiling surface; and
- an articulating floor channel operatively connected to a bottom portion of the rectangular support frame by means of left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively, the articulating floor channel being used for operatively securing the rectangular support frame of the panel to a ground surface, the glide assemblies being further used for displacing the rectangular support frame with respect to the floor channel along a direction substantially parallel to the vertical axis of the panel;
- each vertical post comprising at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel, each receiving lip being removably connectable to another receiving lip of a vertical post of a neighboring panel by means of a

17

connector for selectively and removably connecting together plurality of panels in order to define said office space; the receiving means comprising receiving grooves disposed along the vertical posts in a direction substantially parallel to the vertical axis of the pane; and the panel covering comprising an outer panel shell and vertical stiffeners, the vertical stiffeners being securely affixed to lateral sides of the outer panel shell of the panel covering and being removably connectable onto the receiving grooves of the vertical posts for removably connecting the panel covering onto the rectangular support frame of the panel.

2. A moveable and demountable wall panel system according to claim 1, wherein the receiving means comprise a receiving groove disposed along the top distance channel in a direction substantially parallel to the horizontal axis of the panel and wherein the panel covering comprises an outer panel shell and a top stiffener, the top stiffener being securely affixed to a lateral side of the outer panel shell of the panel covering and being removably hookable onto the receiving groove of the top distance channel for removably hooking the panel covering onto the rectangular support frame of the panel.

3. A moveable and demountable wall panel system according to claim 2, wherein the vertical stiffeners each comprise a bracket and a flexible clip securely affixed onto one another, the brackets being further securely affixed to the lateral sides of the outer panel shell of the panel covering and the flexible clips being removably connectable into the receiving grooves of the vertical posts.

4. A moveable and demountable wall panel system according to claim 1, wherein the panel covering comprises an outer panel shell and intermediate stiffeners, the intermediate stiffeners being securely affixed transversely onto the outer panel shell of the panel covering in a direction substantially parallel to the horizontal axis of the panel.

5. A moveable and demountable wall panel system according to claim 1, wherein the connectors comprise fins.

6. A moveable and demountable wall panel system according to claim 1, wherein the connectors are provided with covering caps.

7. A moveable and demountable wall panel system according to claim 1, wherein the connectors comprise flexible skirts.

8. A moveable and demountable wall panel system according to claim 1, wherein the floor channel is securely affixed to the ground surface by means of fasteners, and wherein the ceiling rail is securely affixed to the ceiling surface by means of fasteners.

9. A moveable and demountable wall panel system according to claim 1, wherein each glide assembly comprises:

18

a substantially L-shaped glide, said glide having an abutment flange and an insert, the insert being removably insertable into a receiving channel of a corresponding vertical post; and

a glide bolt, said glide bolt being threadedly mounted into the abutment flange of the glide and having a pivot head articulately mounted to the floor channel by means of a rivet.

10. A moveable and demountable wall panel system according to claim 9, wherein the pivot head of the glide bolt is positioned inside a longitudinal groove of the floor channel, and wherein the rivet of the pivot head is constrained to slide along a transversal slot of the longitudinal groove of the floor channel.

11. A moveable and demountable wall panel system according to claim 9, wherein the insert of the glide comprises two tongues removably mountable into respective receiving channels of a corresponding vertical post.

12. A moveable and demountable wall panel system according to claim 1, wherein the wall panel system further comprises a base cover.

13. A moveable and demountable wall panel system according to claim 12, wherein the base cover comprises a base cover insert for mounting the base cover onto the floor channel of the panel.

14. A moveable and demountable wall pane system according to claim 1, wherein at least two connecting studs are respectively and securely affixed at opposite ends of each of the top and bottom distance channels.

15. A moveable and demountable wall panel system according to claim 1, wherein each distance channel and each vertical post comprise at least one interseptum, and wherein accessories of the panel system are removably mounted onto said intersepta.

16. A moveable and demountable wall panel system according to claim 1, wherein each panel is stackable onto another panel by means of stackable flyovers inserted and fastened into the receiving channels of the vertical posts of said stacked panels.

17. A moveable and demountable wall panel system according to claim 16, wherein the stackable flyovers comprise interference ribs.

18. A moveable and demountable wall panel system according to claim 1, wherein the vertical posts comprise punched marks extending longitudinally along said vertical posts, said punched marks being used for hooking accessories onto said vertical posts of the panel system.

19. A moveable and demountable wall panel system according to claim 1, wherein the system further comprises a door assembly.

\* \* \* \* \*

PATENT APPLICATION SERIAL NO. \_\_\_\_\_

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

12/31/2001 EFLORES 00000046 10027872

01 FC:101

740.00 OP

PTO-1556  
(5/87)

\*U.S. GPO: 2000-468-987/39595

12/28/01

A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: VON HOYNINGEN HUENE et al.  
Docket: 9680.190US01  
Title: MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM

jc997 U.S. PTO  
10/027872  
12/21/01

12/21/01  
J1130 U.S. PTO

CERTIFICATE UNDER 37 CFR 1.10  
'Express Mail' mailing label number: EV 037644953 US  
Date of Deposit: December 21, 2001  
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Commissioner for Patents, Washington, D.C. 20231.  
By: Chris Stordahl  
Name: Chris Stordahl

BOX PATENT APPLICATION  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

We are transmitting herewith the attached:

- Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- Utility Patent Application: Spec. 29 pgs; 20 claims; Abstract 1 pgs.  
The fee has been calculated as shown below in the 'Claims as Filed' table.
- 60 sheets of informal drawings
- An unsigned Combined Declaration and Power of Attorney
- A check in the amount of \$740.00 to cover the Filing Fee
- Other: Communication Regarding Priority Claim
- Return postcard

CLAIMS AS FILED

Number of Claims Filed	In Excess of:	Number Extra	Rate	Fee
Basic Filing Fee				\$740.00
Total Claims				
20	20	= 0	x 18.00	= \$0.00
Independent Claims				
1	3	= 0	x 84.00	= \$0.00
MULTIPLE DEPENDENT CLAIM FEE				\$0.00
TOTAL FILING FEE				\$740.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

MERCHANT & GOULD P.C.  
P.O. Box 2903, Minneapolis, MN 55402-0903  
(612) 332-5300

By: Gregory A. Sebald  
Name: Gregory A. Sebald  
Reg. No.: 33,280  
Initials: GAS/pjk




(PTO TRANSMITTAL - NEW FILING)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: VON HOYNINGEN HUENE et al.  
 Docket: 9680.190US01  
 Title: MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM

JC997 U.S. PTO  
 10/027872  
  
 12/21/01

CERTIFICATE UNDER 37 CFR 1.10  
 'Express Mail' mailing label number: EV 037644953 US  
 Date of Deposit: December 21, 2001  
 I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Commissioner for Patents, Washington, D.C. 20231.  
 By:   
 Name: Chris Stordahl

BOX PATENT APPLICATION  
 Commissioner for Patents  
 Washington, D.C. 20231

Sir:

We are transmitting herewith the attached:


- Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- Utility Patent Application: Spec. 29 pgs; 20 claims; Abstract 1 pgs.  
The fee has been calculated as shown below in the 'Claims as Filed' table.
- 60 sheets of informal drawings
- An unsigned Combined Declaration and Power of Attorney
- A check in the amount of \$740.00 to cover the Filing Fee
- Other: Communication Regarding Priority Claim
- Return postcard

**CLAIMS AS FILED**

Number of Claims Filed		In Excess of:		Number Extra		Rate		Fee
<b>Basic Filing Fee</b>								\$740.00
<b>Total Claims</b>								
20	-	20	=	0	x	18.00	=	\$0.00
<b>Independent Claims</b>								
1	-	3	=	0	x	84.00	=	\$0.00
<b>MULTIPLE DEPENDENT CLAIM FEE</b>								\$0.00
<b>TOTAL FILING FEE</b>								\$740.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

**MERCHANT & GOULD P.C.**  
 P.O. Box 2903, Minneapolis, MN 55402-0903  
 (612) 332-5300

By:   
 Name: Gregory A. Sebald  
 Reg. No.: 33,280  
 Initials: GAS/pjk



(PTO TRANSMITTAL - NEW FILING)

## MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM

Field of the invention

5           The present invention relates to a wall panel system. More particularly, the present invention relates to a moveable non-progressive mountable and demountable wall panel system.

Background of the invention

10

Fixed wall systems, moveable wall systems, and non-progressive wall systems are very well known in the art.

15

Some problems associated with fixed wall systems are the inability to displace and/or move the fixed wall systems once they are mounted; the inability to readily install passthrough components (wiring, etc.) after the fixed wall systems have been mounted; and the inability to readily change aspects and features of the fixed wall systems once they are installed. Furthermore, fixed wall systems are also disadvantageous because their installing is quite lengthy. For example, for conventional gyproc walls, one must first install supporting studs, then affix gyproc panels thereto, then plaster thereon, wait for drying of the plaster, sanding subsequently and then finishing the surfaces of the gyproc walls. It is well known in the art that the mounting of such fixed wall systems usually extends over several days and requires a great deal of manual labour, which is thus very inefficient and very cost ineffective.

20

25

30

Some of the problems associated with moveable wall systems are that, very often, their components are over-engineered (e.g. too heavy), different and specialized tooling is required for assembling such moveable wall systems, and the moveable wall systems generally comprise various different components which are not readily interchangeable. As a results of the above-mentioned, installation of such moveable wall systems is generally quite lengthy and



cumbersome. Furthermore, it is well known in the art that such moveable wall systems, by virtue of their design, offer generally very poor sound proofing, light proofing and/or vibration proofing.

5           Some of the problems associated with non-progressive wall systems are the inability to independently change, move, and/or alter a particular component of the non-progressive wall system without affecting the other components operatively connected to said particular component. Indeed, by virtue of their design, non-progressive wall systems generally have several components which  
10 are intricately connected to one another and thus prevent one particular component thereof from being changed, moved, and/or altered without disturbing the other components of the non-progressive wall system.

Known to the Applicant are the following American patents which describe  
15 different wall panel systems: 3,040,847; 3,352,078; 3,363,383; 3,675,382; 4,167,084; 4,399,644; 4,640,072; 4,757,657; 4,825,610; 5,056,577; 5,159,793; 5,207,037; 5,379,560; 5,381,845; 5,491,943; 5,644,878; 5,735,089; 5,875,596; 6,112,485; and 6,122,871.

20           None of the above-mentioned patents seem to disclose or even suggest a movable non-progressive mountable and demountable wall panel system which would overcome several of the above-mentioned problems associated with the prior art.

25           Summary of the invention

An object of the present invention is to provide a wall panel system which would satisfy some of the above-mentioned needs, and would thus be an improvement over the wall panel systems known in the art.

30

In accordance with the present invention, the above object is achieved by a moveable and demountable wall panel system comprising a plurality of panels

used for defining an office space, each panel having a vertical axis and a horizontal axis, each panel comprising:

opposite top and bottom distance channels, the distance channels extending along directions substantially parallel to the horizontal axis of the panel;

5 opposite left and right vertical posts, the vertical posts extending along directions substantially parallel to the vertical axis of the panel, the distance channels and vertical posts being affixed to one another by means of connecting studs for forming a rectangular support frame of the panel;

10 a panel covering removably mountable onto receiving means of the rectangular support frame;

a ceiling rail operatively connected to a top portion of the rectangular support frame, the ceiling rail being used for operatively securing the rectangular support frame of the panel to a ceiling surface; and

15 an articulating floor channel operatively connected to a bottom portion of the rectangular support frame by means of left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively, the articulating floor channel being used for operatively securing the rectangular support frame of the panel to a ground surface, the glide assemblies being further used for displacing the rectangular support frame with respect to the floor channel  
20 along a direction substantially parallel to the vertical axis of the panel;

wherein each vertical post comprises at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel, each receiving lip being removably connectable to another receiving lip of a vertical post of a neighboring panel by means of a connector for selectively and  
25 removably connecting together a plurality of panels in order to define said office space.

Preferably, the receiving means comprise receiving grooves disposed along the vertical posts in a direction substantially parallel to the vertical axis of  
30 the panel and the panel covering comprises an outer panel shell and vertical stiffeners, the vertical stiffeners being securely affixed to lateral sides of the outer panel shell of the panel covering and being removably connectable onto the

receiving grooves of the vertical posts for removably connecting the panel covering onto the rectangular support frame of the panel.

