IW 7546480

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

September 17, 2015

THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS OF:

APPLICATION NUMBER: *09/445,046*
FILING DATE: *February 18, 2000*
PATENT NUMBER: *6,973,698*
ISSUE DATE: *December 13, 2005*

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office

R GLOVER
Certifying Officer

SEARCHED

Class	Sub.	Date	Exmr.
015	250.43 250.44 250.361 250.451 250.48	12.17.00	GhG
015	above updated	7.26.01	GhG
Above updated	—	2.27.02	GhG
Above updated	—	8.9.05	GhG

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
015	250.43 250.451	8.9.05	GhG

SEARCH NOTES
(INCLUDING SEARCH STRATEGY)

	Date	Exmr.
Appeal conference G. Graham R. Warden G. Brouillette	2.27.02	GhG

(RIGHT OUTSIDE)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION			
O.I.P.E. CLASSIFIER		25	12-14-99
FORMALITY REVIEW			
RESPONSE FORMALITY REVIEW			

INDEX OF CLAIMS

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

Claim Final	Claim Original	Date			
		12 27 98	7 26 01	3 7 02	7 26 05
	1	✓			
	2	✓			
	3	✓			
	4	✓			
	5		✓	A	
	6				
	7				
	8				
	9				
	10				
	11				
	12				A
	13				
	14		✓	A	
I	15				=
	16				
	17				
	18				
	19				
	20				
	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	Claim 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	Claim 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 10 actions staple additional sheet here

(LEFT INSIDE)

FORM PTO-1390 (Modified) (REV 10-95) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: 989

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR): 09/445046

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/DE 98/03721	DECEMBER 18, 1998	APRIL 1, 1998

TITLE OF INVENTION
WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

APPLICANT(S) FOR DO/EO/US
Thomas KOTLARSKI

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ A copy of the International Search Report (PCT/ISA/210).
8. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
    A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☒ Certificate of Mailing by Express Mail
19. ☐ Other items or information:

EK 069304987 US

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
09/445048	PCT/DE 98/03721	989

20. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐ Search Report has been prepared by the EPO or JPO	$930.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482)	$720.00	
☐ No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))	$790.00	
☒ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO	$1,070.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	$98.00	

ENTER APPROPRIATE BASIC FEE AMOUNT =	$970.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	$0.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	4 - 20 =	0	x $22.00	$0.00	
Independent claims	1 - 3 =	0	x $80.00	$0.00	
Multiple Dependent Claims **(check if applicable)**.			☐	$0.00	
TOTAL OF ABOVE CALCULATIONS =				$970.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable)**.			☐	$0.00	
SUBTOTAL =				$970.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).			+	$0.00	
TOTAL NATIONAL FEE =				$970.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).**			☐	$0.00	
TOTAL FEES ENCLOSED =				$970.00	
				Amount to be: refunded	$
				charged	$

☒ A check in the amount of **$970.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. in the amount of to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4675** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NEW YORK 11743

SIGNATURE

MICHAEL J. STRIKER
NAME

27233
REGISTRATION NUMBER

DECEMBER 1, 1999
DATE

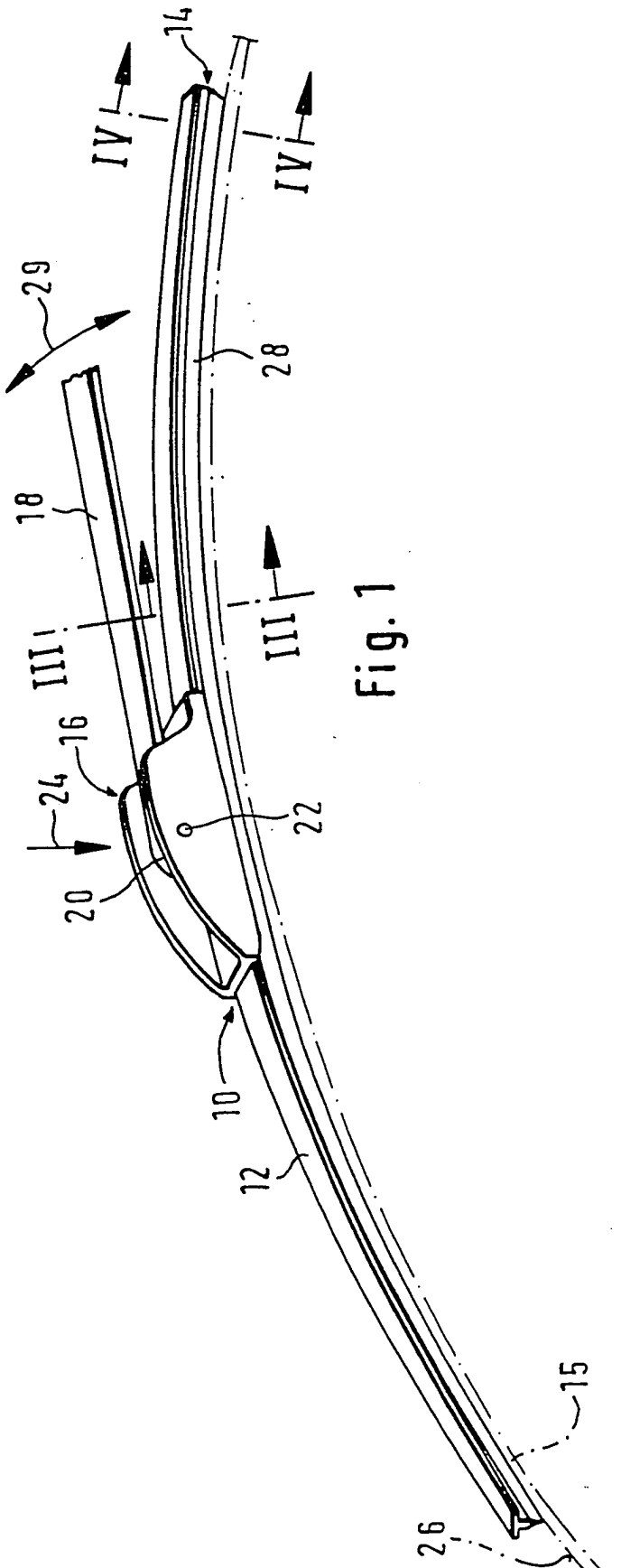


Fig. 1

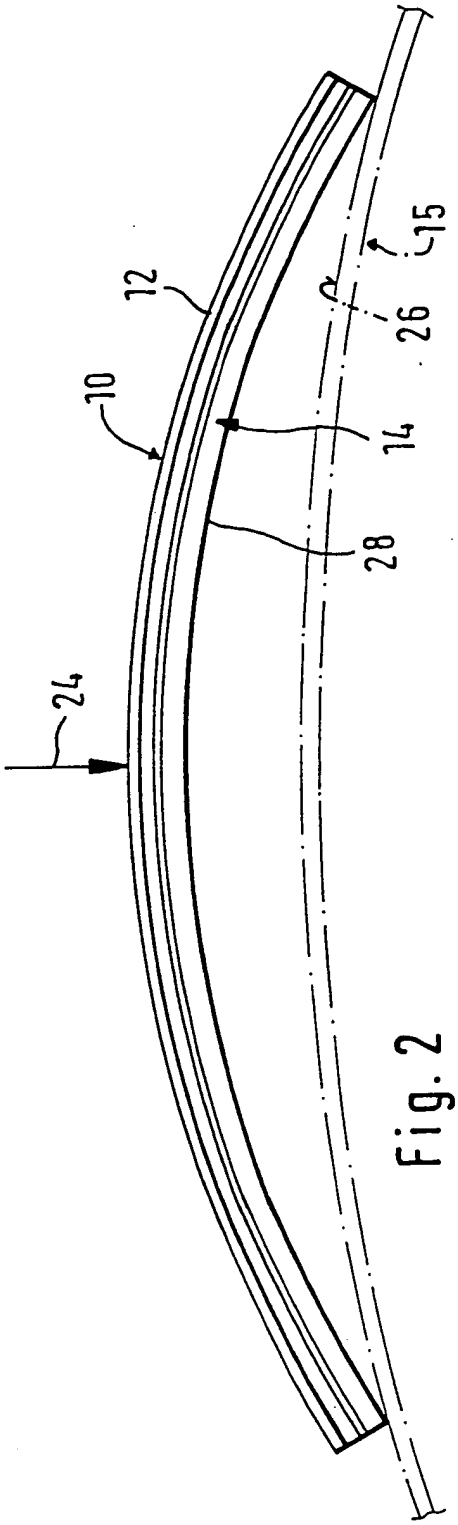


Fig. 2

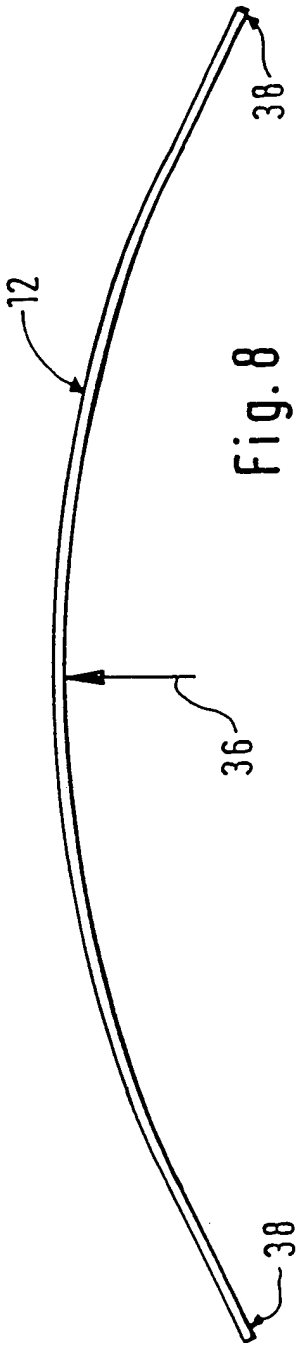


Fig. 8

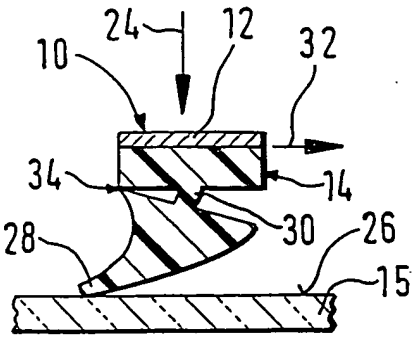


Fig. 3

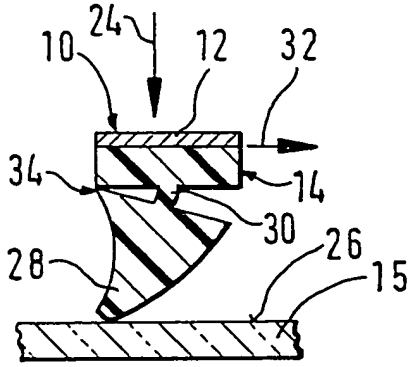


Fig. 4

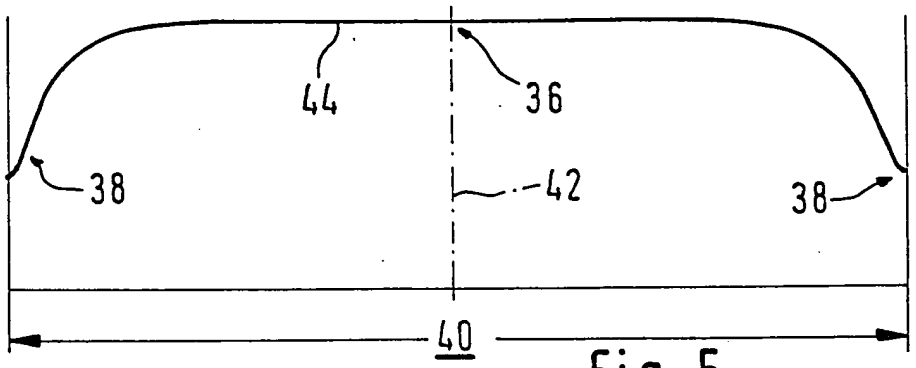


Fig. 5

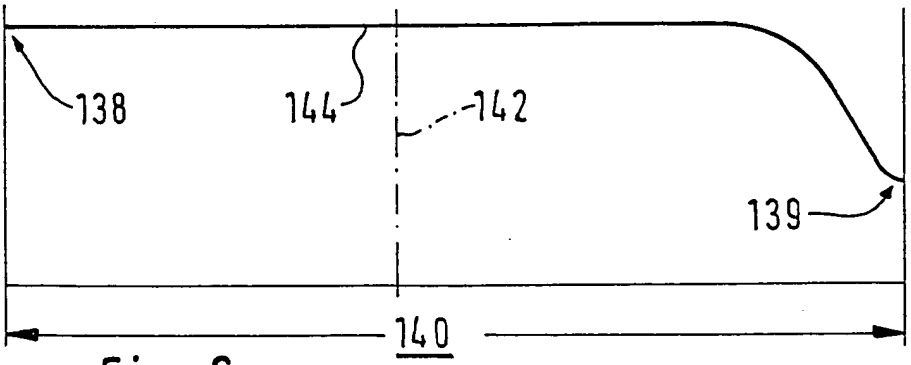


Fig. 6

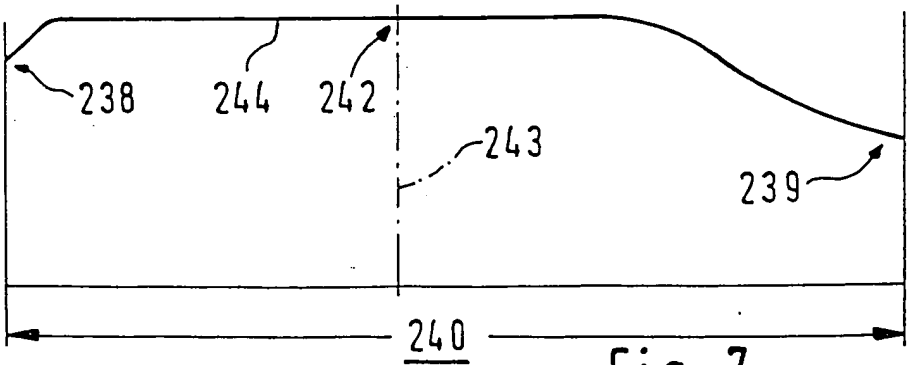


Fig. 7

PATENT APPLICATION FEE DETERMINATION RECORD
Effective November 10, 1998

Application or Docket Number
09/445046

CLAIMS AS FILED - PART I

	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA
FOR		
BASIC FEE		
TOTAL CLAIMS	4 minus 20=	*
INDEPENDENT CLAIMS	1 minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐ RATE	FEE	OR	OTHER THAN SMALL ENTITY RATE	FEE
	380.00	OR		760.00
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL		OR	TOTAL	760.00

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X39=		OR	X78=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
***If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Claims

1. A wiper blade (10) for windows (15) of motor vehicles, which can be moved back and forth across the window lateral to its longitudinal span by a driven wiper arm (18), which can be connected to it and loads it in relation to the window, and the wiper blade has an elongated wiper strip (14) that can be placed against the window, on whose side remote from the window, an elongated, spring-elastic carrying element (12) is disposed, which has connecting means (16) for the wiper arm and is disposed parallel to the longitudinal axis in order to distribute the contact force (arrow 24) over the entire wiper strip length (40), characterized in that the contact force (arrow 24) of the wiper strip (14) against the window (15) is greater in its center section (36) than in at least one of its two end sections (38 or 138, 139 or 238, 239).

2. The wiper blade according to claim 1, characterized in that the contact force (arrow 24) of the wiper strip (14) against the window (15) is lower at its two end sections (38) than in its center section (36).

3. The wiper blade according to ~~one of claims 1 or 2,~~ Claim 1 characterized in that contact force (arrow 24) of the wiper strip (14) against the window (15) is at least almost of uniform magnitude in its center section (36) and decreases at the end section(s).

4. The wiper blade according to ~~one of claims 1 to 3,~~ Claim 1 characterized in that on its side oriented toward the window (15), the carrying element (12) has a concave curvature that is sharper than the sharpest curvature of the spherically curved

window (15) in the region of the wiping field that can be swept across by the wiper blade (10) and that the concave curvature in the center section (36) of the carrying element (12) is sharper than in its end section(s) (38).

Abstract

A wiper blade is proposed, which is used for cleaning windows of motor vehicles. The wiper blade (10) can be moved back and forth lateral to its longitudinal span by a driven wiper arm (18), which can be connected to it and loads it in relation to the window (15), and the wiper blade has an elongated wiper strip (14) that can be placed against the window, on whose side remote from the window, an elongated, spring-elastic carrying element (12) is disposed, which has connecting means (16) for the wiper arm (18) and is disposed parallel to the longitudinal axis in order to distribute the contact force over the entire wiper strip length. A particularly effective and low-noise operation of the wiper system is achieved if the contact force (arrow 24) of the wiper strip (14) against the window (15) is greater in its center section than in at least one of its two end sections (38 or 138, 139 or 238, 239).

DECLARATION AND POWER OF ATTORNEY FOR NATIONAL STAGE OF PCT PATENT APPLICATION

As a below-named inventor, I hereby declare that:

Thomas KOTLARSKI

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES** specification of which was filed as PCT International Application number PCT/DE 98/03721 on December 18, 1998.

I hereby state that I believe the named inventor or inventors in this Declaration to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior foreign application(s):			Priority claimed:	
198 14 610.8	DE	APRIL 1, 1998	X	
(Number)	(Country)	(Date filed)	Yes	No
(Number)	(Country)	(Date filed)	Yes	No

As a named inventor, I hereby appoint the following attorney to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Michael J. Striker, Reg. No. 27233
Ilya Zborovsky, Reg. No. 28563
William G. Valance, Reg. No. 28275.

Direct all telephone calls to Striker, Striker & Stenby at telephone no.: (516) 549 4700 and address and all correspondence to:

STRIKER, STRIKER & STENBY
103 East Neck Road
Huntington, New York 11743
U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statement may jeopardize the validity of the application or any patent issued thereon.

Signature:	Date: 22.11.99	Residence and Full Postal Address: Hauptstrasse 58a 77830 Buehlertal Germany
Full Name of First or Sole Inventor: Thomas KOTLARSKI	Citizenship: DE	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Second Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Third Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Fourth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Fifth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Sixth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Seventh Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Eighth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Ninth Inventor:	Citizenship:	

DECLARATION AND POWER OF ATTORNEY FOR NATIONAL STAGE OF PCT PATENT APPLICATION

As a below-named inventor, I hereby declare that:

Thomas KOTLARSKI

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES** specification of which was filed as PCT International Application number PCT/DE 98/03721 on December 18, 1998.

I hereby state that I believe the named inventor or inventors in this Declaration to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior foreign application(s):			Priority claimed:	
198 14 610.8	DE	APRIL 1, 1998	X	
(Number)	(Country)	(Date filed)	Yes	No
(Number)	(Country)	(Date filed)	Yes	No

As a named inventor, I hereby appoint the following attorney to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Michael J. Striker, Reg. No. 27233
Ilya Zborovsky, Reg. No. 28563
William G. Valance, Reg. No. 28275.

Direct all telephone calls to Striker, Striker & Stenby at telephone no.: (516) 549 4700 and address and all correspondence to:

STRIKER, STRIKER & STENBY
103 East Neck Road
Huntington, New York 11743
U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statement may jeopardize the validity of the application or any patent issued thereon.

Signature:	Date:	Residence and Full Postal Address: Hauptstrasse 58a 77830 Buehlertal Germany
Full Name of First or Sole Inventor: Thomas KOTLARSKI	Citizenship: DE	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Second Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Third Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Fourth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Fifth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Sixth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Seventh Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Eighth Inventor:	Citizenship:	
Signature:	Date:	Residence and Full Postal Address:
Full Name of Ninth Inventor:	Citizenship:	

DO/EO BIBLIOGRAPHIC DATA ENTRY

SERIAL NUMBER: 09 / 445046 RECEIPT DATE: 12 / 01 / 99
IA NUMBER: PCT/ DE98 / 03721 IA FILING DATE: 12 / 18 / 98
FAMILY NAME: KOTLARSKI DELAY WAIVED (Y/N): N
GIVEN NAME: THOMAS DEMAND RECEIVED (Y/N): N
PRIORITY CLAIMED (Y/N): Y PRIORITY DATE: 04 / 01 / 98
NO BASIC FEE (Y/N): N US DESIGNATED ONLY (Y/N): N
ATTORNEY DOCKET NUMBER: 989 COUNTRY: DEX
CORRESPONDENCE NAME/ADDRESS: CUSTOMER NUMBER: TELEPHONE
FAX

NAME: STRIKER STRIKER & STENBY

STREET: 103 EAST NECK ROAD

CITY: HUNTINGTON
STATE/COUNTRY: NY ZIP: 11743
EMAIL:
APPLICATION TITLES:
WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

TAB TO LAST POSITION,PUSH SEND

PATENT APPLICATION SERIAL NO. 09/445046

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

12/08/1999 WCLAYBRO 00000118 09445046
01 FC:960 970.00 OP

Adjustment date: 04/07/2000 WCLAYBRO
02/24/2000 PVOLPE 00000068 09446656
01 FC:254 -65.00 OP

Repln. Ref: 04/07/2000 WCLAYBRO 0016132500
DAA:194675 Name/Number:09446656
FC: 704 $65.00 CR

PTO-1556
(5/87)

09/11/2046

ISSUE CLASSIFICATION	Class	Subclass
	015	250.4

FILED UNDER 35 U.S.C. 371

U.S. **UTILITY** Patent Application

O.I.P.E.	PATENT DATE
(5) SCANNED KW 11-2 Q.A. AG	

2002-2216

CLASS	SUBCLASS	ART UNIT	EXAMINER
15	250.43	1744	GRAHAM

TITLE OF INVENTION:

APPLICANT(S):

ABANDONED

ISSUING CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)	
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)
015	250.43	015	250.451

INTERNATIONAL CLASSIFICATION

B 6 0 S 1 / 38

☐ Continued on Issue Slip Inside File Jacket

☐ TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg.	Figs. Drwg.	Print Fig.	Total Claims	Print Claim for O.G.
	3	8	1,8	1	1

☐ The term of this patent subsequent to _____ (date) has been disclaimed.

_____ (Assistant Examiner) _____ (Date)

NOTICE OF ALLOWANCE MAILED: 8-11-05

☐ The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____

GARY K. GRAHAM
PATENT EXAMINER
GROUP 1700

_____ (Primary Examiner) 8.9.05 (Date)

ISSUE FEE

Amount Due	Date Paid
$1,400.00	

☐ The terminal ___ months of this patent have been disclaimed.

Stacey Smith (Legal Instruments Examiner) 8/10/05 (Date)

ISSUE BATCH NUMBER

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.

Form PTO-436A (Rev. 6/99)

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

(FACE)

[PCT/DE 98/03721 Translated by David Clayberg]

Wiper Blade for Windows of Motor Vehicles

Prior Art

In wiper blades of the type described in the preamble to claim 1, the carrying element is intended to assure a predetermined distribution of the wiper arm-induced wiper blade pressing force - often also called pressure - against the window over the entire wiping field swept across by the wiper blade. Through a corresponding curvature of the unstressed carrying element - i.e. when the wiper blade is not resting against the window - the ends of the wiper strip, which is placed completely against the window during the operation of the wiper blade, are loaded toward the window by the carrying element which is then stressed, even when the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be slightly sharper than the sharpest curvature measured in the wiping field on the window to be wiped. The carrying element consequently replaces the expensive support bracket construction with two spring rails disposed in the wiper strip, as is the practice in conventional wiper blades (published, non-examined German patent application 15 05 357).

The invention is based on a wiper blade according to the preamble to claim 1. In a known wiper blade of this type (German patent 12 47 161), in order to produce as uniform as possible a pressure loading of the wiper blade against a flat window over its entire length, a number of embodiments of the carrying element are provided as attainments of this object.

In another known wiper blade according to the preamble to claim 1 (EP 05 28 643 B1), in order to produce a uniform pressure loading of the wiper blade against spherically curved windows, the pressure loading at the two end sections increases significantly when the wiper blade is pressed against a flat window.

The uniform pressure distribution over the entire wiper blade length desired in both instances, however, causes the wiper lip, which belongs to the wiper blade and does the actual wiping work, to abruptly flip over along its entire length from its one drag position into the other when the wiper blade reverses its working direction. This drag position is essential for an effective and low-noise operation of the wiper system. However, the abrupt flipping over of the wiper lip - which is inevitably connected with a back and forth movement of the wiper blade - produces undesirable knocking noises. Also, the matching of the carrying element stress to the desired pressure distribution, which is different from case to case, is problematic in the case of spherically curved windows.

Advantages of the Invention

In the wiper blade according to the invention with the features of claim 1, in the vicinity of the reduced contact force, a steeper drag position of the wiper lip is produced in comparison to the region with the greater contact force. This steeper position of the wiper lip encourages its tilting-over process in the wiping direction reversal positions of the wiper blade, which is initiated there and then continued in the region

that has the greater contact force. This prevents the abrupt snapping over of the entire wiper lip and the unpleasant knocking noise connected with it. This also eliminates the problems in the design of the carrying element with regard to the contact pressure distribution in spherically curved windows. Namely, it has turned out that the reduction of the contact pressure at the end section of the wiper blade does not inevitably also attend a reduction in the wiping quality.

It is particularly advantageous if the contact pressure of the wiper strip against the window is lower at its two end sections than in its center section because the tilting-over process of the wiper lip then takes place starting from both ends and is therefore finished more quickly.

With particularly problematic window curvatures, it can be useful if the contact pressure of the wiper strip against a window in its center section is at least almost uniform in magnitude and decreases at the end section(s).