5 Preferably, the receiving means comprise a receiving groove disposed along the top distance channel in a direction substantially parallel to the horizontal axis of the panel and the panel covering comprises an outer panel shell and a top stiffener, the top stiffener being securely affixed to a lateral side of the outer panel shell of the panel covering and being removably hookable onto the receiving groove of the top distance channel for removably hooking the panel covering onto the rectangular support frame of the panel.

10 Preferably, the vertical stiffeners each comprise a bracket and a flexible clip securely affixed onto one another, the brackets being further securely affixed to the lateral sides of the outer panel shell of the panel covering and the flexible clips being removably connectable into the receiving grooves of the vertical posts.

15 Preferably, the panel covering comprises an outer panel shell and intermediate stiffeners, the intermediate stiffeners being securely affixed transversely onto the outer panel shell of the panel covering in a direction substantially parallel to the horizontal axis of the panel.

20 Preferably, the connectors may comprise fins, may comprise flexible skirts, and may be provided with covering caps.

25 Preferably, floor channel is securely affixed to the ground surface by means of fasteners, and the ceiling rail is securely affixed to the ceiling surface by means of fasteners.

30 Preferably, each glide assembly comprises a substantially L-shaped glide and a glide bolt. The substantially L-shaped glide preferably has an abutment flange and an insert, the insert being removably insertable into a receiving channel of a corresponding vertical post. Preferably also, the glide bolt is

threadedly mounted into the abutment flange of the glide and has a pivot head articulately mounted to the floor channel by means of a rivet.

5 Preferably also, the pivot head of the glide bolt is positioned inside a longitudinal groove of the floor channel, and the rivet of the pivot head is constrained to slide along a transversal slot of the longitudinal groove of the floor channel. The insert of the glide preferably comprises two tongues removably mountable into respective receiving channels of a corresponding vertical post.

10 The invention and its advantages would be better understood upon reading the following non-restrictive description of preferred embodiments thereof, made with reference to the accompanying drawings.

Brief description of the drawings

15

Figure 1 is an exploded perspective view of a solid wall panel according to a preferred embodiment of the invention.

20 Figure 2 is an exploded perspective view of a glass wall panel according to a preferred embodiment of the invention.

Figure 3 is an exploded perspective view of some of the components of the wall panel shown in Figure 1, said wall panel being shown in an exploded view with a base cover according to a preferred embodiment of the invention.

25

Figure 4 is another exploded perspective view of what is shown in Figure 4.

30 Figure 5 is a perspective view of an intermediate stiffener of the wall panel shown in Figure 1.

Figure 6 is a cross-sectional view of the intermediate stiffener shown in Figure 5.

Figure 7 is a partial sectional exploded view of some of the components of the wall panel shown in Figure 1.

Figure 8 is a cross-sectional view of the bottom distance channel and the bottom stiffener of the wall panel shown in Figure 1.

Figure 9 is a cross-sectional view of the bottom stiffener shown in Figure 8.

Figure 10 is a partial sectional perspective view of some of the components of the wall panel shown in Figure 1.

Figure 11 is another perspective view of what is shown in Figure 10.

Figure 12 is yet another perspective view of what is shown in Figure 10.

Figure 13 is an exploded perspective view of a stackable flyover cooperating with two vertical posts according to a preferred embodiment of the invention.

Figure 14 is a partial enlarged view of what is shown in Figure 13.

Figure 15 is a cross-sectional view of a connecting stud according to a preferred embodiment of the invention.

Figure 16 is a side elevational view of the connecting stud shown in Figure 15.

Figure 17 is a cross-sectional view of what is shown in Figure 14.

Figure 18 is a cross-sectional view of what is shown in Figure 17 according to another preferred embodiment of the invention.

5 17. Figure 19 is a cross-sectional view of the stackable flyover shown in Figure

Figure 20 is a perspective view of a punched solid panel vertical post according to a preferred embodiment of the invention.

10 10 Figure 21 is a perspective view of a ceiling rail cooperating with a notched vertical post according to a preferred embodiment of the invention.

Figure 22 is a top plan view of the ceiling rail shown in Figure 21.

15 15 Figure 23 is a sectional view of a glide assembly of the wall panel shown in Figure 1, said glide assembly being shown cooperating with a floor channel according to a preferred embodiment of the invention.

20 20 Figure 24 is a perspective view of the glide of the glide assembly shown in Figure 23.

25 25 Figure 25 is a partial sectional view of two panel coverings 15 mounted onto a vertical post by means of a vertical stiffener according to a preferred embodiment of the invention.

Figure 26 is a cross-sectional view of one of the vertical stiffeners shown in Figure 25.

30 30 Figure 27 is a wall panel assembly according to a preferred embodiment of the invention.

Figure 28 is a wall panel assembly according to yet another preferred embodiment of the invention.

5

Figure 29 is a cross-sectional view of the connector shown in Figure 28.

Figure 30 is a cross-sectional view of a connector according to another preferred embodiment of the invention.

10

Figure 31 is a wall panel assembly according to yet another preferred embodiment of the invention.

Figure 32 is a cross-sectional view of the building module connector shown in Figure 31.

15

Figure 33 is a cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

Figure 34 is an enlarged cross-sectional view of a portion shown in Figure 33.

20

Figure 35 is a cross-sectional view of the furniture module connector shown in Figure 34.

25

Figure 36 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

Figure 37 is a cross-sectional view of the double glazing gasket shown in the wall panel assembly of Figure 36.

30

Figure 38 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

Figure 39 is a cross-sectional view of the center cap shown in the wall panel of Figure 38.

5 Figure 40 is a partial cross-sectional view of a wall panel assembly according to yet another preferred embodiment of the invention.

Figure 41 is a cross-sectional view of a furniture module according to a preferred embodiment of the invention.

10 Figure 42 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

Figure 43 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

15 Figure 44 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

20 Figure 45 is a cross-sectional view of a furniture module according to yet another preferred embodiment of the invention.

Figure 46 is a cross-sectional view of a glass vertical post according to a preferred embodiment of the invention.

25 Figure 47 is a cross-sectional view of a vertical post according to yet another preferred embodiment of the invention, said vertical post being shown with a weatherstrip holder mounted into the interseptum thereof.

30 Figure 48 is a cross-sectional view of a solid vertical post according to yet another preferred embodiment of the invention.



Figure 49 is a cross-sectional view of a building module according to a preferred embodiment of the invention.

5 Figure 50 is a cross-sectional view of a corner post according to a preferred embodiment of the invention.

10 Figure 51 is a cross-sectional view of a distance channel according to a preferred embodiment of the invention, said distance channel being shown provided with a connecting stud.

Figure 52 is a partial cross-sectional view of a wall panel assembly according to a preferred embodiment of the invention.

15 Figure 53 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

Figure 54 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

20 Figure 55 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

25 Figure 56 is a cross-sectional view of a distance channel according to yet another preferred embodiment of the invention.

Figure 57 is a cross-sectional view of a transition channel according to a preferred embodiment of the invention.

30 Figure 58 is a cross-sectional view of a wall post according to a preferred embodiment of the invention.

10027872-13104



Detailed description of preferred embodiments of the invention

In the following description, the same numerical references refer to similar elements. The embodiments shown in the figures are preferred only.

5

Moreover, although the present invention as exemplified hereinafter was primarily designed for wall systems, it could be used with other objects and for other purposes, such as with furniture applications, for example, as apparent to a person skilled in the art. For this reason, expressions such as "wall" and any  
10 other references and/or other expressions equivalent thereto should not be taken as to limit the scope of the present invention and include all other objects and all other applications with which the present invention could be used and may be useful.

15 Similarly, expressions such as "wall" and "panel", as well as any mutually equivalent expressions and/or compound words thereof, may be used interchangeably in the context of the present description. The same applies for any other mutually equivalent expressions, such as "covering" and "shell" and "screw" and "bolt" for example, as also apparent to a person skilled in the art.

20

In addition, although the preferred embodiment of the wall panel system 1 as disclosed hereinafter comprises various components such as intermediate stiffeners 47, gaskets, connecting studs 21, transition channels 9, 11, glide assemblies 25, solid panels 3, glass panels 3, stackable flyovers 81, etc., which  
25 are useful and present several substantial advantages, not all of these components are essential to the invention and thus should not be taken in their restrictive sense, i.e. should not be taken as to limit the scope of the present invention. It is to be understood, as also apparent to a person skilled in the art, that other suitable components and cooperations thereinbetween may be used  
30 for the wall panel system 1 according to the present invention, as will be explained hereinafter, without departing from the scope of the invention.

5 Broadly described, the wall panel system 1 according to the preferred embodiment of the invention as it is illustrated in the accompanying drawings, is a wall panel system 1 comprising a plurality of panels 3 used for defining an office space. Each panel 3 has a vertical axis 5 and a horizontal axis 7. Each panel 3  
10 has opposite top and bottom distance channels 9, 11, opposite left and right vertical posts 13, a panel covering 15, a ceiling rail 17, and an articulating floor channel 19. The top and bottom distance channels 9, 11 extend along a direction substantially parallel to the horizontal axis 7 of the panel 3. The left and right vertical posts 13 extend along a direction substantially parallel to the vertical axis  
15 5 of the panel 3. The distance channels 9, 11 and vertical posts 13 are affixed to one another by means of connecting studs 21 so as to form a rectangular support frame 23 of the panel 3. The panel covering 15 is removably mountable onto receiving means of the rectangular support frame 23. The ceiling rail 17 is operatively connected to a top portion of the rectangular support frame 23 and is  
20 used for operatively securing the rectangular support frame 23 of the panel 3 to a ceiling surface. The articulating floor channel 19 is operatively connected to a bottom portion of the rectangular support frame 23 by means of left and right glide assemblies 25 mounted into receiving channels 27 of the left and right vertical posts 13 respectively. The articulating floor channel 19 is used for  
25 operatively securing the rectangular support frame 23 of the panel 3 to a ground surface. The glide assemblies 25 are also used for displacing the rectangular support frame 23 with respect to the floor channel 19 along a direction substantially parallel to the vertical axis 5 of the panel 3. Each vertical post 13 has at least one receiving lip 29 extending along a direction substantially parallel  
30 to the vertical axis 5 of the panel 3. Each receiving lip 29 is removable connectable to another receiving lip 29 of a vertical post 13 of a neighboring panel 3 by means of a connector 31 for selectively and removably connecting together a plurality of panels 3 in order to define the office space. By virtue of its design and its components, the present wall panel system 1 is a moveable non-  
progressive mountable and demountable wall panel system 1.

FOOTER "1013"

Preferably, the receiving means comprise receiving grooves 33 disposed along the vertical posts 13 in a direction substantially parallel to the vertical axis 5 of the panel 3 and the panel covering 15 comprises an outer panel shell 35 and vertical stiffeners 37, the vertical stiffeners 37 being securely affixed to lateral sides of the outer panel shell 35 of the panel covering 15 and being removably connectable onto the receiving grooves 33 of the vertical posts 13 for removably connecting the panel covering 15 onto the rectangular support frame 23 of the panel 3, as better shown in Figures 1, 3, 4, 7 and 12.

Preferably, the receiving means comprise a receiving groove 39 disposed along the top distance channel 9 in a direction substantially parallel to the horizontal axis 7 of the panel 3 and the panel covering 15 comprises an outer panel shell 35 and a top stiffener 41, the top stiffener 41 being securely affixed to a lateral side of the outer panel shell 35 of the panel covering 15 and being removably hookable onto the receiving groove 39 of the top distance channel 9 for removably hooking the panel covering 15 onto the rectangular support frame 23 of the panel 3, as better shown in Figures 1, 3, 4, and 7.

Preferably, the vertical stiffeners 37 each comprise a bracket 43 and a flexible clip 45 securely affixed onto one another, the brackets 43 being further securely affixed to the lateral sides of the outer panel shell 35 of the panel covering 15 and the flexible clips 45 being removably connectable into the receiving grooves 33 of the vertical posts 13, as better shown in Figures 25-27.

Preferably, the panel covering 15 comprises an outer panel shell 35 and intermediate stiffeners 47, the intermediate stiffeners 47 being securely affixed transversely onto the outer panel shell 35 of the panel covering 15 in a direction substantially parallel to the horizontal axis 7 of the panel 3, as better shown in Figures 1, 3 and 4.