A preferred embodiment of the carrying elements for achieving the desired distribution of the contact pressure provides that the carrying element has a concave curvature on its side oriented toward the window which is sharper than the sharpest curvature of the spherically curved window in the vicinity of the wiping field that can be swept across by the wiper blade and that the concave curvature in the center section of the carrying element is sharper than that of its end section(s).

Other advantageous embodiments and updates of the invention are disclosed in the following description of an exemplary embodiment shown in the respective drawings.

Drawings

Fig. 1 is a perspective depiction of a wiper blade that is resting against the window and is connected to a wiper arm that is loaded in the direction of the window,

Fig. 2 is a schematic representation of a side view of an unloaded wiper blade placed against the window, shown at a reduced scale in comparison to Fig. 1,

Fig. 3 shows the sectional plane of the section through the wiper blade according to Fig. 1, along the line III - III in an enlarged depiction,

Fig. 4 shows the sectional plane of a section through the wiper blade according to Fig. 1 along the line IV - IV in an enlarged depiction,

Fig. 5 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to a first possible embodiment of the invention,

Fig. 6 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to a different possible embodiment of the invention,

Fig. 7 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to another possible embodiment of the invention, and

Fig. 8 is a schematic representation, not to scale, of a side view of a carrying element belonging to the wiper blade.

Description of the Exemplary Embodiment

A wiper blade 10 shown in Fig. 1 has an elongated, spring-elastic carrying element 12 for a wiper strip 14, and this carrying element 12 is shown separately in Fig. 8. As can be seen from Figs. 1, 3, and 4, the carrying element 12 and the wiper strip 14 are connected to each other so that their longitudinal axes are parallel. A connecting device 16 is disposed on the top side of the carrying element 12 remote from the window 15 to be wiped - indicated with dot-and-dash lines in Fig. 1 - and with the aid of this connecting device 16, the wiper blade 10 can be detachably connected to a driven wiper arm 18 that is supported on the body of a motor vehicle. The elongated, rubber-elastic wiper strip 14 is disposed on the underside of the carrying element 12 oriented toward the window 15. A hook, which is used as a reciprocal connecting means, is formed onto the free end 20 of the wiper arm 18 and encompasses a pivot bolt 22 belonging to the connecting device 16 of the wiper blade 10. The retention between the wiper arm 18 and the wiper blade 10 is performed by an intrinsically known securing means that is embodied as an adapter and is not shown in detail. The wiper arm 18 and therefore also its hook end 20 are loaded in the direction of the arrow 24 in relation to the window 15 to be wiped, whose surface to be wiped is indicated in Figs. 1 and 2 by means of a dot-and-dash line 26. The force (arrow 24) places the wiper blade 10 over its entire length against the surface 26 of the window 15 to be wiped. Since the dot-and-dash line 26 depicted in Fig. 2 is intended to represent the sharpest curvature of the window surface in the region of the wiping field, it is clearly evident that the curvature of the as yet unloaded wiper blade 10 resting with both of its ends against

the window is sharper than the maximal curvature of the spherically curved window 15. Due to the pressure (arrow 24), the wiper blade 10 rests over its entire length against the window surface 26 with its wiper lip 28 that belongs to the wiper strip 14. This produces a stress in the band-like spring-elastic carrying element 12, which assures a proper contact of the wiper strip 14 or the wiper lip 28 over its entire length against the motor vehicle window 15. During wiper operation, the wiper arm 18 moves the wiper blade 10 lateral to its longitudinal span, across the window 15. This wiping or working motion is indicated in Fig. 1 with the double arrow 29.

The particular embodiment of the wiper blade according to the invention will now be discussed in detail. As shown by the not-to-scale Figs. 3 and 4, the wiper strip 14 is disposed on the lower band surface of the carrying element 12 oriented toward the window 15. Spaced apart from the carrying element 12, the wiper strip 14 is constricted from its two long sides in such a way that a tilting piece 30 remains in its longitudinal center region and extends over the entire length of the wiper strip 14. The tilting piece 30 transitions into the wiper lip 28, which has an essentially wedge-shaped cross section. Because of the contact force (arrow 24), the wiper blade or the wiper lip 28 is pressed against the surface 26 of the window 15 to be wiped, wherein due to the influence of the wiping movement - one of the two opposing wiping motions (double arrow 29) in particular is considered in Figs. 3 and 4 and is indicated by the direction arrow 32 -, this wiper lip 28 tilts into a so-called drag position in which the wiper lip is supported over its entire length against the part of the wiper strip 14 that is secured to the carrying element 12. This support, which is indicated in Figs. 3 and 4 with the arrow 34, is always produced

- depending on the respective wiping direction (double arrow 29 or arrow 32) - against the upper edge of the wiper lip 28 disposed toward the rear in the respective wiping direction so that it is always guided across the window in a so-called drag position. This drag position is required for an effective and low-noise operation of the wiper apparatus. The reversal of the drag position takes place in the so-called reversal position of the wiper blade 10 when this reverses its wiping motion (double arrow 29). The wiper blade executes a back and forth motion, which is induced by the tilting over of the wiper lip 28. The upward motion occurs counter to the direction 24 and consequently also counter to the contact force. In the other wiping direction directed counter to the arrow 32, a mirror image of the Figs. 3 and 4 is consequently produced.

In order to produce as low-noise as possible a tilting over of the wiper lip 28 from its one drag position into its other drag position, the carrying element 12 used for distributing the contact force (arrow 24) is designed so that the contact force of the wiper strip 24 or the wiper lip 28 against the window surface 26 is greater in its center section 36 (Fig. 8) than in at least one of the two end sections 38. This fundamental concept, for example, can be incorporated, as shown in a graphic representations according to Figs. 5 to 7.

According to Fig. 5, the carrying element 12 is designed so that viewed in terms of the length 40 of the wiper blade, its center region 36 has a virtually uniform contact force (line 44) and that this contact force 44 sharply decreases at both end sections 38 of the wiper blade. The dot-and-dash line 42 is intended to indicate a possible position of the pivot bolt 22,

i.e. the engagement point of the wiper arm-induced contact force.

In another embodiment (Fig. 6), the carrying element 12 is designed so that viewed in terms of the length 140 of the wiper blade, starting from the one and 138 of the wiper blade until well beyond its linkage point (line 142), the contact force 24 is of a uniform magnitude (line 144) until it decreases sharply in the region of the other and 139 of the wiper blade. The possible linkage point of the wiper blade to the wiper arm has been labeled 142 in Fig. 6.

Another possible design of the wiper blade according to the invention, which is shown in Fig. 7, provides that the contact pressure or contact force (244) of the wiper lip 28 against the window surface 26 is essentially uniform in the center region 242 of the wiper blade - where the linkage point of the wiper arm 18 is disposed - and that it decreases slightly toward one and 238 of the wiper blade whereas it decreases considerably in the vicinity of the other and 239 of the wiper blade. With this design of the wiper blade, the engagement point 243 of the wiper arm 18, is disposed on the wiper blade outside the center of the wiper blade length 240, as in the design according to Fig. 6. Naturally, it is possible to use such a positioning of the linkage point even in wiper blades that are designed in accordance with Fig. 5. The different designs of the wiper blade can be required by particular window types, which differ from one another, for example due to the type of spherical curvatures of the windows.

Fig. 8 shows a possible curvature course of the carrying element 12, which can produce a pressure distribution of the

wiper lip 28 against the window 15, as is graphically depicted in Fig. 5. With this spring-elastic carrying element 12, which when unloaded has a sharper concave curvature than the window in the region of the wiping field being swept across by the wiper blade, the curvature course is embodied so that it is sharper in the center section 36 of the carrying element than at its end sections 38. In order to achieve the desired contact force distribution, however, it is also conceivable to reduce the end sections 38 of the carrying element 12 cross sectionally so that a comparable effect is achieved.

Naturally, this possibility can also be combined with correspondingly coordinated changes in the curvature course of the carrying element 12.

The reduction of the contact force of the wiper lip 28 against the window surface 26 in the region of one or both wiper blade ends, prevents an abrupt flipping over or snapping over of the wiper lip 28 from its one drag position into its other drag position. In contrast, with the wiper blade according to the invention, a comparatively gentle tilting over of the wiper lip is produced, starting from the wiper blade end and continuing to the wiper lip center or to the other wiper lip end. Figs. 3 and 4, in connection with Fig. 1, show that even with spherically curved windows, the less-loaded end sections of the wiper lip 28 still rest effectively against the window surface. A comparison of Figs. 3 and 4 shows this, from which it is clear that in the less-loaded end region (Fig. 4), the wiper lip 28 is disposed more steeply in relation to the window surface 26 than in its center section (Fig. 3), where the greater contact force is in effect. This steeper disposition of the wiper lip 28 encourages

the beginning of the tilting over of the wiper lip when the reverse motion of the wiping motion begins (double arrow 29).

It is common to all of the exemplary embodiments that the contact pressure (arrow 24) of the wiper strip 14 against the window 15 is greater in its center section 36 than in at least one of its two end sections 38. This is true even if in contrast to the currently shown wiper blade 10 with a one-piece carrying element 12 depicted as a spring rail, the carrying element is embodied as having a number of parts. The only crucial thing is the distribution of the contact pressure according to the invention.

O/ EO WORKSHEET

U.S. Appl. No. 09/445046 International Appl. No. DE98/03721

Application filed by : ☑ 20 months ☐ 30 months

WIPO PUBLICATION INFORMATION :

Publication No.: WO 99/51470 Publication Language : GERMAN Screening Done by : RJ

Publication Date : 14 OCT 1999 Not Published : ☐ U.S. only designated ☐ EP request

INTERNATIONAL APPLICATION PAPERS IN THE APPLICATION FILE :

- ☑ International Application *(RECORD COPY)*
- ☐ Article 19 Amendments
- ☐ PCT/IB/331
- ☐ PCT/IPEA/409 IPER (PCT/IPEA/416 on front)
- ☐ Annexes to 409
- ☐ Priority Document (s) No. _____
- ☐ International Appl. on Double Sided Paper *(COPIES MADE)*
- ☐ Request form PCT/RO/101
- ☑ PCT/ISA/210 - Search Report
- ☑ Search Report References
- ☐ Other : _____

RECEIPTS FROM THE APPLICANT *(other than checked above) :*

- ☑ Baisc National Fee *(paid or authorized to charge)*
  - ☑ Description
  - ☑ Claims
  - ☐ Words in the Drawing Figure(s)
  - ☐ Article 19 Amendments
  - ☐ Annexes to 409 ☐ entered ☐ not entered
- ☑ Oath/ Declaration (executed) (UNSIGNED)
- ☐ DNA Diskette
- ☑ Preliminary Amendment(s) Filed on : 07 DEC 1999
- ☐ Information Disclosure Statement(s) Filed on : _____
- ☐ Assignment Document
- ☑ Power of Attorney/ Change of Address
- ☐ Substitute Specification Filed on : _____
- ☐ Verified Small Status Claim *(if submitted after Receipt Date - Is it timely ? Y/N)*
- ☐ Other : _____

NOTES :

35 U.S.C. 371 - Receipt of Request (PTO-1390)	07 DEC 1999
Date Acceptable Oath/ Declaration Received	
Date Complete 35 U.S.C. 371	
102(e) Date	
Date of Completion of DO/ EO 906 - Notification of Missing 102(e) Requirements	
Date of Completion of DO/ EO 907 - Notification of Acceptance for 102(e) Date	
Date of Completion of DO/ EO 911 - Application Accepted Under 35 U.S.C. 111	
Date of Completion of DO/ EO 905 - Notification of Missing Requirements	21 JAN 00
Date of Completion of DO/ EO 916 - Notification of Defective Response	
Date of Completion of DO/ EO 903 - Notification of Acceptance	
Date of Completion of DO/ EO 909 - Notification of Abandonment	

MULTIPLE DEPENDENT CLAIM
FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-875)

09/445046
APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1		1			
2		4		1		
3		2		1		
4		0		1		
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
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						
TOTAL IND.	1		1			
TOTAL DEP.	4		3			
TOTAL CLAIMS	5		4			

	•		•		•	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
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						
TOTAL IND.						
TOTAL DEP.						
TOTAL CLAIMS						

PTO-1360 (3-78)

*MAY BE USED FOR ADDITIONAL CLAIMS OR AMENDMENTS

U.S. DEPARTMENT of COMMERCE
Patent and Trademark Office

PCT/DE 98/03721

BUNDESREPUBLIK DEUTSCHLAND

EJKU

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

Bescheinigung

Die ROBERT BOSCH GMBH in Stuttgart/Deutschland hat eine Patentanmeldung unter der Bezeichnung

"Wischblatt für Scheiben von Kraftfahrzeugen"

am 1. April 1998 beim Deutschen Patent- und Markenamt eingereicht.

Die angehefteten Stücke sind eine richtige und genaue Wiedergabe der ursprünglichen Unterlagen dieser Patentanmeldung.

Die Anmeldung hat im Deutschen Patent- und Markenamt vorläufig das Symbol B 60 S 1/38 der Internationalen Patentklassifikation erhalten.

München, den 15. Januar 1999

Deutsches Patent- und Markenamt

Der Präsident

Im Auftrag

Faust

Aktenzeichen: 198 14 610.8

A 9161
6.90
(EDV-L)
01/98

R. 33418

30.03.98 Sa/AK

ROBERT BOSCH GMBH, 70442 Stuttgart

Wischblatt für Scheiben von Kraftfahrzeugen

Stand der Technik

Bei Wischblättern der im Oberbegriff des Anspruchs 1 bezeichneten Art soll das Tragelement über das gesamte vom Wischblatt bestrichene Wischfeld eine vorbestimmte Verteilung der vom Wischerarm ausgehenden Wischblatt-Anpresskraft - oft auch als Anpreßdruck bezeichnet - an der Scheibe gewährleisten. Durch eine entsprechende Krümmung des unbelasteten Tragelements - also wenn das Wischblatt nicht an der Scheibe anliegt - werden die Enden der im Betrieb des Wischblatts vollständig an der Scheibe angelegten Wischleiste durch das dann gespannte Tragelement zur Scheibe belastet, auch wenn sich die Krümmungsradien von sphärisch gekrümmten Fahrzeugscheiben bei jeder Wischblattposition ändern. Die Krümmung des Wischblatts muß also etwas stärker sein als die im Wischfeld an der zu wischenden Scheibe gemessene stärkste Krümmung. Das Tragelement ersetzt somit die aufwendige Tragbügelkonstruktion mit zwei in der Wischleiste angeordneten Federschienen, wie sie bei herkömmlichen Wischblättern praktiziert wird (DE-OS 15 05 357).

Die Erfindung geht aus von einem Wischblatt nach dem Oberbegriff des Anspruchs 1. Bei einem bekannten Wischblatt dieser Art (DE-PS 12 47 161) sind zur Erzielung einer

möglichst gleichmäßigen Druckbelastung des Wischblatts an einer ebenen Scheibe über seine gesamte Länge mehrere Ausgestaltungen des Tragelements als Problemlösung vorgesehen.

Bei einem anderen bekannten Wischblatt gemäß der Gattung des Anspruchs 1 (EP 05 28 643 B1) nimmt - zur Erzielung einer gleichmäßigen Druckbelastung des Wischblatts an sphärisch gekrümmten Scheiben - die Druckbelastung an den beiden Endabschnitten wesentlich zu, wenn das Wischblatt auf eine ebene Scheibe gepreßt wird.

Die in beiden Fällen angestrebte gleichmäßige Druckverteilung über die gesamte Wischblattlänge führt jedoch zu einem schlagartigen Umspringen der zum Wischblatt gehörenden, die eigentliche Wischarbeit ausführenden Wischlippe über deren gesamte Länge aus ihrer einen in ihre andere Schlepplage, wenn das Wischblatt seine Arbeitsrichtung umkehrt. Diese Schlepplage ist unabdingbar für einen effektiven und geräuscharmen Betrieb der Wischanlage. Das schlagartige Umspringen der Wischlippe - welches zwangsläufig mit einer Auf- Abbewegung des Wischblatts verbunden ist - erzeugt jedoch unerwünschte Klopfgeräusche. Auch ist die Abstimmung der Tragelementspannung auf die gewünschte, von Fall zu Fall andersartige Druckverteilung bei sphärisch gekrümmten Scheiben problematisch.

Vorteile der Erfindung

Bei dem erfindungsgemäßen Wischblatt mit den Merkmalen des Anspruchs 1 ergibt sich im Bereich der verminderten Anlegekraft eine steilere Schlepplage der Wischlippe gegenüber dem Bereich mit der größeren Anlagekraft. Diese steilere Stellung der Wischlippe begünstigt deren

Umlegevorgang in den Wischrichtungsumkehrpositionen des Wischblatts, welcher dort eingeleitet wird und sich dann in den Bereich mit der größeren Anlegekraft fortsetzt. Dadurch wird das schlagartige Umschnappen der gesamten Wischlippe und das damit verbundene störende Klopfgeräusch vermieden. Auch entfallen die Probleme bei der Auslegung des Tragelements hinsichtlich der Anlagedruckverteilung bei sphärisch gekrümmten Scheiben. Es hat sich nämlich gezeigt, daß mit der Verringerung des Anlegedrucks am Endabschnitt des Wischblatts nicht zwangsläufig auch eine Minderung der Wischqualität einhergeht.

Besonders vorteilhaft ist es, wenn der Anlegedruck der Wischleiste an der Scheibe an deren beiden Endabschnitten kleiner ist als in deren Mittelabschnitt, weil dann der Umlegevorgang der Wischlippe von beiden Enden her erfolgt und dadurch schneller abgeschlossen ist.

Bei besonders problematischen Scheibenkrümmungen kann es zweckdienlich sein, wenn der Anlegedruck der Wischleiste an der Scheibe in deren Mittelabschnitt zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

Eine bevorzugte Ausführung des Tragelements zum Erreichen der angestrebten Verteilung des Anlegedrucks sieht vor, daß das Tragelement an seiner der Scheibe zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe im Bereich des vom Wischblatt überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt des Tragelements stärker ist als an dessen Endabschnitt/Endabschnitten.
Weitere vorteilhafte Weiterbildungen und Ausgestaltungen der Erfindung sind in der nachfolgenden Beschreibung eines in

der dazugehörigen Zeichnung dargestellten Ausführungsbeispiels angegeben.

Zeichnung

In der Zeichnung zeigen: Figur 1 eine perspektivische Darstellung eines an der Scheibe angelegten, mit einem zur Scheibe belasteten Wischerarm verbundenen Wischblatts, Figur 2 eine Prinzipdarstellung einer Seitenansicht eines unbelastet auf die Scheibe aufgesetzten Wischblatts, gegenüber Figur 1 verkleinert dargestellt, Figur 3 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1, entlang der Linie III-III in vergrößerter Darstellung, Figur 4 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1 entlang der Linie IV-IV in vergrößerter Darstellung, Figur 5 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer ersten möglichen Ausführungsform der Erfindung, Figur 6 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer anderen möglichen Ausführungsform der Erfindung, Figur 7 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer weiteren möglichen Ausführungsform der Erfindung und Figur 8 eine unmaßstäbliche Prinzipdarstellung eines zum Wischblatt gehörenden Tragelements in Seitenansicht.

Beschreibung des Ausführungsbeispiels

Ein in Figur 1 dargestelltes Wischblatt 10 weist ein langgestrecktes, federelastisches Tragelement 12 für eine Wischleiste 14 auf, das in Figur 8 separat dargestellt ist. Wie aus den Figuren 1, 3 und 4 ersichtlich ist, sind das Tragelement 12 und die Wischleiste 14 längsachsenparallel

miteinander verbunden. An der von der zu wischenden Scheibe 15 - in Figur 1 strichpunktiert gezeichnet - abgewandten Oberseite des Tragelements 12 ist eine Anschlußvorrichtung 16 angeordnet, mit deren Hilfe das Wischblatt 10 mit einem an der Karosserie eines Kraftfahrzeugs geführten, angetriebenen Wischerarm 18 lösbar verbunden werden kann. An der der Scheibe 15 zugewandten Unterseite des Tragelements 12 ist die langgestreckte, gummielastische Wischleiste 14 angeordnet. An dem freien Ende 20 des Wischarms 18 ist ein als Gegenanschlußmittel dienender Haken angeformt, welcher einen zur Anschlußvorrichtung 16 des Wischblatts 10 gehörenden Gelenkbolzen 22 umgreift. Die Sicherung zwischen dem Wischerarm 18 und dem Wischblatt 10 wird durch nicht näher dargestellte, an sich bekannte, als Adapter ausgebildete Sicherungsmittel übernommen. Der Wischerarm 18 und damit auch dessen Hakenende 20 sind in Richtung des Pfeiles 24 zur zu wischenden Scheibe 15 belastet, deren zu wischende Oberfläche in den Figuren 1 und 2 durch eine strichpunktierte Linie 26 angedeutet ist. Die Kraft (Pfeil 24) legt das Wischblatt 10 über dessen gesamte Länge an der Oberfläche 26 der zu wischenden Scheibe 15 an. Da die in Figur 2 dargestellte strichpunktierte Linie 26 die stärkste Krümmung der Scheibenoberfläche im Bereich des Wischfeldes darstellen soll ist klar ersichtlich, daß die Krümmung des mit seinen beiden Enden an der Scheibe anliegenden, noch unbelasteten Wischblatts 10 stärker ist als die maximale Krümmung der sphärisch gekrümmten Scheibe 15. Unter dem Anpressdruck (Pfeil 24) legt sich das Wischblatt 10 mit seiner zur Wischleiste 14 gehörenden Wischlippe 28 über seine gesamte Länge an der Scheibenoberfläche 26 an. Dabei baut sich im bandartigen federelastischen Tragelement 12 eine Spannung auf, welche für eine ordnungsgemäße Anlage der Wischleiste 14 bzw. der Wischlippe 28 über deren gesamte Länge an der Kraftfahrzeugscheibe 15 sorgt. Während des Wischbetriebs bewegt der Wischerarm 18 das Wischblatt 10

quer zu dessen Längserstreckung über die Scheibe 15. Diese Wisch- oder Arbeitsbewegung ist in Figur 1 mit dem Doppelpfeil 29 bezeichnet.

Im folgenden soll nun auf die besondere Ausgestaltung des erfindungsgemäßen Wischblatts näher eingegangen werden. Wie die unmaßstäblich dargestellten Figuren 3 und 4 zeigen, ist die Wischleiste 14 an der unteren, der Scheibe 15 zugewandten Bandfläche des Tragelements 12 angeordnet. Mit Abstand von dem Tragelement 12 ist die Wischleiste 14 von ihren beiden Längsseiten her so eingeschnürt, daß in ihrem Längsmittelbereich ein Kippsteg 30 verbleibt, der sich über die gesamte Länge der Wischleiste 14 erstreckt. Der Kippsteg 30 geht in die Wischlippe 28 über, die einen im wesentlichen keilförmigen Querschnitt aufweist. Durch die Anlegekraft (Pfeil 24) wird das Wischblatt beziehungsweise die Wischlippe 28 gegen die zu wischende Oberfläche 26 der Scheibe 15 gedrückt, wobei sie unter dem Einfluß der Wischbewegung - von der in den Figuren 3 und 4 speziell die eine der beiden gegenläufigen Wischbewegungen (Doppelpfeil 29) betrachtet wird und die durch den Richtungspfeil 32 angedeutet ist - in eine sogenannte Schlepplage kippt, in der sich die Wischlippe an dem am Tragelement 12 gehaltenen Teil der Wischleiste 14 über ihre gesamte Länge abstützt. Dieser Abstützung welche in den Figuren 3 und 4 mit dem Pfeil 34 gekennzeichnet ist erfolgt stets - in Abhängigkeit von der jeweiligen Wischrichtung (Doppelpfeil 29 bzw. Pfeil 32) an der in der jeweiligen Wischrichtung hintenliegenden Oberkante der Wischlippe 28, sodaß diese stets in einer sogenannten Schlepplage über die Scheibe geführt wird. Diese Schlepplage ist für einen effektiven und geräuscharmen Betrieb der Wischvorrichtung notwendig. Die Umkehrung der Schlepplage erfolgte in der sogenannten Umkehrposition des Wischblatts 10, wenn dieses seine Wischbewegung (Doppelpfeil 29) umkehrt. Dabei führt das Wischblatt eine Auf- Abbewegung

aus, welche durch das Umkippen der Wischlippe 28 bedingt ist. Die Aufbewegung erfolgt entgegen Richtung des Pfeiles 24 und somit auch entgegen der Anlegekraft. In der entgegen dem Pfeil 32 gerichteten anderen Wischbewegung ergibt sich somit ein Spiegelbild der Figuren 3 und 4.

Um ein möglichst geräuscharmes Umlegen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage zu erreichen, wird das zur Verteilung der Anlegekraft (Pfeil 24) dienende Tragelement 12 so ausgelegt, daß der Anlegedruck der Wischleiste 24 beziehungsweise der Wischlippe 28 an der Scheibenoberfläche 26 in deren Mittelabschnitt 36 (Figur 8) größer ist als an wenigsten einen der beiden Endabschnitten 38. Dieser Grundgedanke kann beispielsweise so umgesetzt werden, wie dies in den graphischen Darstellungen gemäß den Figuren 5 bis 7 aufgezeigt ist.

Gemäß Figur 5 ist das Tragelement 12 so ausgelegt, daß über die Länge 40 des Wischblatts gesehen dessen Mittelbereich 36 eine annähernd gleichstarke Anlegekraft (Linie 44) vorhanden ist und daß diese Anlegekraft 44 an den beiden Endabschnitten 38 des Wischblatts stark abfällt. Die strichpunktierte Linie 42 soll eine mögliche Lage des Gelenkbolzens 22, das heißt den Angriffspunkt der vom Wischerarm ausgehenden Anlegekraft zeigen.