Preferably, the connectors 31 may comprise fins 49, may comprise flexible skirts 50, and may be provided with covering caps 51, as better shown in Figures

7 and 27-35. The connectors 31 are preferably shaped and sized to provide proper sound proofing, light proofing and vibration proofing to the wall panel system 1.

5 Preferably, the floor channel 19 is securely affixed to the ground surface by means of fasteners, and the ceiling rail 17 is securely affixed to the ceiling surface by means of fasteners, as better shown in Figures 21 and 22.

10 Preferably, each glide assembly 25 comprises a substantially L-shaped glide 53 and a glide bolt 55. The substantially L-shaped glide 53 preferably has an abutment flange 57 and an insert 59, the insert 59 being removably insertable into a receiving channel 27 of a corresponding vertical post 13. Preferably also, the glide bolt 55 is threadedly mounted into the abutment flange 57 of the glide 53 and has a pivot head 61 articulately mounted to the floor channel 19 by means of  
15 a rivet 63, as better shown in Figures 10-12 and 23.

20 Preferably also, the pivot head 61 of the glide bolt 55 is positioned inside a longitudinal groove 65 of the floor channel 19, and the rivet 63 of the pivot head 61 is constrained to slide along a transversal slot 67 of the longitudinal groove 65 of the floor channel 19, as better shown in Figure 12. The insert 59 of the glide 53 preferably comprises two tongues 69 removably mountable into respective receiving channels 27 of a corresponding vertical post 13, as better shown in  
25 Figures 11, 12 and 24.

30 Preferably, the wall panel system 1 further comprises a base cover 71 and the base cover 71 preferably comprises a base cover insert 73 for removably mounting the base cover 71 onto the floor channel 19 of the panel 3, as better shown in Figures 3, 10-12, and 23.

35 Preferably also, at least two connecting studs 21 are respectively and securely affixed at opposite ends of each of the top and bottom distance channels 9, 11, as better shown in Figures 1, 2, 10, 11, 15 and 16.

Preferably, each distance channel 9, 11 and each vertical post 13 comprise at least one interseptum 79, so that accessories of the panel system 1 can be removably mounted onto said intersepta 79, as shown in several of the accompanying drawings.

Preferably, each panel 3 is stackable onto another panel 3 by means of stackable flyovers 81 inserted and fastened into the receiving channels 27 of the vertical posts 13 of the stacked panels 3, as better shown in Figures 13, 14, 17 and 18. Preferably also, the stackable flyovers 81 comprise interference ribs 83, as better shown in Figure 19.

Preferably, the vertical posts 13 may comprise punched marks 85 extending longitudinally along the vertical posts 13, the punched marks 85 being used for hooking accessories onto the vertical posts 13 of the panel system 1, as better shown in Figure 20.

Preferably also, the moveable and demountable wall panel system 1 according to the present invention may also comprise a door assembly 87, as better shown in Figures 60-67.

Referring now to Figure 1, there is shown an exploded perspective view of a solid wall panel 3 according to a preferred embodiment of the invention. As can be seen, the wall panel 3 preferably comprises two vertical members, known as "vertical posts" 13, which are connected to two horizontal members, known as "distance channels" 9, 11. The left and right vertical posts 13 are connected to the top and bottom distance channels 9, 11 to form a rectangular structural support frame 23. The vertical posts 13 are preferably connected to the distance channels 9, 11 by appropriate fasteners drilled into the sides of the vertical posts 13 and inserted into corresponding connecting studs 21 which are preferably securely affixed to the respective distance channels 9, 11, as better shown in Figures 1 and 2. The solid wall panel 3 preferably comprises also an outer panel

covering 15 which is removably mounted onto the rectangular support frame 23 formed by the vertical posts 13 and the distance channels 9, 11. The outer panel covering 15 preferably comprises an outer panel shell 35, vertical stiffeners 37 securely mounted to the outer panel shell 35 for allowing the same to be  
5 removably fastened onto receiving grooves 33 of the vertical posts 13 of the panel 3, and intermediate and top and bottom stiffeners 41, 42, 47 mounted transversely to the outer panel shell 35. The intermediate stiffeners 47 are primarily used for providing the outer panel shell 35 with structural rigidity whereas the top stiffener 41 may be used for hooking and sustaining the outer  
10 panel shell 35 onto a corresponding receiving groove 39 of the top distance channel 9. Although the bottom stiffener 42 is preferably not hooked onto a similar groove 39 of the bottom distance channel 11, it nevertheless rests thereagainst so as to ensure proper positioning of the outer panel covering 15 with respect to the bottom distance channel 11, as better shown in Figure 8.

15 As also shown in Figure 1, the wall panel 3 preferably also comprises a floor channel 19 which is destined to be securely affixed to the ground floor by means of suitable fasteners, such as carpet grippers for example. The wall panel 3 preferably also comprises left and right glide assemblies 25 for adjusting  
20 vertical positioning of the rectangular support frame 23 with respect to the articulating floor channel 19. Preferably also, the wall panel 3 comprises connectors 31 for connecting two neighboring vertical posts 13 and thus adjoining two vertical wall panels 3 together. As better shown in Figure 21, the top portion of the vertical post 13 is preferably notched to allow the guiding rail 17 to pass  
25 therethrough. As it can be easily understood, once an appropriate wall panel 3 is assembled, it may be installed into the ceiling rail 17 at an angle and then swiveled towards the vertical axis 5 in order to properly secure the articulating floor channel 19 to the ground floor and then adjust positioning of the rectangular support frame 23 with respect to the ceiling rail 17 by means of the glide  
30 assemblies 25. Once the wall panel 3 is properly positioned in a vertical upright position, it is preferably provided with a base cover 71 so as to conceal the floor channel 19, the bottom distance channel 11 and the glide assemblies 25. The



connectors 31, panel coverings 15, and base covers 71 are preferably shaped and sized so as to provide to the wall panel system 1 with a very sleek and clean look, as shown in the accompanying drawings.

5 Referring now to Figure 2, there is shown an exploded perspective view of a glass wall panel 3 according to a preferred embodiment of the invention. Similarly to the wall panel 3 shown in Figure 1, the glass panel 3 shown in Figure 2 comprises left and right vertical posts 13, top and bottom distance channels 9, 11, a floor channel 19 and glide assemblies 25. Once again, the vertical posts 13 and the distance channels 9, 11 are connected to one another so as to form a rectangular support frame 23 and the glide assemblies 25 cooperate with such rectangular support frame 23 so as to be able to displace it vertically in order to adjust the positioning of the wall panel 3 with respect to the ceiling. As shown in Figure 2, a glass panel 3 is inserted into respective grooves of the vertical posts 10 13 and distance channels 9, 11, these grooves are commonly known as "interseptum" 79, or "intersepta" (plural). Preferably, appropriate glazing gaskets are used between these grooves and the glass panels 3 so as to provide the wall panel 3 with appropriate sound proofing, light proofing and vibration proofing. The glass panel 3 also preferably comprises a floor channel 19 which is devised to be 15 securely affixed to the ground floor and also preferably comprises a base cover 71 with functions similar to the ones described for Figure 1. Similarly to the above-mentioned, the vertical posts 13 are connected to the horizontal distance channels 9, 11 by appropriate fasteners which are inserted into the side portions of the vertical posts 13 and into corresponding connecting studs 21 which are 20 preferably securely affixed to the top and bottom distance channels 9, 11, as explained and illustrated hereinabove. 25

As better shown in Figure 3, the intermediate stiffeners 47 are devised to be securely affixed onto the outer panel shell 35 in order to, among other things, 30 provide the same with increased rigidity. Preferably also, the top stiffener 41 is to be securely affixed to a top lateral side of the outer panel shell 35 and is to be used for hooking the outer panel covering 15 onto a corresponding groove 39

provided to that effect on the top distance channel 11 of the panel 3. As also shown, the horizontal bottom stiffener 42 is intended to be securely affixed to the bottom portion of the outer panel shell 35 and to cooperate with the bottom distance channel 11 in the preferred manner better illustrated in Figure 9. As better shown in Figure 3, the outer panel covering 15 of a solid panel 3 preferably comprises an outer panel shell 35, intermediate stiffeners 47, top and bottom stiffeners 41, 42, and vertical stiffeners 37. As mentioned hereinabove, the vertical stiffeners 37 are preferably securely affixed to the outer panel shell 35 along the left and right internal sides thereof and are intended primarily to removably fasten the outer panel covering 15 onto the corresponding receiving grooves 33 of the vertical posts 13 of the panel 3, as better shown in Figure 1.

Referring now to Figure 7, there is shown a partial sectional exploded view of some of the components of the wall panel 3 shown in Figure 1. More particularly, there is shown a cross-sectional configuration of the top distance channel 9 according to a preferred embodiment of the invention. Indeed, the distance channel 9 comprises grooves 33 for removably receiving optional horizontal stiffeners (not shown) of the outer panel coverings 15. The distance channel 9 also preferably comprises a corresponding groove 39 for receiving a top stiffener 41 of the outer panel covering 15. Preferably also, the distance channel 9 also comprises a longitudinal interseptum 79 for receiving different modular components of the wall panel system 1, such as a glass panel 3, as in the case of Figure 2. It is worth mentioning here that other shaped and sized intersepta 79 may be used for mounting different accessories thereon, such as blinds for example. As also shown in Figure 7, two vertical posts 13 are preferably adjoined to one another so as to connect two neighboring wall panels 3 by means of a connector 31 which may or may not be provided with a covering cap 51. The covering cap 51 of the connector 31 is preferably selected to match the outer surface of the outer panel covering 15 (i.e. the outer panel shell 35). It is worth mentioning that different finishes and textures may be used for the covering cap 51 of the connector 31 as well as for the outer panel shell 35 of the panel covering 15, depending on the particulars of a user of the wall panel system 1, as

apparent to a person skilled in the art. For example, the covering cap 51 and the outer panel shell 35 may have a wood finish, a metallic finish, an upholstery finish, etc., and may be similar to one another or different from each other, depending on the particular wants and needs of a user of the wall panel system 1. Advantageously, because all of the above-mentioned components of the wall panel system 1 are removably mountable and demountable onto the wall panel 3, one may mix and match different configurations, as need may be.

Referring now to Figure 10, there is shown a partial sectional perspective view of some of the components of the wall panel 3 shown in Figure 1. As illustrated in this figure, and as can be easily understood, the glide assemblies 25 enable to adjust vertically the rectangular structural support frame 23 formed by the vertical posts 13 and horizontal top and bottom distance channels 9, 11 with respect to the floor channel 19, and consequently with respect to the ceiling, or the ceiling rail 17 which is preferably affixed thereto according to the present invention. Caddy™ clips are preferably used for affixing the ceiling rail 17 to the ceiling surface, although other suitable fasteners may be used, as apparent to a person skilled in the art.

As better shown in Figures 11 and 12, the glide assemblies 25 preferably comprise a glide bolt 55, a glide 53, and a fastener. The glide 53 preferably comprises two tongues 69 which are insertable into corresponding grooves 33 of the vertical posts 13 and an abutment flange 57 which preferably extends perpendicularly with respect to the tongues 69 so as to form an abutment with the vertical post 13, as better shown in Figure 12. The abutment flange 57 is preferably threadedly mounted onto the glide bolt 55 so as to enable a relative movement between the glide 53 and the glide bolt 55 by rotation of the glide bolt 55. Preferably, as also shown in Figures 11 and 12, the glide bolt 55 preferably comprises a pivot head 61 which is operatively connected to the floor channel 19 by means of a suitable fastener, the latter guiding the sliding of the glide bolt 55 along a corresponding slot 67 of the floor channel 19, as better shown in Figure 12. Preferably also, the fastener connecting the glide bolt 55 to the floor channel

19 is a rivet 63, although other suitable means may be used, as apparent to a person skilled in the art. Preferably also and as better shown in Figure 23, the glide bolt 55 has a square cross-sectional portion so as to facilitate rotation thereof by suitable means, such as a conventional wrench for example.

5

As can be easily understood, since the floor channel 19 is securely affixed to the floor, when the glide 53 is moved with respect to the glide bolt 55 vertically, then so will the vertical post 13 with respect to the floor because of the abutment of the flange 57 against the bottom portion of the vertical post 13, as better shown in Figure 12.

10

Figure 11 also shows how the connecting stud 21 is preferably securely affixed to the bottom distance channel 11.

15

Referring now to Figures 13-19, and particularly to Figure 13, there is shown a perspective view of a stackable flyover 81 cooperating with two vertical posts 13 of two wall panels 3 intended to be stacked onto one another. As can be easily understood, the stackable flyover 81 is used to connect adjoining vertical posts 13, i.e. stacked them together, so as to enable to stack wall panels 3 onto one another. Among many other functions, the stackable flyover 81 is intended to impart to the vertical posts 13 with a sound structural integrity, as well as to provide both wall panels 3 stacked together with sound structural stability. The stackable flyover 81 is preferably devised to be snugly inserted into the receiving channels 33 of the vertical posts 13 so as to enable quick and easy assembling of the same, by light taping for example. Preferably also, the stackable flyover 81 is made of a suitable material, so as to not allow jigger and so as to sustain the loads of the vertical posts 13 connected thereto, as apparent to a person skilled in the art.

20

25

30

According to the preferred embodiment of the invention, holes are drilled through the assembled vertical posts 13 and through the stackable flyovers 81 at predetermined ranges, as better shown in Figure 14, and then suitable

connecting fasteners are preferably passed therethrough, and into the connecting studs 21, as can be inferred from in Figures 1 and 2, so as to hold the entire wall panel, formed of stacked panels 3, together. Therefore, the vertical posts 13 are operatively connected to the connecting studs 21 of the horizontal distance channels 9, 11, whether simple or transition distance channels 9, 11, by means of the stackable flyovers 81 and appropriate connecting fasteners, as apparent to a person skilled in the art.

Preferably, the connecting stud 21 is a threaded metal receptacle that allows the connecting fasteners, such as screws for example, to be affixed to the distance channels 9, 11.

As can be easily understood, by inserting the connecting screws into the connecting studs 21, one is able to align both stackable panels 3 and keep them in position with respect to one another.

As better shown in Figures 13, 14 and 17, the vertical post 13 preferably comprises a receiving groove 33 for receiving the vertical stiffeners 37 of the panel coverings 15. Preferably, these receiving grooves 33 are a half-round arc of about 270° sweep. The vertical post 13 also preferably comprises a longitudinal groove, known as an "interseptum" 79 and panel-to-panel receiving lips 29, said panel-to-panel receiving lips 29 being used for receiving the panel-to-panel connectors 31, as explained hereinabove. Preferably, the receiving lips 29 and the connectors 31 are preferably devised to be removably insertable and connectable onto one another.

In general, the vertical post 13 is one of the main vertical structural members of the wall panel support frame 23 and as a result thereof, may also be provided with punch marks 85, as shown in Figure 20, to receive slotted standards that could be used to hold shelf brackets or even hang other suitable accessories, such as overhead cabinets for example, as apparent to a person skilled in the art.

Preferably, as better shown in Figure 19, the stackable flyover 81 comprises interference ribs 83 which are used to decrease to an appropriate extent surface contact between the stackable flyover 81 and the corresponding receiving channels 33 of the vertical posts 13 so as to ensure a proper cooperation between the latter two.

Referring now to Figures 21 and 22, one can see a preferred embodiment of the ceiling rail 17 according to the present invention. As better shown in Figure 21, the ceiling rail 17 is preferably connected to the ceiling by means of suitable fasteners, such as caddy<sup>TM</sup> clips for example, and is preferably provided with a closed cell gasket to ensure once again, sound proofing, light proofing, and vibration proofing of the wall panel system 1. The ceiling rail 17 has two projecting members which are preferably designed to be inserted into corresponding notched grooves of the vertical posts 13, and into the inside of the top distance channel 9. The ceiling rail 17 is preferably provided with oblong orifices provided at appropriate locations along the rail 17 so as to properly fasten the rail 17 to the ceiling surface, as apparent to a person skilled in the art.

Referring now to Figure 23, there is shown a sectional view of the glide 53, glide bolt 55, articulating floor channel 19, and base cover 71 of the wall panel 3 shown in Figure 1. As explained hereinabove, the glide 53 of the glide assembly 25 preferably comprises two tongues 69 which are to be inserted into corresponding receiving channels 33 of the vertical posts 13 and preferably also comprises an abutment flange 57 for sustaining the vertical post 13 into which the tongues 69 have been inserted. Preferably also, the glide bolt 55 is provided with an appropriate threading therealong so that the glide 53 may be threadedly engaged with the same so as to ensure proper relative displacement between the two. Preferably also, the glide bolt 55 comprises a pivot head 61 which is connected to a corresponding groove 65 of the floor channel 19 by means of a fastener, such as a rivet 63 for example. The pivot head and rivet assembly of the glide bolt 55 enable the same to rotate about the groove 65 of the floor channel

19 along a slot 67 provided to that effect, as better shown in Figure 12. Preferably also, the glide bolt 55 is provided with a square cross-sectional section so as to enable suitable rotating means, such as a ratchet or a wrench for example, to rotate the glide bolt 55 so as to displace the glide 53 with respect to the glide bolt 55, as apparent to a person skilled in the art. By doing so, since the glide 53 is in an abutment relationship with the vertical post 13, one may adjust vertical displacement of the wall panel 3 with respect to the ceiling and/or ground floor by appropriately turning the glide bolt 55 with respect to the glide 53 of the glide assembly 25. Preferably, as also shown in Figure 3, the wall panel 3 comprises a base cover 71 which comprises a covering, and a cover insert 77 which is preferably removably connectable to the covering, so as to define a slit enabling sliding of the base cover 71 onto a projecting member of the floor channel 19. Preferably, suitable foam tapes are provided between the floor channel 19 and the ground in order to further provide the wall panel system 1 with light proofing, sound proofing, and vibration proofing.

Referring now to Figure 25, there is shown a partial sectional view of two panel coverings 15 mounted onto a vertical post 13 by means of vertical stiffeners 37. As shown in this figure, the outer panel coverings 15 are preferably mounted to the vertical post 13 by means of vertical stiffeners 37, which are intended to be removably mountable into corresponding grooves 33 of the vertical posts 13. As better shown in Figure 26, the vertical stiffeners 37 preferably comprise a bracket 43 which is intended to be securely affixed to the outer panel shell 35 of the panel covering 15 and further comprise a flexible clip 45 which is removably insertable into the corresponding grooves 33 shown in Figure 25. The vertical clip 45 according to the preferred embodiment shown in Figure 26 is advantageous in that it offers a circular configuration and comprises two compressible wings which enable the panel coverings 15 to be mounted onto the vertical posts 13 with a certain slack and play.

Figure 27 is a partial cross-sectional view of a wall assembly according to a preferred embodiment of the invention. Figure 27 shows two vertical posts 13

which are connected to one another by means of connectors 31. Furthermore, panel coverings 15 are mounted onto the vertical posts 13 by means of their vertical stiffeners 37. Furthermore, according to this particular embodiment of the invention, the connectors 31 are preferably devised to ensure a flush surface with the outer panel shells 35 of the panel coverings 15.

As better shown in Figure 29, the flush connector 31 which is used to connect two neighboring vertical posts 13, such as in the case of Figures 27 and 28, preferably comprises a connecting portion 89, and a covering cap 51. The connecting portion 89 is preferably made of a suitable material, such as PVC for example, and preferably comprises fins 49 which are intended to further increase gripping and mounting of the connector 31 onto the receiving lips 29 of the vertical posts 13, and to further increase sound proofing, light proofing, and vibration proofing of the wall panel system 1. The different components of the connecting portion 89 are preferably made integral to each other, that is are preferably made into one single piece from one single material. Preferably also, the covering cap 51 of the connector 31 is preferably connected to the connecting portion 89 by suitable means, as apparent to a person skilled in the art.

Figure 30 illustrates a recessed connector 31 which may be used to adjoin neighboring vertical posts 13, similarly to the connector 31 shown in Figure 29, while enabling a recessed cavity between two neighboring vertical posts 13. Indeed, it is worth mentioning here that different types of connectors 31, such as the one shown in Figures 29 and 30, may be used to provided the outer part of the wall panel system 1 with different esthetic configurations.

Figure 32 shows a preferred embodiment of a building module connector 31 allowing adjacent 90° corners to be connected in a non-progressive manner, such as in the case of Figure 31.

Figures 33 to 59 illustrate different embodiments of the components discussed hereinabove.



More particularly, Figures 33 and 34 describe embodiments used for a furniture module connection in the case of a 90° corner. A furniture module connector 31 such as the one in Figure 35, may be used. This type of connector  
5 31 preferably comprises fins 49 for ensuring proper mounting of the connector 31 onto the receiving lips 29 of the different vertical posts 13 and also preferably comprises a flexible skirt 50 to ensure light proofing, sound proofing, and to some extent, vibration proofing, as apparent to a person skilled in the art.

10 Figure 37 illustrates a double glazing gasket to be used in different possible wall assemblies, such as the one illustrated in Figure 36, which corresponds to a double glaze vertical post assembly.

Figure 38 shows another wall assembly comprising a center cap which is  
15 mounted onto the interseptum 79 of the vertical post 13 to provide a smooth finish between two glass panels 3 of a double glaze condition wall panel 3.

A single glazing gasket such as the one shown in Figure 40 may be used  
20 for a glass panel 3 such as the one illustrated in Figure 2.

Figure 41 illustrates a two-way square profile of a furniture module according to a preferred embodiment of the invention. Figure 42 illustrates a 180° post furniture module according to a preferred embodiment of the invention. Figure 43 illustrates a half-round two-way post corner furniture module according  
25 to a preferred embodiment of the invention. Figures 44 and 45 illustrate respectively three-way corner and four-way corner furniture modules.

Figures 46 to 59 illustrate different cross-sectional embodiments of the above-discussed various components of the wall panel system 1 according to the  
30 present invention. Indeed, Figure 46 illustrates a glass vertical post 13. Figure 47 shows a vertical post 13 mounted with a weatherstrip holder 91. Figure 48 illustrates a solid panel vertical post 13. Figure 49 illustrates a corner profile

building module. Figure 50 illustrates a 135° corner post 13. Figure 51 illustrates a glass-glass transition distance channel 9, 11 comprising a connecting stud 21. Figure 52 illustrates a glass-solid transition distance channel 9, 11. Figure 53 illustrates a double glaze distance channel 9, 11. Figure 54 illustrates another double glaze distance channel 9, 11. Figure 55 illustrates a top-bottom distance channel 9, 11 of a glass panel 3. Figure 56 illustrates a top-bottom distance channel 9, 11 of a solid panel 3. Figure 57 illustrates a double glass transition channel 9, 11. Figure 58 illustrates an inner telescopic channel 9, 11 of a wall post 13. Figure 59 illustrates the wall post 13 of Figure 58 cooperating with different components of the panel system 1.

Referring now to Figure 60, there is shown an exploded view of a door assembly 87 according to a preferred embodiment of the invention. Similarly to the wall panels 3 of the wall panel system 1 according to the present invention as explained hereinabove, the door assembly 87 comprises vertical posts 13 and a top distance channel 9. The door assembly 87 preferably further comprises left and right center strikes 93, suitable bumpers 95, a top door pivot 97, a bottom door pivot 99, a bottom pivot plate 101, and a bottom pivot base 103. As better shown in Figure 61 and 62, the center strikes 93 are preferably mounted to the vertical posts 13 by means of projecting members which are removably insertable into the intersepta 79 of the vertical posts 13, as better shown in Figure 62. The center strikes 93 preferably also each comprise an interseptum 79 onto which may be removably mounted a door bumper 95, such as the one shown in Figure 63, or other components explained herein and illustrated in the accompanying drawings.

Other suitable door strikes 93 and other embodiments of such, may be used, such as the one shown in Figure 64. The bottom pivot plate 101 is preferably inserted into a corresponding recessed cavity of the door 105 and is operatively connected by means of the bottom pivot 99 to the bottom pivot plate 101 which, similarly to the glide 53, comprises corresponding tongues 69 which are removably insertable into the receiving channels 33 of the vertical posts 13.

As better shown in Figure 65, the bottom pivot base 103 preferably comprises an abutment flange 57 having a hole into which a suitable fastener is inserted to connect the pivot base 103 onto the ground floor. The abutment flange 57 of the pivot base 103 is operatively connected to the door 105 by means of the bottom pivot 99 and other suitable connecting means, as apparent to a person skilled in the art.