Bei einer anderen Ausführungsform (Figur 6) ist das Tragelement 12 so ausgelegt, daß über die Länge 140 des Wischblatts gesehen die Anlegekraft 24 ausgehend von dem einen Ende 138 des Wischblatts bis weit über dessen Anlenkpunkt (Linie 142) hinaus gleichbleibend groß ist (Linie 144), bis sie im Bereich des anderen Ende 139 des Wischblatts stark abfällt. In Figur 6 ist der mögliche

Anlenkpunkt des Wischblatts am Wischerarm mit 142 bezeichnet worden.

Eine weitere, in Figur 7 dargestellte mögliche Auslegung des erfindungsgemäßen Wischblatts sieht vor, daß der Anlegedruck oder die Anlegekraft (244) der Wischlippe 28 an der Scheibenoberfläche 26 im Mittelbereich 242 des Wischblatts - wo sich der Anlenkpunkt des Wischerarms 18 befindet - im wesentlichen gleich groß ist und daß sie zum einen Ende 238 des Wischblatts leicht abfällt, während sie im Bereich des anderen Endes 239 des Wischblatts erheblich geringer wird. Bei dieser Auslegung des Wischblatts ist der Angriffspunkt 243 des Wischerarms 18 am Wischblatt wie bei der Auslegung gemäß Figur 6 außerhalb der Mitte der Wischblattlänge 240 angeordnet. Eine solche Positionierung der Anlenkstelle kann unter Umständen natürlich auch bei Wischblättern die gemäß Figur 5 ausgelegt sind angewendet werden. Die verschiedenen Auslegungen des Wischblatts können durch bestimmte Scheibentypen, die sich beispielsweise durch die Art der sphärischen Krümmungen der Scheiben voneinander unterscheiden, bedingt sein.

Figur 8 zeigt einen möglichen Krümmungsverlauf des Tragelements 12, der eine Druckverteilung der Wischlippe 28 an der Scheibe 15 ergeben kann, wie sie in Figur 5 graphisch dargestellt ist. Bei diesem federelastischen Tragelement 12, das unbelastet eine stärkere Hohlkrümmung gegenüber der Scheibe aufweist als diese im Bereich des vom Wischblatt überstrichenen Wischfeldes gekrümmt ist, ist der Krümmungsverlauf so ausgeführt, daß dieser im Mittelabschnitt 36 des Tragelements stärker ist als an dessen Endabschnitten 38. Zur Erlangung der angestrebten Anlegekraftverteilung ist es jedoch auch denkbar, die Endabschnitte 38 des Tragelements 12 im Querschnitt so zu reduzieren, daß eine vergleichbare Wirkung erreicht wird.

Selbstverständlich läßt sich diese Möglichkeit auch mit entsprechend abgestimmten Veränderungen des Krümmungsverlaufs des Tragelements 12 kombinieren.

Durch die Verringerung der Anlegekraft der Wischlippe 28 an der Scheibenoberfläche 26 im Bereich eines Wischblattendes oder an beiden Wischblattenden wird ein schlagartiges Umspringen oder Umschnappen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage vermieden. Vielmehr erfolgt beim erfindungsgemäßen Wischblatt ein vergleichsweise sanftes Umlegen der Wischlippe vom Wischblattende aus fortschreitend zur Wischlippenmitte beziehungsweise bis zum anderen Wischlippenende. Die Figuren 3 und 4 zeigen in Verbindung mit Figur 1, daß auch bei sphärisch gekrümmten Scheiben die geringer belasteten Endabschnitte der Wischlippe 28 noch wirksam an der Scheibenoberfläche anliegen. Dies zeigt ein Vergleich der Figuren 3 und 4, aus dem klar ersichtlich ist, daß im geringer belasteten Endbereich (Figur 4) die Wischlippe 28 steiler zur Scheibenobenfläche 26 steht als in deren Mittelabschnitt (Figur 3) wo die größere Anlegekraft zur Wirkung kommt. Dieses steilere Anstellen der Wischlippe 28 begünstigt den Beginn des Umlegens der Wischlippe, wenn der Gegenlauf der Wischbewegung (Doppelpfeil 29) einsetzt.

Allen Ausführungsbeispielen ist gemeinsam, daß der Anlegedruck (Pfeil 24) der Wischleiste 14 an der Scheibe 15 in deren Mittelabschnitt 36 größer ist als an wenigstens einem ihrer beiden Endabschnitte 38. Dies gilt auch dann, wenn - abweichend vom gegenständlich gezeigten Wischblatt 10 mit einem einteiligen, als Federschiene dargestelltem Tragelement 12 - das Tragelement mehrteilig aufgebaut ist. Entscheident ist alleine die erfindungsgemäße Verteilung des Anlegedrucks.

30.03.98 Sa/AK

Ansprüche

1. Wischblatt (10) für Scheiben (15) von Kraftfahrzeugen, das quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen, zur Scheibe belastenden Wischerarm (18) hin- und hergehend über die Scheibe bewegbar ist und das Wischblatt eine an der Scheibe anlegbare, langgestreckte Wischleiste (14) hat, an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm aufweisendes Tragelement (12) zur Verteilung der Anlegekraft (Pfeil 24) über die gesamte Wischleistenlänge (40) längsachsenparallel angeordnet ist, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt (36) größer ist als an wenigstens einem ihrer beiden Endabschnitte (38, bzw. 138, 139 bzw. 238, 239).

2. Wischblatt nach Anspruch 1, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) an deren beiden Endabschnitten (38) kleiner ist als in deren Mittelabschnitt (36).

3. Wischblatt nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in deren Mittelabschnitt (36) zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

4. Wischblatt nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß das Tragelement (12) an seiner der Scheibe (15) zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe (15) im Bereich des vom Wischblatt (10) überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt (36) des Tragelements (12) stärker ist als an dessen Endabschnitt/Endabschnitten (38).

30.03.98 Sa/AK

ROBERT BOSCH GMBH, 70442 Stuttgart

Zusammenfassung

Es wird ein Wischblatt vorgeschlagen, das zum Reinigen von Scheiben von Kraftfahrzeugen dient. Das Wischblatt (10) ist quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen zur Scheibe (15) belasteten Wischerarm (18) hin- und hergehend bewegbar und hat eine an der Scheibe anlegbare langgestreckte Wischleiste (14) an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm (18) aufweisendes Tragelement (12) zur Verteilung der Anlegekraft über die gesamte Wischleistenlänge längsachsenparallel angeordnet ist. Ein besonders effektiver und geräuscharmer Betrieb der Wischanlage wird erreicht, wenn die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt größer ist als an wenigstens einem ihrer beiden Endabschnitte (38 bzw. 138, 139 bzw. 238, 239).

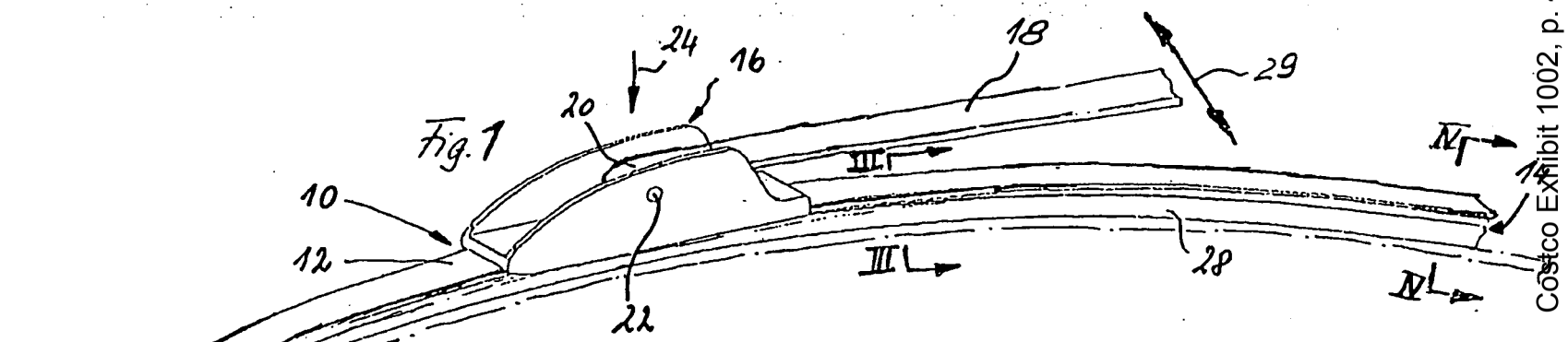
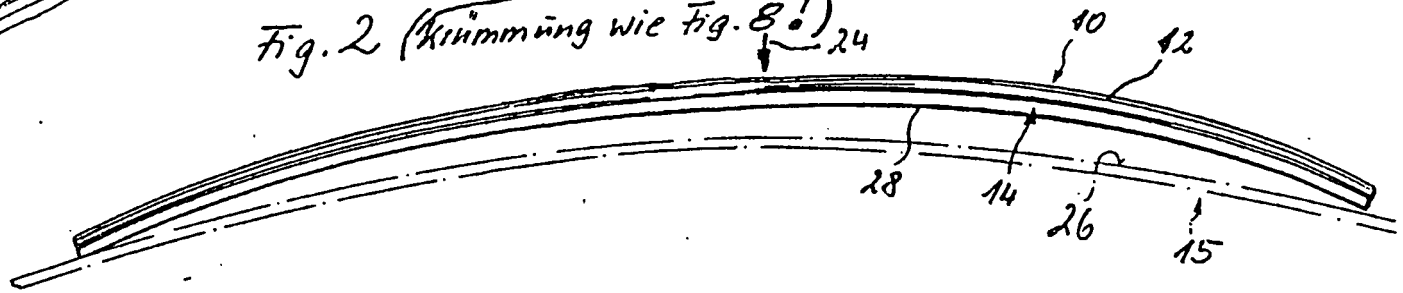


Fig. 1

WB-

Fig. 2 (Krümmung wie Fig. 8!)



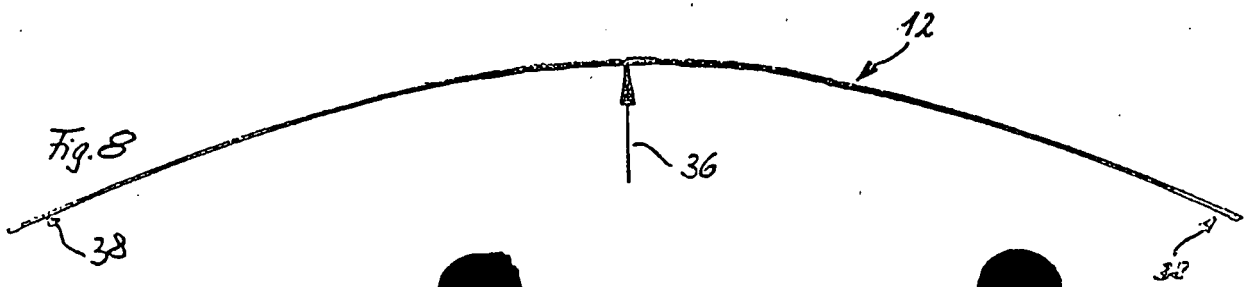
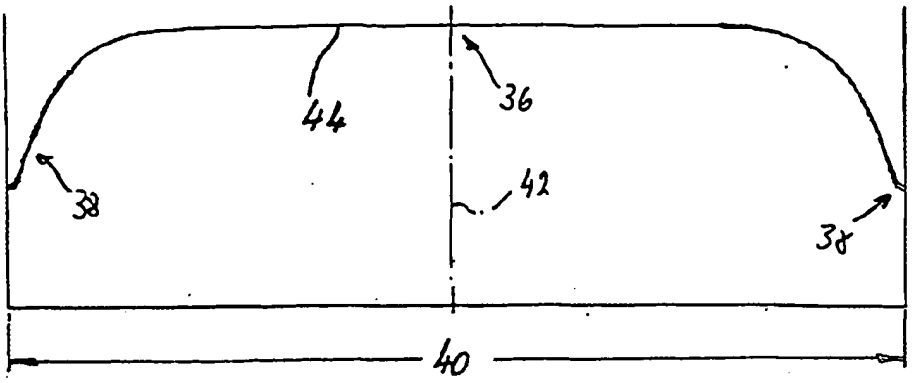


Fig. 8

Fig. 5



Achtung: Platztausch
Fig. 3+4 mit Fig. 5

Fig. 3

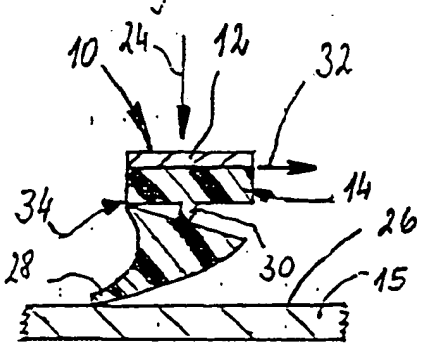


Fig. 4

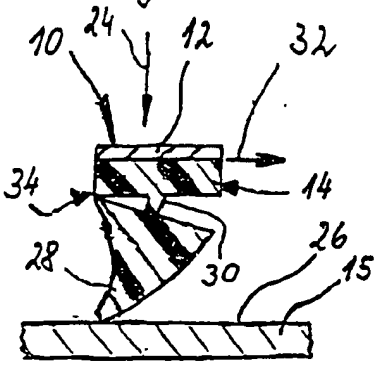


Fig. 6

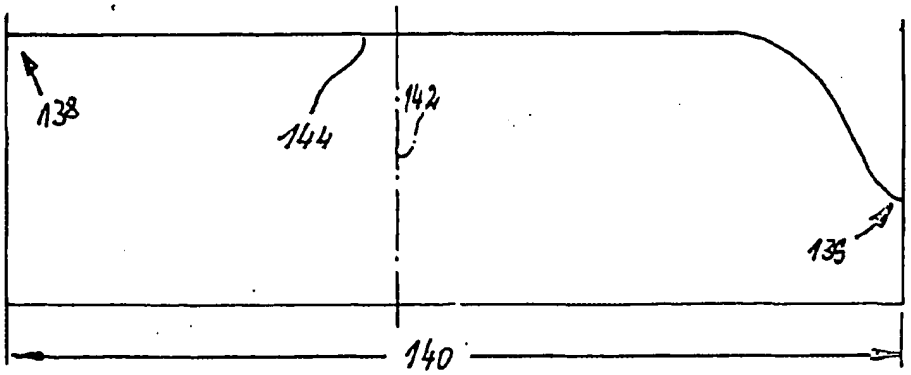
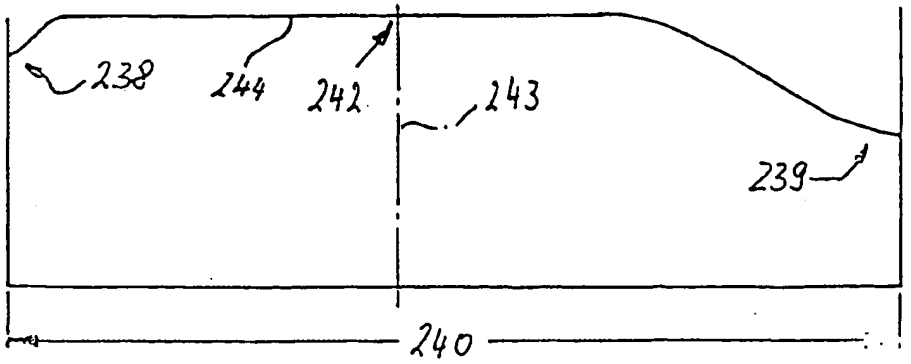
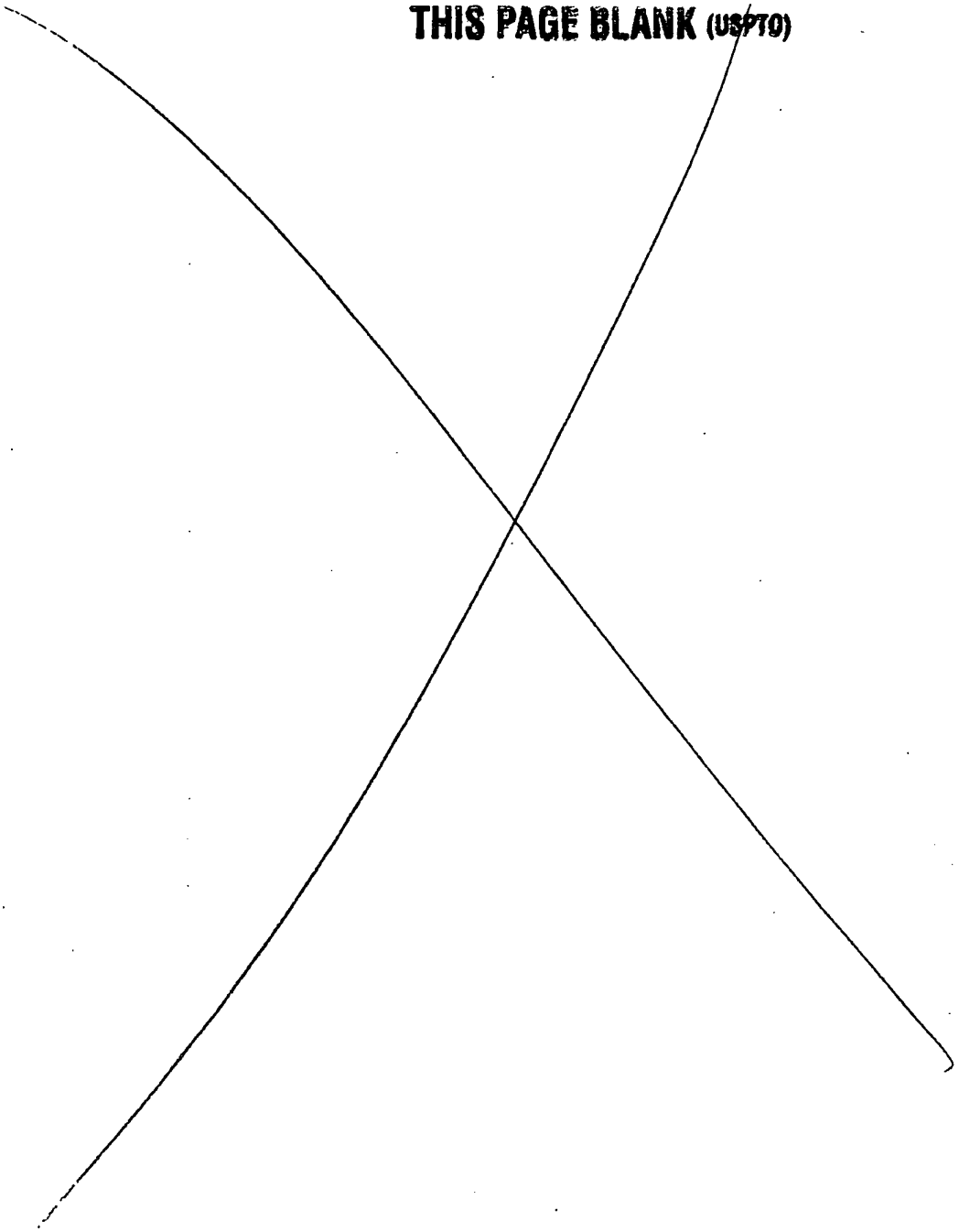


Fig. 7





VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS

PCT

INTERNATIONALER RECHERCHENBERICHT

(Artikel 18 sowie Regeln 43 und 44 PCT)

Aktenzeichen des Anmelders oder Anwalts	**WEITERES VORGEHEN**	siehe Mitteilung über die Übermittlung des internationalen Recherchenberichts (Formblatt PCT/ISA/220) sowie, soweit zutreffend, nachstehender Punkt 5
R. 33418 Km/Hx		
Internationales Aktenzeichen	Internationales Anmeldedatum *(Tag/Monat/Jahr)*	(Frühestes) Prioritätsdatum *(Tag/Monat/Jahr)*
PCT/DE 98/ 03721	18/12/1998	01/04/1998
Anmelder		
ROBERT BOSCH GMBH et al.		

Dieser internationale Recherchenbericht wurde von der Internationalen Recherchenbehörde erstellt und wird dem Anmelder gemäß Artikel 18 übermittelt. Eine Kopie wird dem Internationalen Büro übermittelt.

Dieser internationale Recherchenbericht umfaßt insgesamt 2 Blätter.

[X] Darüber hinaus liegt ihm jeweils eine Kopie der in diesem Bericht genannten Unterlagen zum Stand der Technik bei.

1. **Grundlage des Berichts**

   a. Hinsichtlich der **Sprache** ist die internationale Recherche auf der Grundlage der internationalen Anmeldung in der Sprache durchgeführt worden, in der sie eingereicht wurde, sofern unter diesem Punkt nichts anderes angegeben ist.

   [ ] Die internationale Recherche ist auf der Grundlage einer bei der Behörde eingereichten Übersetzung der internationalen Anmeldung (Regel 23.1 b)) durchgeführt worden.

   b. Hinsichtlich der in der internationalen Anmeldung offenbarten **Nucleotid- und/oder Aminosäuresequenz** ist die internationale Recherche auf der Grundlage des Sequenzprotokolls durchgeführt worden, das

   [ ] in der internationalen Anmeldung in Schriftlicher Form enthalten ist.

   [ ] zusammen mit der internationalen Anmeldung in computerlesbarer Form eingereicht worden ist.

   [ ] bei der Behörde nachträglich in schriftlicher Form eingereicht worden ist.

   [ ] bei der Behörde nachträglich in computerlesbarer Form eingereicht worden ist.

   [ ] Die Erklärung, daß das nachträglich eingereichte schriftliche Sequenzprotokoll nicht über den Offenbarungsgehalt der internationalen Anmeldung im Anmeldezeitpunkt hinausgeht, wurde vorgelegt.

   [ ] Die Erklärung, daß die in computerlesbarer Form erfaßten Informationen dem schriftlichen Sequenzprotokoll entsprechen, wurde vorgelegt.

2. [ ] **Bestimmte Ansprüche haben sich als nicht recherchierbar erwiesen** (siehe Feld I).

3. [ ] **Mangelnde Einheitlichkeit der Erfindung** (siehe Feld II).

4. Hinsichtlich der **Bezeichnung der Erfindung**

   [X] wird der vom Anmelder eingereichte Wortlaut genehmigt.

   [ ] wurde der Wortlaut von der Behörde wie folgt festgesetzt:

5. Hinsichtlich der **Zusammenfassung**

   [X] wird der vom Anmelder eingereichte Wortlaut genehmigt.

   [ ] wurde der Wortlaut nach Regel 38.2b) in der in Feld III angegebenen Fassung von der Behörde festgesetzt. Der Anmelder kann der Behörde innerhalb eines Monats nach dem Datum der Absendung dieses internationalen Recherchenberichts eine Stellungnahme vorlegen.

6. Folgende Abbildung der **Zeichnungen** ist mit der Zusammenfassung zu veröffentlichen: Abb. Nr. 1

   [X] wie vom Anmelder vorgeschlagen

   [ ] keine der Abb.

   [ ] weil der Anmelder selbst keine Abbildung vorgeschlagen hat.

   [ ] weil diese Abbildung die Erfindung besser kennzeichnet.

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/DE 98/03721

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
IPK 6 B60S1/38

Nach der Internationalen Patentklassifikation (IPK) oder nach der nationalen Klassifikation und der IPK

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
IPK 6 B60S

Recherchierte aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie°	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP 0 279 640 A (NIPPON WIPER BLADE CO LTD) 24. August 1988 siehe das ganze Dokument ---	1-4
A	US 4 343 063 A (BATT RICHARD A) 10. August 1982 siehe Spalte 5, Zeile 15-36; Abbildung 12 ---	1
A	EP 0 528 643 A (ANGLO AMERICAN IND CORP LTD) 24. Februar 1993 in der Anmeldung erwähnt siehe das ganze Dokument -----	1-4

☐ Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

☒ Siehe Anhang Patentfamilie

° Besondere Kategorien von angegebenen Veröffentlichungen :

"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist

"E" älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist

"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)

"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht

"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist

"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist

"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden

"Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist

"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
30. Juni 1999	08/07/1999

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Blandin, B

1

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0279640 A	24-08-1988	US 4807326 A	28-02-1989
US 4343063 A	10-08-1982	NONE	
EP 0528643 A	24-02-1993	AU 651237 B	14-07-1994
		AU 2108092 A	25-02-1993
		CA 2076268 A	17-02-1993
		DE 69203303 D	10-08-1995
		DE 69203303 T	14-03-1996
		ES 2077984 T	01-12-1995
		JP 5254399 A	05-10-1993
		MX 9204682 A	31-05-1994
		RU 2091257 C	27-09-1997
		US 5325564 A	05-07-1994
		ZA 9206186 A	01-03-1993

VERIFICATION OF TRANSLATION

I, DAVID CLAYBERG

of 948 15th St., Ste. 4
Santa Monica, CA 90403-3134

declare that I am a certified translator well acquainted with both the German and English languages, and that the attached is an accurate translation, to the best of my knowledge and ability, of the International Patent Application PCT/DE 98/03721.