Figure 66 illustrates a preferred embodiment of the top pivot bushing 107 as used in the door assembly 87 of Figure 60.

Figure 67 illustrates an opening filler strip 109 which may be used to close up the interseptum 79 of the vertical post 13 of the door assembly shown in Figure 60.

Figure 68 is a perspective view of an assembled wall panel system 1 according to a preferred embodiment of the invention, the assembled wall panel system 1 being shown with glass panels 3 and a door assembly 87.

As may now be appreciated, the wall panel system 1 according to the present invention is an improvement over the prior art in that it provides variable sized, pre-fabricated panels 3 available in both furniture and building module, ceiling height (either flush or recessed base and ceiling conditions), clear story and/or free standing options. Furthermore, the present invention is an improvement over the prior art in that the wall thickness of a wall panel 3 is preferably 3 1/2" thus allowing for superior sound rating, as well as passthrough components, i.e. electrical wires, communication and network cables, air conditioning, fiber optic cables, and the like. The present invention is also advantageous in that the outer panel shells 35 are removable by means of specially designed connecting strips, i.e. connectors 31. These connecting strips and the shells 35 are designed in such a way as to achieve on sight demountability. Moreover, they allow for field installation of electrical, communication and fiber optic wires. According to the present invention, the wall

panel system 1 is also advantageous in that the adjustability at the ceiling is preferably  $\pm 1$ ". As explained hereinabove, the present invention is also advantageous in that the panels 3 are stackable onto one another. Indeed, the unique splice connector, i.e. flyover 81, allows panels 3 to be stacked on top of each other, thereby allowing the stacked panels 3 to exceed a preferred 120" in height. Furthermore, the panel wall system 1 according to the present invention is also advantageous in that the panel-to-panel connectors 31 gives both the ability to adjust for "panel creep" and, using the flush version, allows the system 1 to be used in "clean room" and fire-rated corridor environments. As explained hereinabove, the vertical and horizontal shapes of the wall panel system 1 are designed so that it can accommodate both single or double glazing, and a variety of blinds and privacy screens. Furthermore, the unique design of the lower glide assembly 25 allows for an adjustability of over a preferred 3". Moreover, the panels 3 may be attached to drywalls by means of a telescopic wall connector 31, as shown in the accompanying drawings. Furthermore, the specially designed glazing posts 13 allow for electrical and communication wiring to be housed inside these posts 13. Additionally, the outer panel shells 35 according to the present invention may be manufactured from a variety of materials, i.e. steel, wood, gypsum, plastic, fiberglass, etc., in a variety of finishes (fabric, vinyl, veneer, paint, laminates, for example). Furthermore, the wall panel system 1 according to the present invention is also advantageous in that it has the capacity to allow for pocket doors, pivot doors, and hinged doors. Furthermore, according to the present invention, there is a minimal number of "loose" components on the job site which allows for an easy and clean installation. Moreover, as explained hereinabove, the present invention is also advantageous in that it also allows for hanging componentry, i.e. worksurfaces, light accessories, and the like.

Of course, numerous modifications can be made to the above-described embodiments without departing from the scope of the invention as described in the appended claims.

**What is claimed is:**

## CLAIMS:

- 5 *Sub* 1. A moveable and demountable wall panel system comprising a plurality of panels used for defining an office space, each panel having a vertical axis and a horizontal axis, each panel comprising:
- opposite top and bottom distance channels, the distance channels extending along directions substantially parallel to the horizontal axis of the panel;
- opposite left and right vertical posts, the vertical posts extending along directions substantially parallel to the vertical axis of the panel, the distance channels and vertical posts being affixed to one another by means of connecting studs for forming a rectangular support frame of the panel;
- 10 a panel covering removably mountable onto receiving means of the rectangular support frame;
- a ceiling rail operatively connected to a top portion of the rectangular support frame, the ceiling rail being used for operatively securing the rectangular support frame of the panel to a ceiling surface; and
- 15 an articulating floor channel operatively connected to a bottom portion of the rectangular support frame by means of left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively,
- 20 the articulating floor channel being used for operatively securing the rectangular support frame of the panel to a ground surface, the glide assemblies being further used for displacing the rectangular support frame with respect to the floor channel along a direction substantially parallel to the vertical axis of the panel;
- wherein each vertical post comprises at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel, each receiving lip being removably connectable to another receiving lip of a vertical post of a neighboring panel by means of a connector for selectively and removably connecting together a plurality of panels in order to define said office space.
- 25
- 30
2. A moveable and demountable wall panel system according to claim 1, wherein the receiving means comprise receiving grooves disposed along the

FOOTNOTES

vertical posts in a direction substantially parallel to the vertical axis of the panel and wherein the panel covering comprises an outer panel shell and vertical stiffeners, the vertical stiffeners being securely affixed to lateral sides of the outer panel shell of the panel covering and being removably connectable onto the receiving grooves of the vertical posts for removably connecting the panel covering onto the rectangular support frame of the panel.

3. A moveable and demountable wall panel system according to claim 1, wherein the receiving means comprise a receiving groove disposed along the top distance channel in a direction substantially parallel to the horizontal axis of the panel and wherein the panel covering comprises an outer panel shell and a top stiffener, the top stiffener being securely affixed to a lateral side of the outer panel shell of the panel covering and being removably hookable onto the receiving groove of the top distance channel for removably hooking the panel covering onto the rectangular support frame of the panel.

4. A moveable and demountable wall panel system according to claim 3, wherein the vertical stiffeners each comprise a bracket and a flexible clip securely affixed onto one another, the brackets being further securely affixed to the lateral sides of the outer panel shell of the panel covering and the flexible clips being removably connectable into the receiving grooves of the vertical posts.

5. A moveable and demountable wall panel system according to claim 1, wherein the panel covering comprises an outer panel shell and intermediate stiffeners, the intermediate stiffeners being securely affixed transversely onto the outer panel shell of the panel covering in a direction substantially parallel to the horizontal axis of the panel.

6. A moveable and demountable wall panel system according to claim 1, wherein the connectors comprise fins.

7. A moveable and demountable wall panel system according to claim 1, wherein the connectors are provided with covering caps.

5 8. A moveable and demountable wall panel system according to claim 1, wherein the connectors comprise flexible skirts.

9. A moveable and demountable wall panel system according to claim 1, wherein the floor channel is securely affixed to the ground surface by means of fasteners, and wherein the ceiling rail is securely affixed to the ceiling surface by means of fasteners.

10 10. A moveable and demountable wall panel system according to claim 1, wherein each glide assembly comprises:

15 a substantially L-shaped glide, said glide having an abutment flange and an insert, the insert being removably insertable into a receiving channel of a corresponding vertical post; and

20 a glide bolt, said glide bolt being threadedly mounted into the abutment flange of the glide and having a pivot head articulately mounted to the floor channel by means of a rivet.

25 11. A moveable and demountable wall panel system according to claim 9, wherein the pivot head of the glide bolt is positioned inside a longitudinal groove of the floor channel, and wherein the rivet of the pivot head is constrained to slide along a transversal slot of the longitudinal groove of the floor channel.

12. A moveable and demountable wall panel system according to claim 9, wherein the insert of the glide comprises two tongues removably mountable into respective receiving channels of a corresponding vertical post.

30 13. A moveable and demountable wall panel system according to claim 1, wherein the wall panel system further comprises a base cover.

cont. a1

FOR "SECRET"



14. A moveable and demountable wall panel system according to claim 13, wherein the base cover comprises a base cover insert for mounting the base cover onto the floor channel of the panel.

5 15. A moveable and demountable wall panel system according to claim 1, wherein at least two connecting studs are respectively and securely affixed at opposite ends of each of the top and bottom distance channels.

10 16. A moveable and demountable wall panel system according to claim 1, wherein each distance channel and each vertical post comprise at least one interseptum, and wherein accessories of the panel system are removably mounted onto said intersepta.

15 17. A moveable and demountable wall panel system according to claim 1, wherein each panel is stackable onto another panel by means of stackable flyovers inserted and fastened into the receiving channels of the vertical posts of said stacked panels.

20 18. A moveable and demountable wall panel system according to claim 17, wherein the stackable flyovers comprise interference ribs.

25 19. A moveable and demountable wall panel system according to claim 1, wherein the vertical posts comprise punched marks extending longitudinally along said vertical posts, said punched marks being used for hooking accessories onto said vertical posts of the panel system.

30 20. A moveable and demountable wall panel system according to claim 1, wherein the system further comprises a door assembly.

30

CMF  
"FOR THE" "FOR THE" "FOR THE"


ABSTRACT

5 A moveable and demountable wall panel system including a plurality of panels <sup>each having</sup> ~~used for defining an office space.~~ Each panel has opposite top and bottom distance channels, opposite left and right vertical posts, a panel covering, a ceiling rail, and an articulating floor channel. ~~The top and bottom distance channels extend along a direction substantially parallel to a horizontal axis of the panel.~~ The left and right vertical posts extend along a direction substantially parallel to a vertical axis of the panel. The distance channels and vertical posts are affixed to one another by ~~means of~~ connecting studs in order to form a rectangular support frame of the panel. ~~The panel covering is removably mountable onto receiving means of the rectangular support frame. The ceiling rail is operatively connected to a top portion of the rectangular support frame and is~~

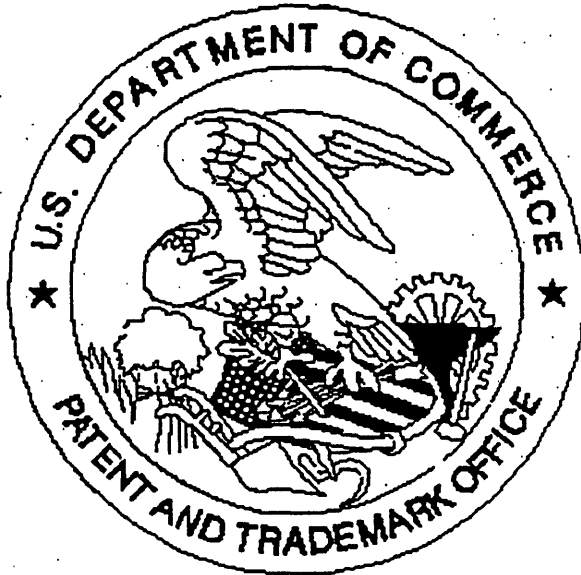
10 ~~used for operatively securing the rectangular support frame of the panel to a ceiling surface.~~ The articulating floor channel is operatively connected to a bottom portion of the rectangular support frame by ~~means of~~ left and right glide assemblies mounted into receiving channels of the left and right vertical posts respectively. The articulating floor channel is used for operatively securing the rectangular support frame of the panel to a ground surface. ~~The glide assemblies are also used for displacing the rectangular support frame with respect to the floor channel along a direction substantially parallel to the vertical axis of the panel.~~ Each vertical post has at least one receiving lip extending along a direction substantially parallel to the vertical axis of the panel. ~~Each receiving lip is~~

15 ~~removable connectable to another receiving lip of a vertical post of a neighboring panel by means of a connector for selectively and removably connecting together a plurality of panels in order to define the office space. By virtue of its design and its components, the present wall panel system is a moveable non-progressive mountable and demountable wall panel system.~~

30

"Express Mail" mailing label number EV 037644953 US  
 Date of Deposit 12-21-01  
 I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37CFR 1.10 on the date indicated above and is addressed to:  
 Assistant Commissioner for Patents, Washington, D.C. 20231.  
Chris Sturdahl  
 (Printed Name)  
  
 (Signature)

United States Patent & Trademark Office  
Office of Initial Patent Examination -- Scanning Division



Application deficiencies found during scanning:

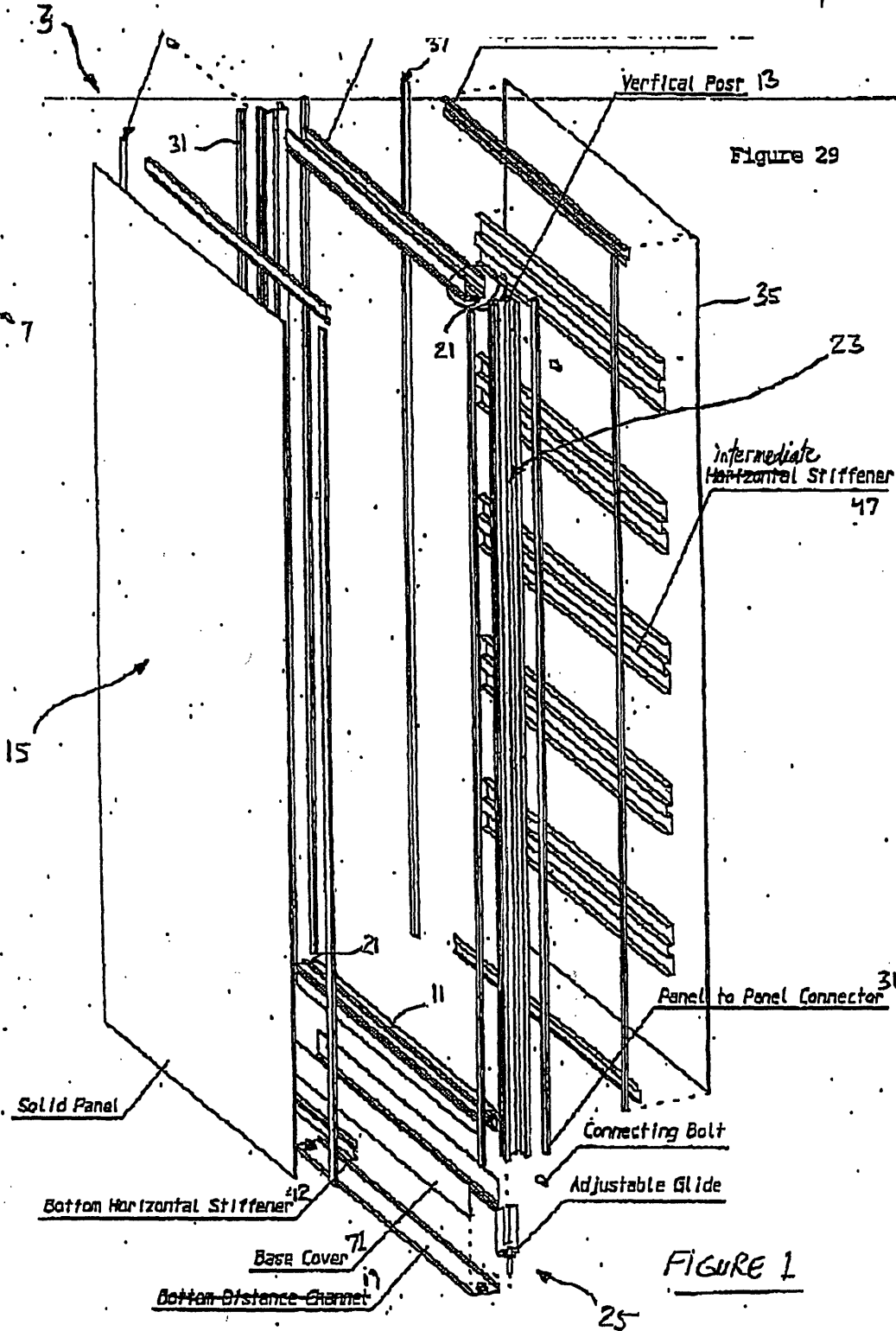
Page(s) \_\_\_\_\_ of \_\_\_\_\_ were not present  
for scanning. (Document title)

Page(s) \_\_\_\_\_ of \_\_\_\_\_ were not present  
for scanning. (Document title)

Scanned copy is best available. Fig. 21. 60- are too dark

FOIEU 2007-08-07

160



100272001

<b>EDERHARD VON HUENE &amp; ASSOCIATES</b> 244, Allee Vincent (Nantes, France)	<b>TITLE</b> · Genius Wall System Solid Panel · Exploded View	<b>Drawn by</b> JACRE	<b>Approved by</b> DATE Nov 12 2001
	This drawing is the exclusive property of Ederhard von Huene & Associates Inc. All production or revision of this drawing is made in cart.		

Expédit: Leger Robic R:

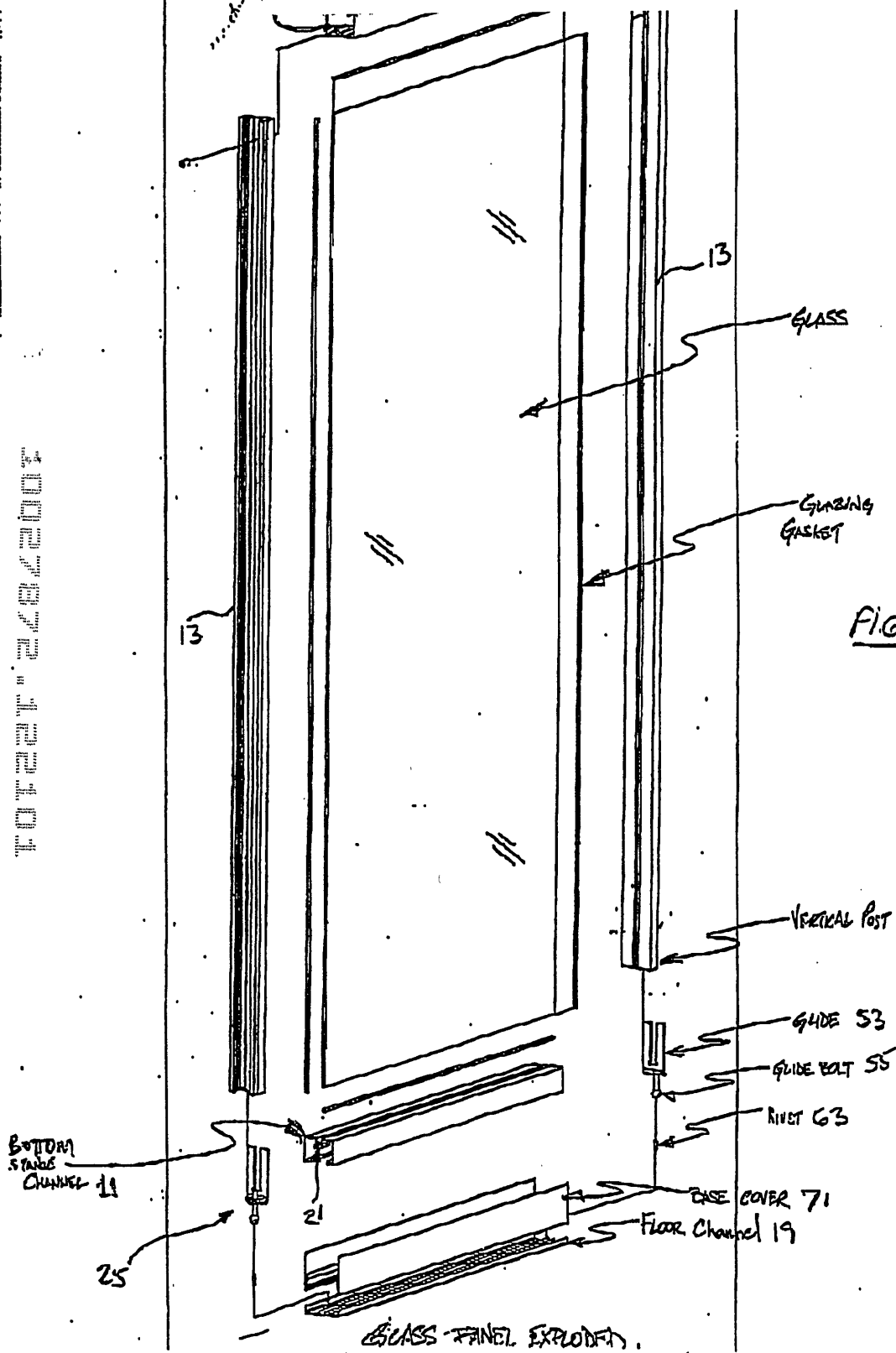
Inventor: VON HOYNINGEN HUENE et al.  
Docket No.: 9680.190US01  
Title: MOUNTABLE AND DEMOUNTABLE WALL PANEL SYSTEM  
Attorney: Gregory A. Sebald  
Phone No.: 336.4728  
Sheet 2 of 60

EXHIBIT #919; Page 40/98

2/60

DRAWING

FOR REFERENCE



Expédit: Leger Robic Richa

Inventor: VON HOYNINGEN HUENE et al.  
Docket No.: 9680.190US01  
TITLE: MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM  
Attorney Name: Gregory A. Sebald  
Phone No.: 612.336.4728  
Sheet 3 of 60