Signature _____ Date November 30, 1999

DAVID CLAYBERG

Wischblatt für Scheiben von Kraftfahrzeugen

Stand der Technik

Bei Wischblättern der im Oberbegriff des Anspruchs 1 bezeichneten Art soll das Tragelement über das gesamte vom Wischblatt bestrichene Wischfeld eine vorbestimmte Verteilung der vom Wischerarm ausgehenden Wischblatt-Anpresskraft - oft auch als Anpreßdruck bezeichnet - an der Scheibe gewährleisten. Durch eine entsprechende Krümmung des unbelasteten Tragelements - also wenn das Wischblatt nicht an der Scheibe anliegt - werden die Enden der im Betrieb des Wischblatts vollständig an der Scheibe angelegten Wischleiste durch das dann gespannte Tragelement zur Scheibe belastet, auch wenn sich die Krümmungsradien von sphärisch gekrümmten Fahrzeugscheiben bei jeder Wischblattposition ändern. Die Krümmung des Wischblatts muß also etwas stärker sein als die im Wischfeld an der zu wischenden Scheibe gemessene stärkste Krümmung. Das Tragelement ersetzt somit die aufwendige Tragbügelkonstruktion mit zwei in der Wischleiste angeordneten Federschienen, wie sie bei herkömmlichen Wischblättern praktiziert wird (DE-OS 15 05 357).

Die Erfindung geht aus von einem Wischblatt nach dem Oberbegriff des Anspruchs 1. Bei einem bekannten Wischblatt dieser Art (DE-PS 12 47 161) sind zur Erzielung einer

möglichst gleichmäßigen Druckbelastung des Wischblatts an einer ebenen Scheibe über seine gesamte Länge mehrere Ausgestaltungen des Tragelements als Problemlösung vorgesehen.

Bei einem anderen bekannten Wischblatt gemäß der Gattung des Anspruchs 1 (EP 05 28 643 B1) nimmt - zur Erzielung einer gleichmäßigen Druckbelastung des Wischblatts an sphärisch gekrümmten Scheiben - die Druckbelastung an den beiden Endabschnitten wesentlich zu, wenn das Wischblatt auf eine ebene Scheibe gepreßt wird.

Die in beiden Fällen angestrebte gleichmäßige Druckverteilung über die gesamte Wischblattlänge führt jedoch zu einem schlagartigen Umspringen der zum Wischblatt gehörenden, die eigentliche Wischarbeit ausführenden Wischlippe über deren gesamte Länge aus ihrer einen in ihre andere Schlepplage, wenn das Wischblatt seine Arbeitsrichtung umkehrt. Diese Schlepplage ist unabdingbar für einen effektiven und geräuscharmen Betrieb der Wischanlage. Das schlagartige Umspringen der Wischlippe - welches zwangsläufig mit einer Auf- Abbewegung des Wischblatts verbunden ist - erzeugt jedoch unerwünschte Klopfgeräusche. Auch ist die Abstimmung der Tragelementspannung auf die gewünschte, von Fall zu Fall andersartige Druckverteilung bei sphärisch gekrümmten Scheiben problematisch.

Vorteile der Erfindung

Bei dem erfindungsgemäßen Wischblatt mit den Merkmalen des Anspruchs 1 ergibt sich im Bereich der verminderten Anlegekraft eine steilere Schlepplage der Wischlippe gegenüber dem Bereich mit der größeren Anlagekraft. Diese steilere Stellung der Wischlippe begünstigt deren

Umlegevorgang in den Wischrichtungsumkehrpositionen des Wischblatts, welcher dort eingeleitet wird und sich dann in den Bereich mit der größeren Anlegekraft fortsetzt. Dadurch wird das schlagartige Umschnappen der gesamten Wischlippe und das damit verbundene störende Klopfgeräusch vermieden. Auch entfallen die Probleme bei der Auslegung des Tragelements hinsichtlich der Anlagedruckverteilung bei sphärisch gekrümmten Scheiben. Es hat sich nämlich gezeigt, daß mit der Verringerung des Anlegedrucks am Endabschnitt des Wischblatts nicht zwangsläufig auch eine Minderung der Wischqualität einhergeht.

Besonders vorteilhaft ist es, wenn der Anlegedruck der Wischleiste an der Scheibe an deren beiden Endabschnitten kleiner ist als in deren Mittelabschnitt, weil dann der Umlegevorgang der Wischlippe von beiden Enden her erfolgt und dadurch schneller abgeschlossen ist.

Bei besonders problematischen Scheibenkrümmungen kann es zweckdienlich sein, wenn der Anlegedruck der Wischleiste an der Scheibe in deren Mittelabschnitt zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

Eine bevorzugte Ausführung des Tragelements zum Erreichen der angestrebten Verteilung des Anlegedrucks sieht vor, daß das Tragelement an seiner der Scheibe zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe im Bereich des vom Wischblatt überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt des Tragelements stärker ist als an dessen Endabschnitt/Endabschnitten.
Weitere vorteilhafte Weiterbildungen und Ausgestaltungen der Erfindung sind in der nachfolgenden Beschreibung eines in

der dazugehörigen Zeichnung dargestellten Ausführungsbeispiels angegeben.

Zeichnung

In der Zeichnung zeigen: Figur 1 eine perspektivische Darstellung eines an der Scheibe angelegten, mit einem zur Scheibe belasteten Wischerarm verbundenen Wischblatts, Figur 2 eine Prinzipdarstellung einer Seitenansicht eines unbelastet auf die Scheibe aufgesetzten Wischblatts, gegenüber Figur 1 verkleinert dargestellt, Figur 3 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1, entlang der Linie III-III in vergrößerter Darstellung, Figur 4 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1 entlang der Linie IV-IV in vergrößerter Darstellung, Figur 5 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer ersten möglichen Ausführungsform der Erfindung, Figur 6 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer anderen möglichen Ausführungsform der Erfindung, Figur 7 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer weiteren möglichen Ausführungsform der Erfindung und Figur 8 eine unmaßstäbliche Prinzipdarstellung eines zum Wischblatt gehörenden Tragelements in Seitenansicht.

Beschreibung des Ausführungsbeispiels

Ein in Figur 1 dargestelltes Wischblatt 10 weist ein langgestrecktes, federelastisches Tragelement 12 für eine Wischleiste 14 auf, das in Figur 8 separat dargestellt ist. Wie aus den Figuren 1, 3 und 4 ersichtlich ist, sind das Tragelement 12 und die Wischleiste 14 längsachsenparallel

miteinander verbunden. An der von der zu wischenden Scheibe 15 - in Figur 1 strichpunktiert gezeichnet - abgewandten Oberseite des Tragelements 12 ist eine Anschlußvorrichtung 16 angeordnet, mit deren Hilfe das Wischblatt 10 mit einem an der Karosserie eines Kraftfahrzeugs geführten, angetriebenen Wischerarm 18 lösbar verbunden werden kann. An der der Scheibe 15 zugewandten Unterseite des Tragelements 12 ist die langgestreckte, gummielastische Wischleiste 14 angeordnet. An dem freien Ende 20 des Wischarms 18 ist ein als Gegenanschlußmittel dienender Haken angeformt, welcher einen zur Anschlußvorrichtung 16 des Wischblatts 10 gehörenden Gelenkbolzen 22 umgreift. Die Sicherung zwischen dem Wischerarm 18 und dem Wischblatt 10 wird durch nicht näher dargestellte, an sich bekannte, als Adapter ausgebildete Sicherungsmittel übernommen. Der Wischerarm 18 und damit auch dessen Hakenende 20 sind in Richtung des Pfeiles 24 zur zu wischenden Scheibe 15 belastet, deren zu wischende Oberfläche in den Figuren 1 und 2 durch eine strichpunktierte Linie 26 angedeutet ist. Die Kraft (Pfeil 24) legt das Wischblatt 10 über dessen gesamte Länge an der Oberfläche 26 der zu wischenden Scheibe 15 an. Da die in Figur 2 dargestellte strichpunktierte Linie 26 die stärkste Krümmung der Scheibenoberfläche im Bereich des Wischfeldes darstellen soll ist klar ersichtlich, daß die Krümmung des mit seinen beiden Enden an der Scheibe anliegenden, noch unbelasteten Wischblatts 10 stärker ist als die maximale Krümmung der sphärisch gekrümmten Scheibe 15. Unter dem Anpressdruck (Pfeil 24) legt sich das Wischblatt 10 mit seiner zur Wischleiste 14 gehörenden Wischlippe 28 über seine gesamte Länge an der Scheibenoberfläche 26 an. Dabei baut sich im bandartigen federelastischen Tragelement 12 eine Spannung auf, welche für eine ordnungsgemäße Anlage der Wischleiste 14 bzw. der Wischlippe 28 über deren gesamte Länge an der Kraftfahrzeugscheibe 15 sorgt. Während des Wischbetriebs bewegt der Wischerarm 18 das Wischblatt 10

quer zu dessen Längserstreckung über die Scheibe 15. Diese Wisch- oder Arbeitsbewegung ist in Figur 1 mit dem Doppelpfeil 29 bezeichnet.

Im folgenden soll nun auf die besondere Ausgestaltung des erfindungsgemäßen Wischblatts näher eingegangen werden. Wie die unmaßstäblich dargestellten Figuren 3 und 4 zeigen, ist die Wischleiste 14 an der unteren, der Scheibe 15 zugewandten Bandfläche des Tragelements 12 angeordnet. Mit Abstand von dem Tragelement 12 ist die Wischleiste 14 von ihren beiden Längsseiten her so eingeschnürt, daß in ihrem Längsmittelbereich ein Kippsteg 30 verbleibt, der sich über die gesamte Länge der Wischleiste 14 erstreckt. Der Kippsteg 30 geht in die Wischlippe 28 über, die einen im wesentlichen keilförmigen Querschnitt aufweist. Durch die Anlegekraft (Pfeil 24) wird das Wischblatt beziehungsweise die Wischlippe 28 gegen die zu wischende Oberfläche 26 der Scheibe 15 gedrückt, wobei sie unter dem Einfluß der Wischbewegung - von der in den Figuren 3 und 4 speziell die eine der beiden gegenläufigen Wischbewegungen (Doppelpfeil 29) betrachtet wird und die durch den Richtungspfeil 32 angedeutet ist - in eine sogenannte Schlepplage kippt, in der sich die Wischlippe an dem am Tragelement 12 gehaltenen Teil der Wischleiste 14 über ihre gesamte Länge abstützt. Dieser Abstützung welche in den Figuren 3 und 4 mit dem Pfeil 34 gekennzeichnet ist erfolgt stets - in Abhängigkeit von der jeweiligen Wischrichtung (Doppelpfeil 29 bzw. Pfeil 32) an der in der jeweiligen Wischrichtung hintenliegenden Oberkante der Wischlippe 28, sodaß diese stets in einer sogenannten Schlepplage über die Scheibe geführt wird. Diese Schlepplage ist für einen effektiven und geräuscharmen Betrieb der Wischvorrichtung notwendig. Die Umkehrung der Schlepplage erfolgte in der sogenannten Umkehrposition des Wischblatts 10, wenn dieses seine Wischbewegung (Doppelpfeil 29) umkehrt. Dabei führt das Wischblatt eine Auf- Abbewegung

aus, welche durch das Umkippen der Wischlippe 28 bedingt ist. Die Aufbewegung erfolgt entgegen Richtung des Pfeiles 24 und somit auch entgegen der Anlegekraft. In der entgegen dem Pfeil 32 gerichteten anderen Wischbewegung ergibt sich somit ein Spiegelbild der Figuren 3 und 4.

Um ein möglichst geräuscharmes Umlegen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage zu erreichen, wird das zur Verteilung der Anlegekraft (Pfeil 24) dienende Tragelement 12 so ausgelegt, daß der Anlegedruck der Wischleiste 24 beziehungsweise der Wischlippe 28 an der Scheibenoberfläche 26 in deren Mittelabschnitt 36 (Figur 8) größer ist als an wenigsten einen der beiden Endabschnitten 38. Dieser Grundgedanke kann beispielsweise so umgesetzt werden, wie dies in den graphischen Darstellungen gemäß den Figuren 5 bis 7 aufgezeigt ist.

Gemäß Figur 5 ist das Tragelement 12 so ausgelegt, daß über die Länge 40 des Wischblatts gesehen dessen Mittelbereich 36 eine annähernd gleichstarke Anlegekraft (Linie 44) vorhanden ist und daß diese Anlegekraft 44 an den beiden Endabschnitten 38 des Wischblatts stark abfällt. Die strichpunktierte Linie 42 soll eine mögliche Lage des Gelenkbolzens 22, das heißt den Angriffspunkt der vom Wischerarm ausgehenden Anlegekraft zeigen.

Bei einer anderen Ausführungsform (Figur 6) ist das Tragelement 12 so ausgelegt, daß über die Länge 140 des Wischblatts gesehen die Anlegekraft 24 ausgehend von dem einen Ende 138 des Wischblatts bis weit über dessen Anlenkpunkt (Linie 142) hinaus gleichbleibend groß ist (Linie 144), bis sie im Bereich des anderen Ende 139 des Wischblatts stark abfällt. In Figur 6 ist der mögliche

Anlenkpunkt des Wischblatts am Wischerarm mit 142 bezeichnet worden.