#919; Page 41/98

1/60

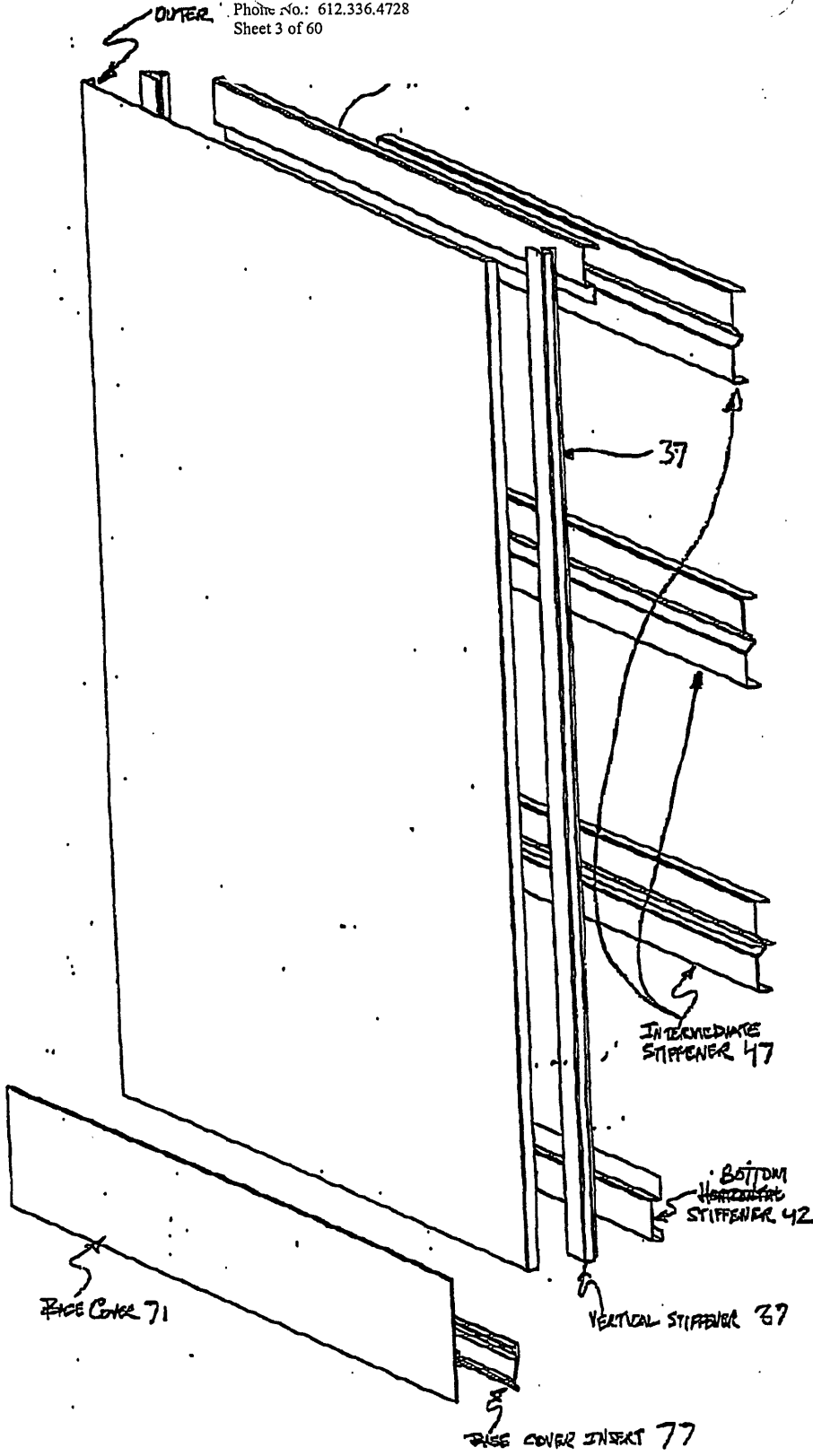


FIGURE 3

3/60

FOR REFERENCE

4/60

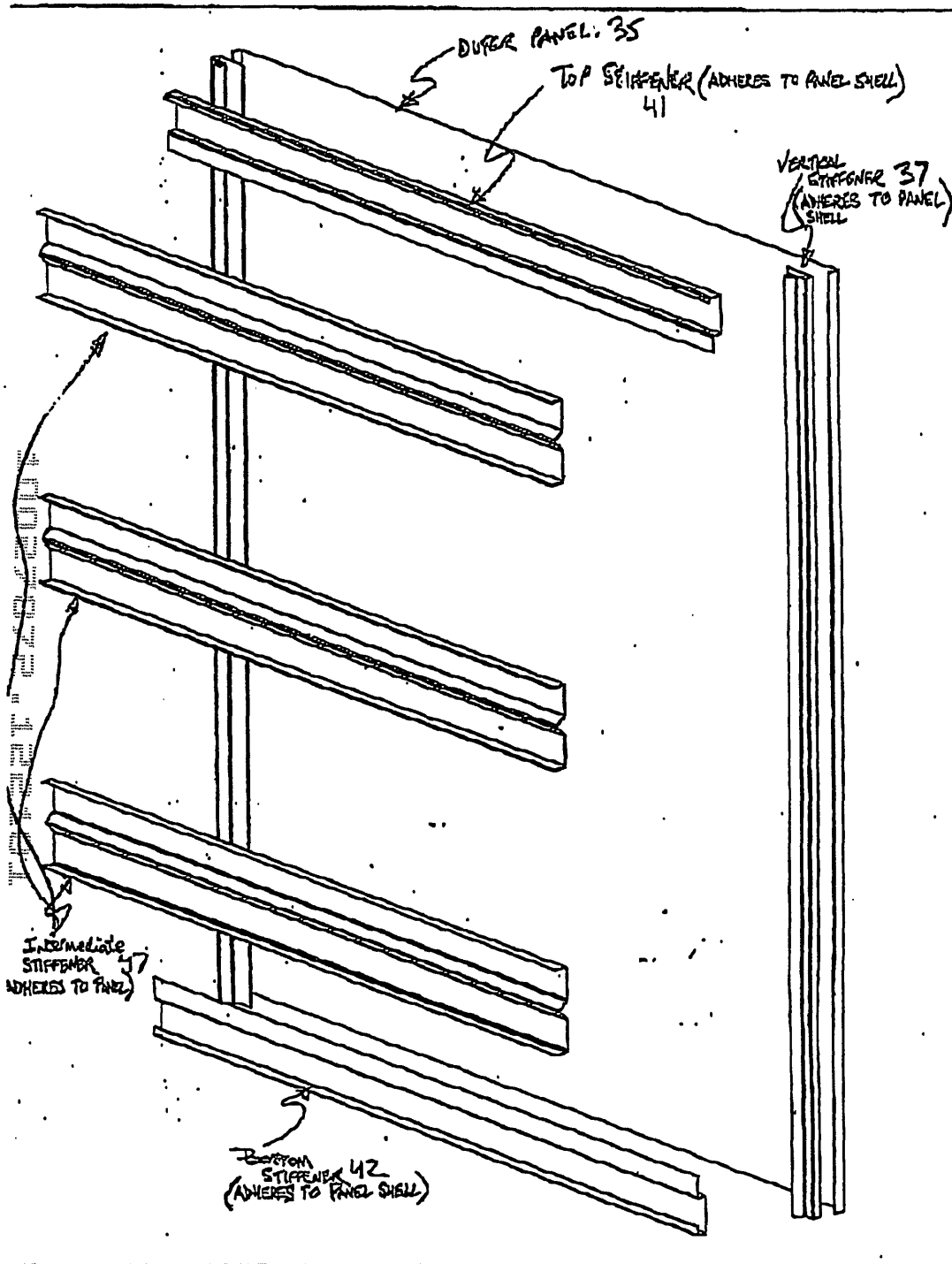
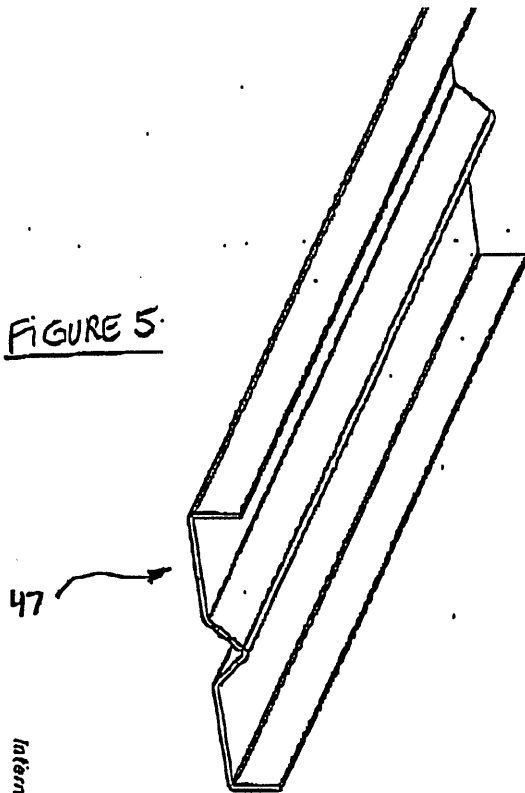


FIGURE 4

Outer Panel Construction

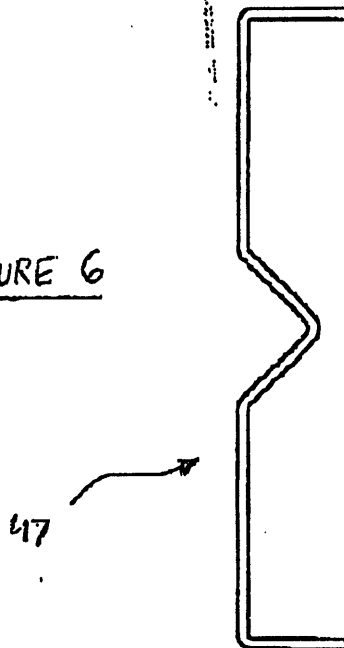
FFF  
5/60

FIGURE 5



*Intermediate Stiffener Profile  
Solid Panel Shell*

FIGURE 6



10027872 439404



Expédit: Leger Rob1

Inventor: VON HOYNINGEN HUENE et al.  
Docket No.: 9680.190US01  
Title: MOVABLE AND DEMOUNTABLE WALL PANEL SYSTEM  
Attorney Name: [Redacted] A. Sebald  
Phone No.: 612-4728  
Sheet 6 of 60

JetFax #919; Page 44/98

6/60

DRAWING V

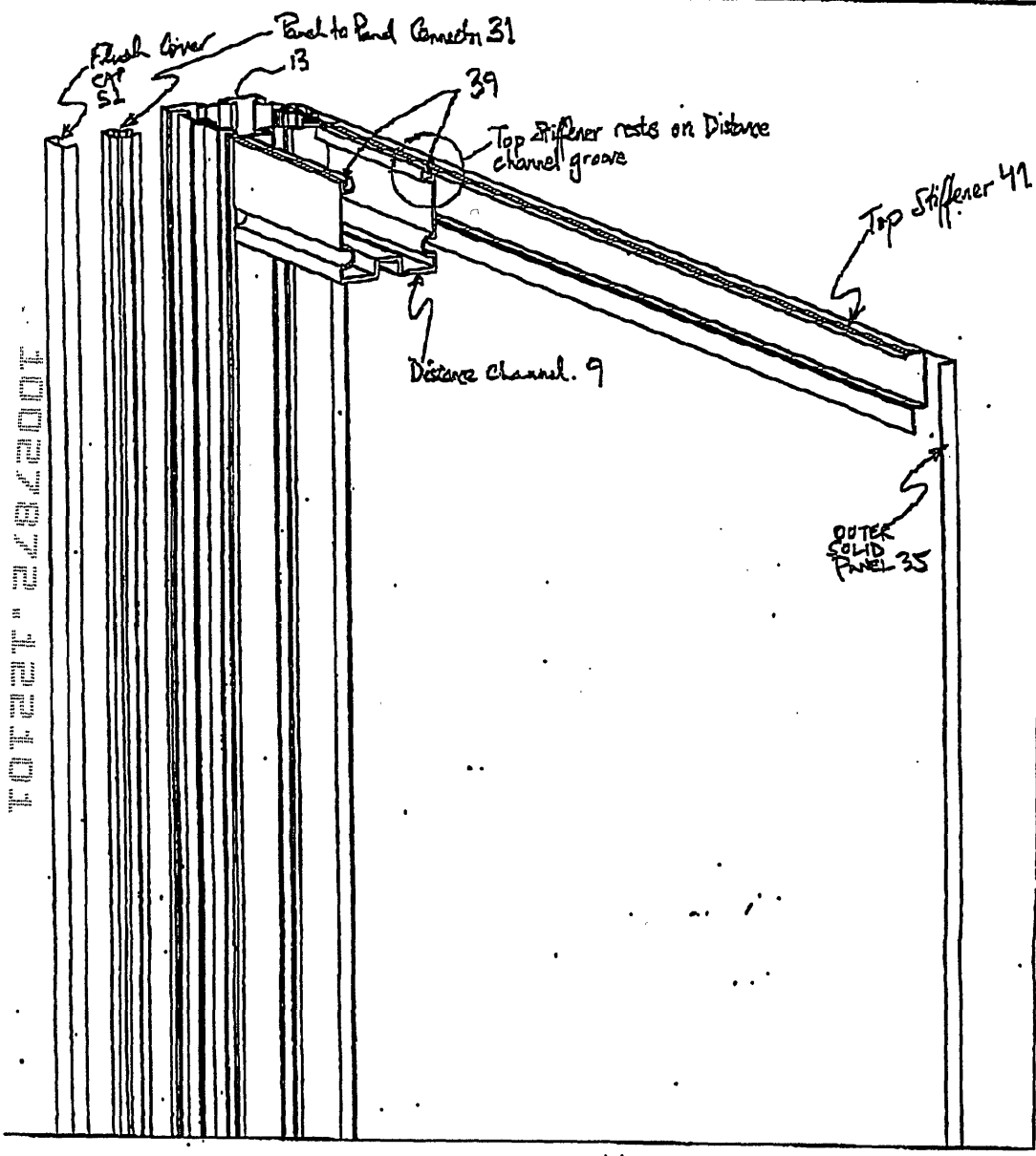


FIGURE 7

TOP connection  
A finish panel.

TOP LEFT CORNER

FOR "SECRET"

Expedit: Leger Robic Richar Inventor: VON HOYNINGEN HUENE et al.  
Docket No.: 9680.190US01  
TITLE: MOVEABLE AND DEMOUNTABLE WALL PANEL SYSTEM  
Attorney Name: Gregory A. Sebald  
Phone No.: 612.336.4728  
Sheet 7 of 60

#919;Page 45/98

7/60

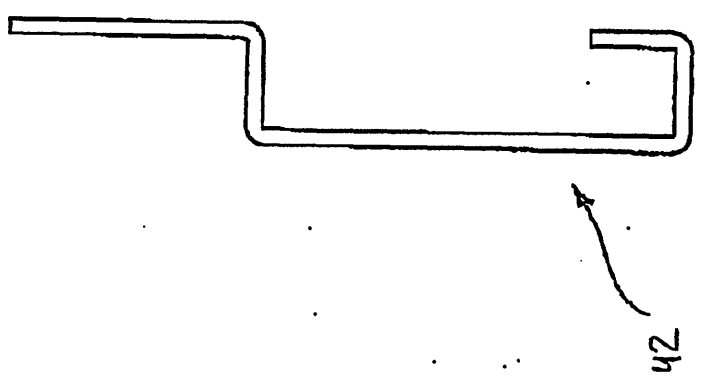


FIGURE 9

Bottom Stiffener

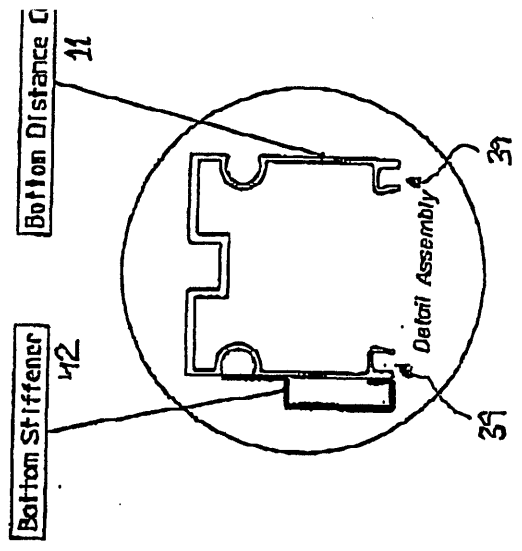


FIGURE 8

999

8/60

FOOT 282200F

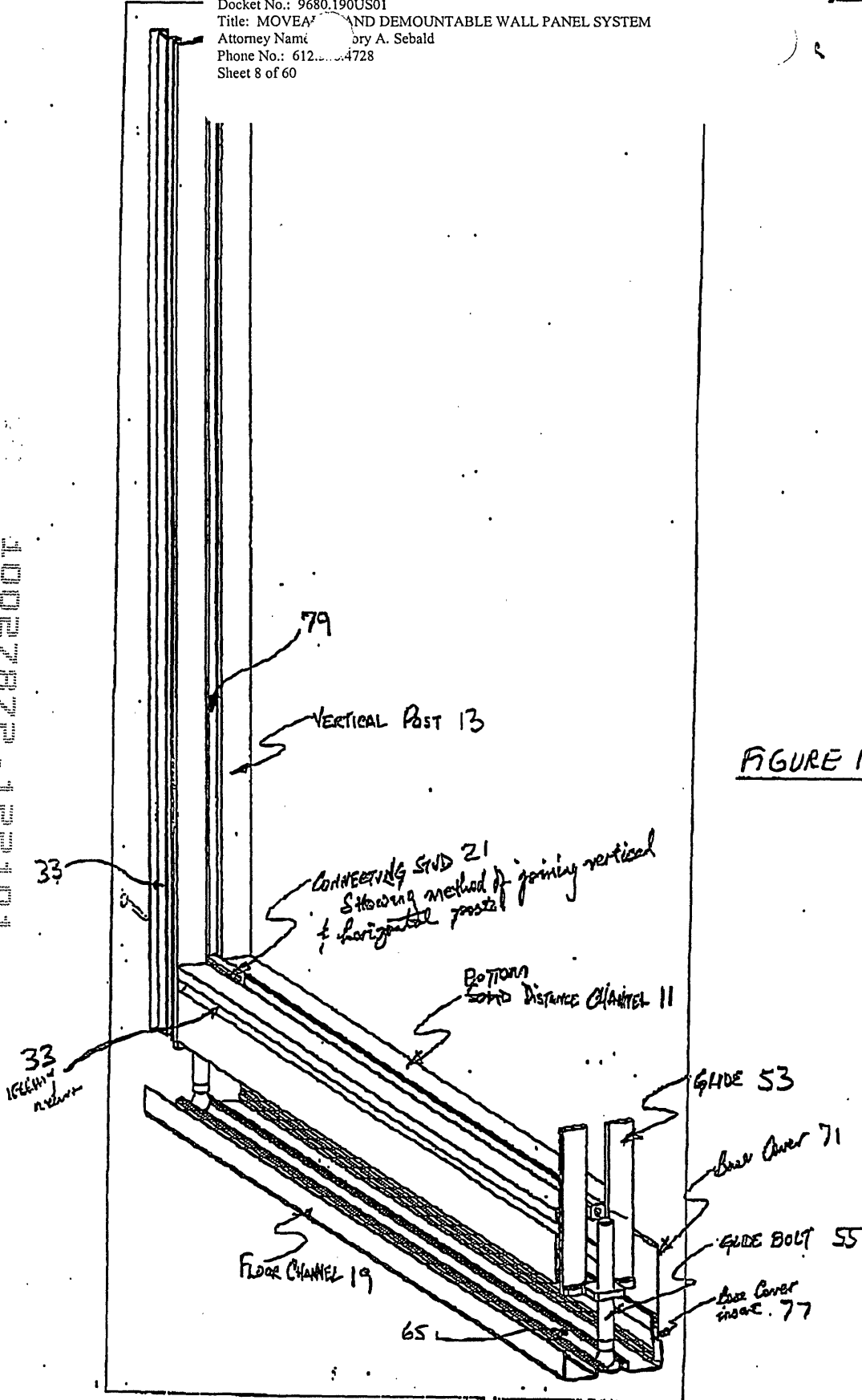


FIGURE 10

DRAWING 88

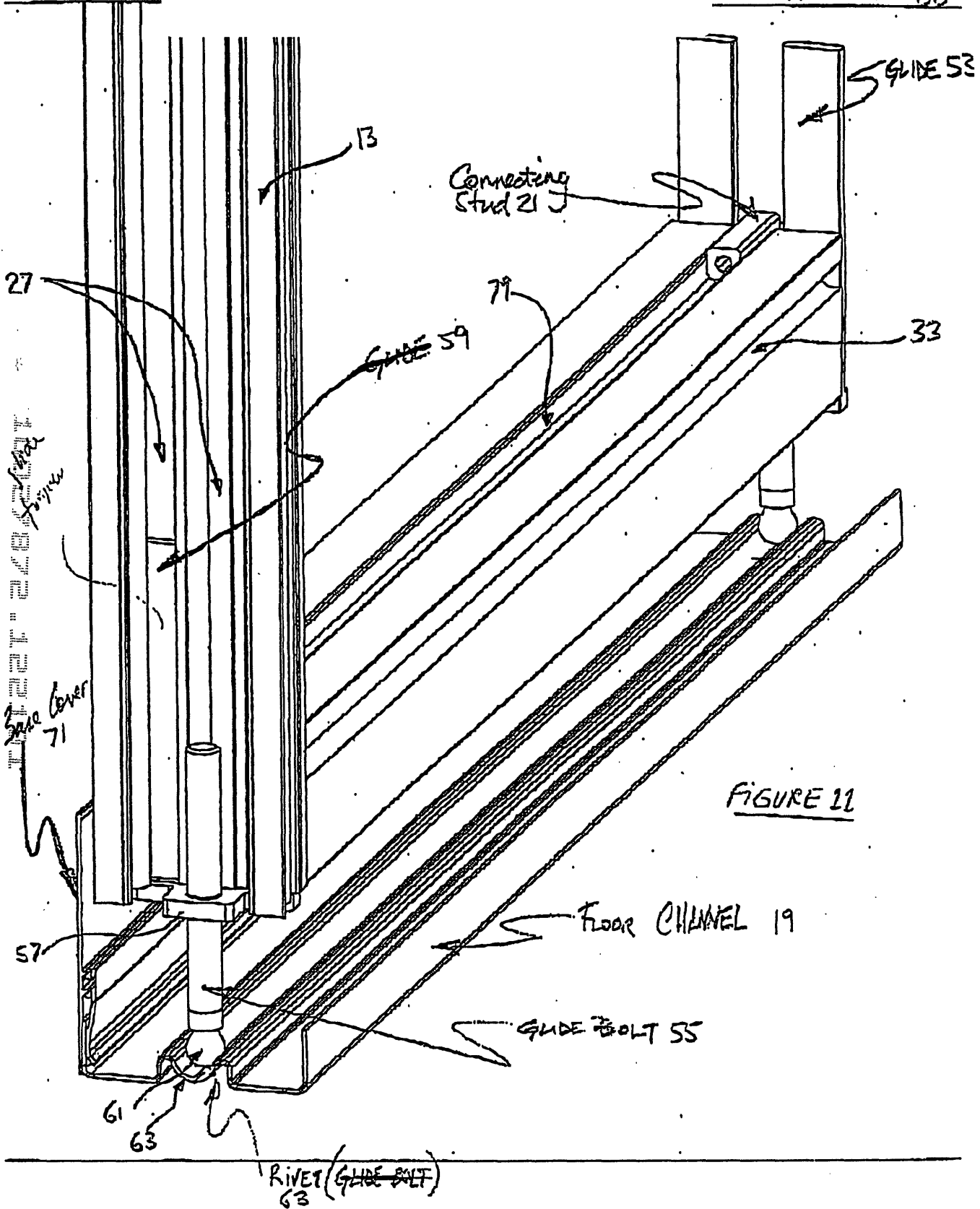
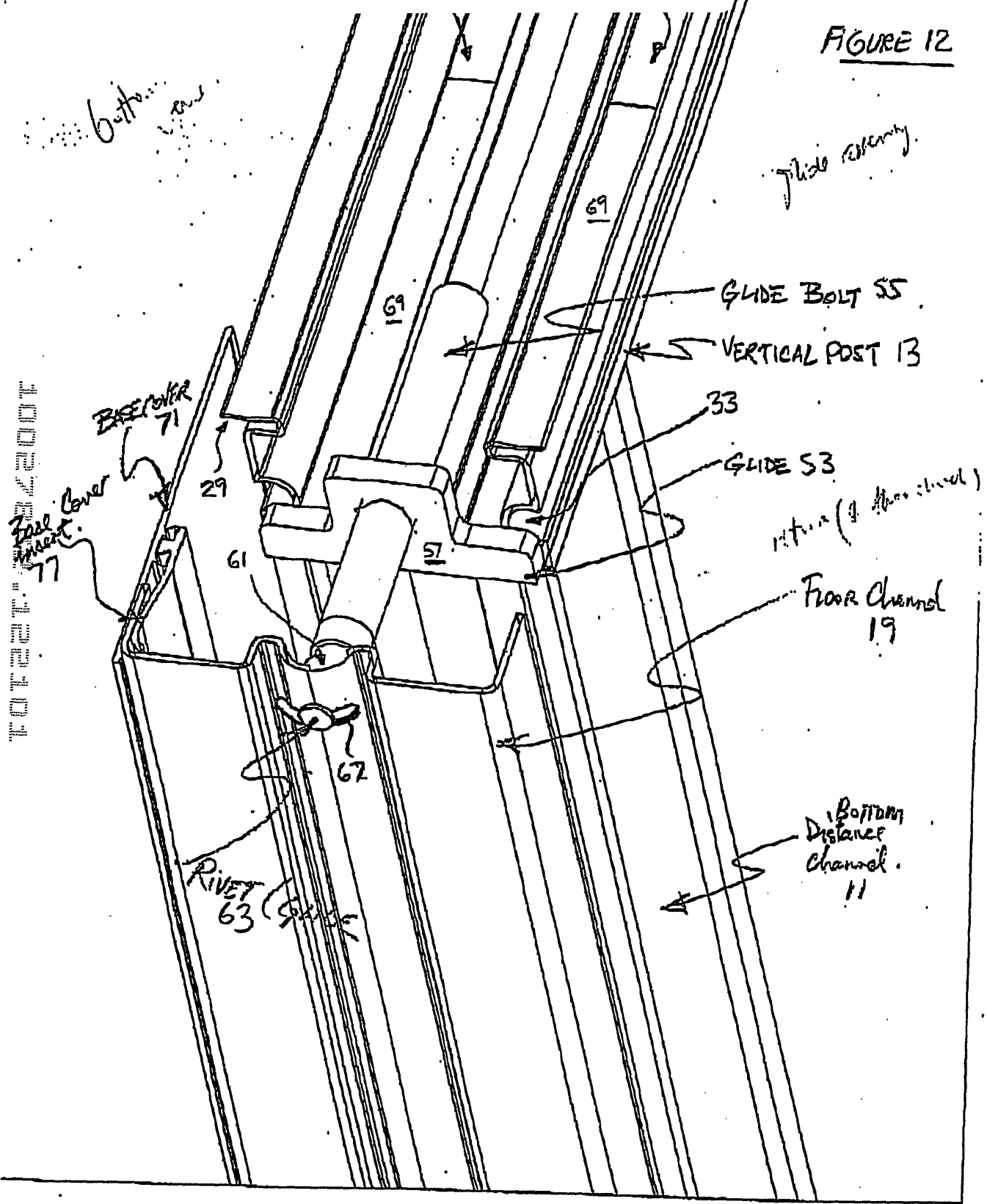


FIGURE 11

FIGURE 12



FOR SETTING