Eine weitere, in Figur 7 dargestellte mögliche Auslegung des erfindungsgemäßen Wischblatts sieht vor, daß der Anlegedruck oder die Anlegekraft (244) der Wischlippe 28 an der Scheibenoberfläche 26 im Mittelbereich 242 des Wischblatts - wo sich der Anlenkpunkt des Wischerarms 18 befindet - im wesentlichen gleich groß ist und daß sie zum einen Ende 238 des Wischblatts leicht abfällt, während sie im Bereich des anderen Endes 239 des Wischblatts erheblich geringer wird. Bei dieser Auslegung des Wischblatts ist der Angriffspunkt 243 des Wischerarms 18 am Wischblatt wie bei der Auslegung gemäß Figur 6 außerhalb der Mitte der Wischblattlänge 240 angeordnet. Eine solche Positionierung der Anlenkstelle kann unter Umständen natürlich auch bei Wischblättern die gemäß Figur 5 ausgelegt sind angewendet werden. Die verschiedenen Auslegungen des Wischblatts können durch bestimmte Scheibentypen, die sich beispielsweise durch die Art der sphärischen Krümmungen der Scheiben voneinander unterscheiden, bedingt sein.

Figur 8 zeigt einen möglichen Krümmungsverlauf des Tragelements 12, der eine Druckverteilung der Wischlippe 28 an der Scheibe 15 ergeben kann, wie sie in Figur 5 graphisch dargestellt ist. Bei diesem federelastischen Tragelement 12, das unbelastet eine stärkere Hohlkrümmung gegenüber der Scheibe aufweist als diese im Bereich des vom Wischblatt überstrichenen Wischfeldes gekrümmt ist, ist der Krümmungsverlauf so ausgeführt, daß dieser im Mittelabschnitt 36 des Tragelements stärker ist als an dessen Endabschnitten 38. Zur Erlangung der angestrebten Anlegekraftverteilung ist es jedoch auch denkbar, die Endabschnitte 38 des Tragelements 12 im Querschnitt so zu reduzieren, daß eine vergleichbare Wirkung erreicht wird.

Selbstverständlich läßt sich diese Möglichkeit auch mit entsprechend abgestimmten Veränderungen des Krümmungsverlaufs des Tragelements 12 kombinieren.

Durch die Verringerung der Anlegekraft der Wischlippe 28 an der Scheibenoberfläche 26 im Bereich eines Wischblattendes oder an beiden Wischblattenden wird ein schlagartiges Umspringen oder Umschnappen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage vermieden. Vielmehr erfolgt beim erfindungsgemäßen Wischblatt ein vergleichsweise sanftes Umlegen der Wischlippe vom Wischblattende aus fortschreitend zur Wischlippenmitte beziehungsweise bis zum anderen Wischlippenende. Die Figuren 3 und 4 zeigen in Verbindung mit Figur 1, daß auch bei sphärisch gekrümmten Scheiben die geringer belasteten Endabschnitte der Wischlippe 28 noch wirksam an der Scheibenoberfläche anliegen. Dies zeigt ein Vergleich der Figuren 3 und 4, aus dem klar ersichtlich ist, daß im geringer belasteten Endbereich (Figur 4) die Wischlippe 28 steiler zur Scheibenobenfläche 26 steht als in deren Mittelabschnitt (Figur 3) wo die größere Anlegekraft zur Wirkung kommt. Dieses steilere Anstellen der Wischlippe 28 begünstigt den Beginn des Umlegens der Wischlippe, wenn der Gegenlauf der Wischbewegung (Doppelpfeil 29) einsetzt.

Allen Ausführungsbeispielen ist gemeinsam, daß der Anlegedruck (Pfeil 24) der Wischleiste 14 an der Scheibe 15 in deren Mittelabschnitt 36 größer ist als an wenigstens einem ihrer beiden Endabschnitte 38. Dies gilt auch dann, wenn - abweichend vom gegenständlich gezeigten Wischblatt 10 mit einem einteiligen, als Federschiene dargestelltem Tragelement 12 - das Tragelement mehrteilig aufgebaut ist. Entscheident ist alleine die erfindungsgemäße Verteilung des Anlegedrucks.

Ansprüche

1. Wischblatt (10) für Scheiben (15) von Kraftfahrzeugen, das quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen, zur Scheibe belastenden Wischerarm (18) hin- und hergehend über die Scheibe bewegbar ist und das Wischblatt eine an der Scheibe anlegbare, langgestreckte Wischleiste (14) hat, an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm aufweisendes Tragelement (12) zur Verteilung der Anlegekraft (Pfeil 24) über die gesamte Wischleistenlänge (40) längsachsenparallel angeordnet ist, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt (36) größer ist als an wenigstens einem ihrer beiden Endabschnitte (38, bzw. 138, 139 bzw. 238, 239).

2. Wischblatt nach Anspruch 1, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) an deren beiden Endabschnitten (38) kleiner ist als in deren Mittelabschnitt (36).

3. Wischblatt nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in deren Mittelabschnitt (36) zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

4. Wischblatt nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß das Tragelement (12) an seiner der Scheibe (15) zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe (15) im Bereich des vom Wischblatt (10) überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt (36) des Tragelements (12) stärker ist als an dessen Endabschnitt/Endabschnitten (38).

Zusammenfassung

Es wird ein Wischblatt vorgeschlagen, das zum Reinigen von Scheiben von Kraftfahrzeugen dient. Das Wischblatt (10) ist quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen zur Scheibe (15) belasteten Wischerarm (18) hin- und hergehend bewegbar und hat eine an der Scheibe anlegbare langgestreckte Wischleiste (14) an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm (18) aufweisendes Tragelement (12) zur Verteilung der Anlegekraft über die gesamte Wischleistenlänge längsachsenparallel angeordnet ist. Ein besonders effektiver und geräuscharmer Betrieb der Wischanlage wird erreicht, wenn die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt größer ist als an wenigstens einem ihrer beiden Endabschnitte (38 bzw. 138, 139 bzw. 238, 239).

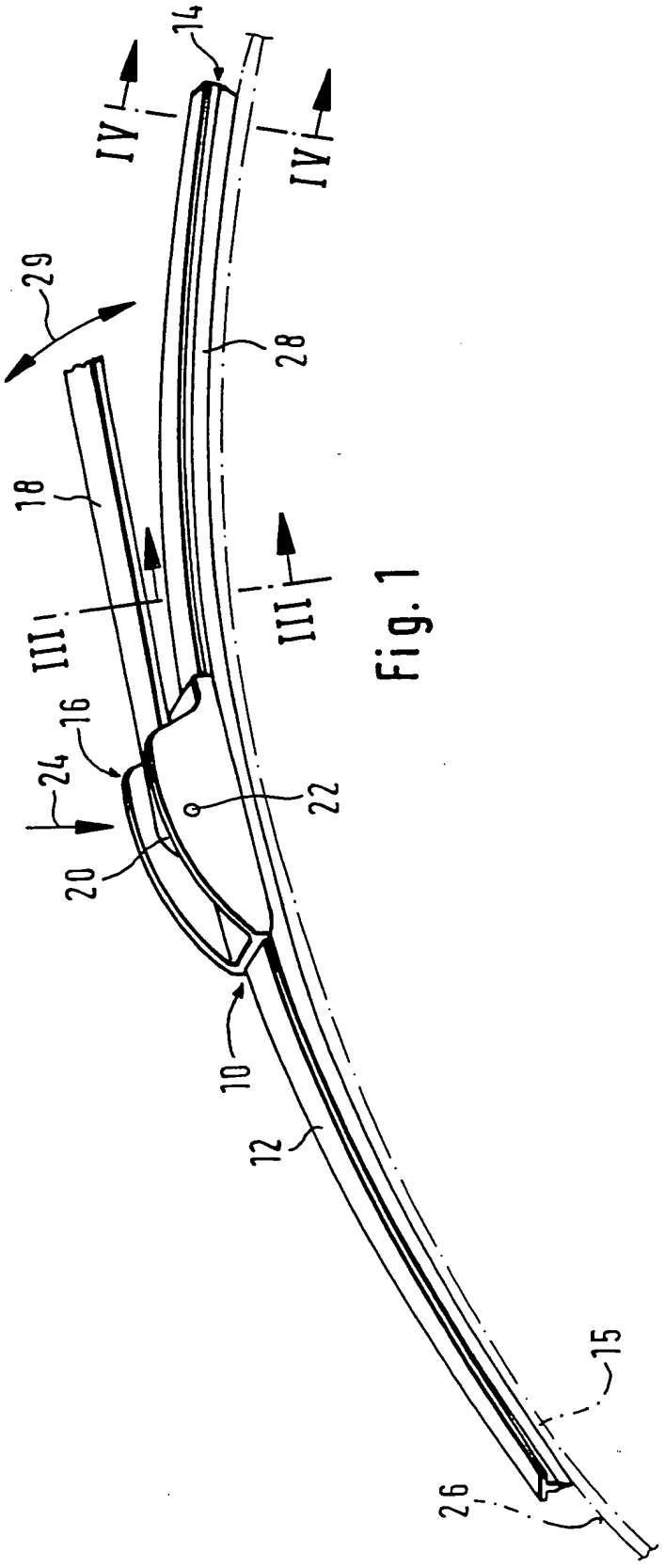


Fig. 1

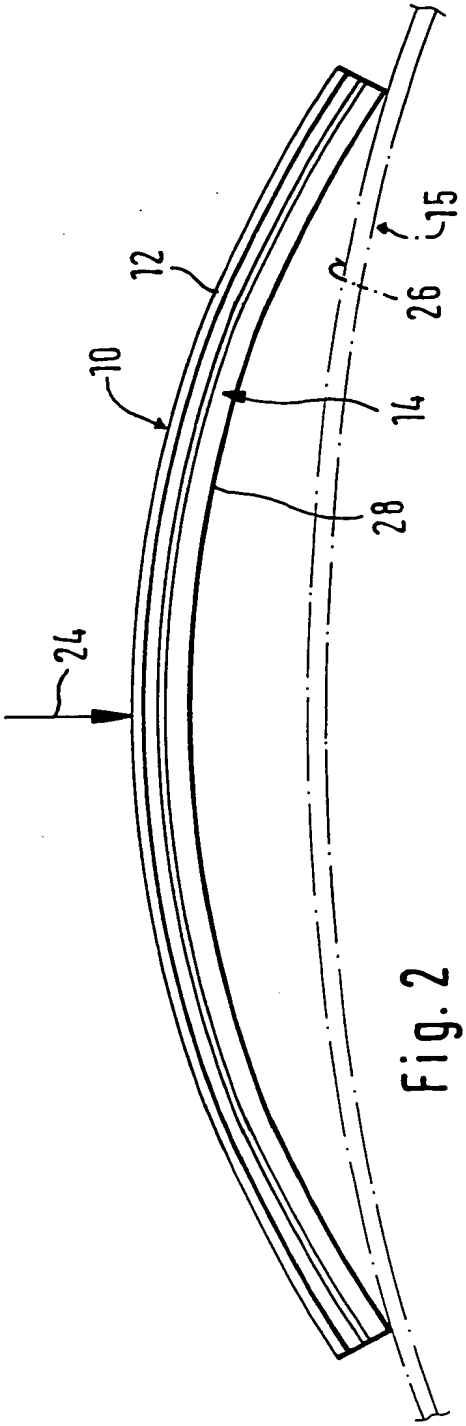


Fig. 2

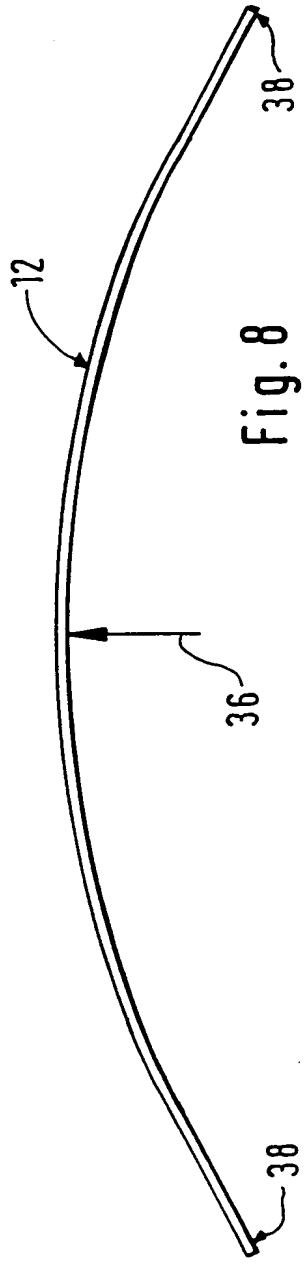


Fig. 8

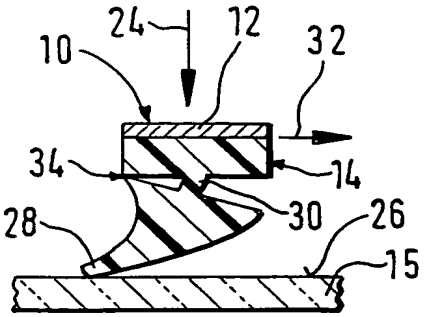


Fig. 3

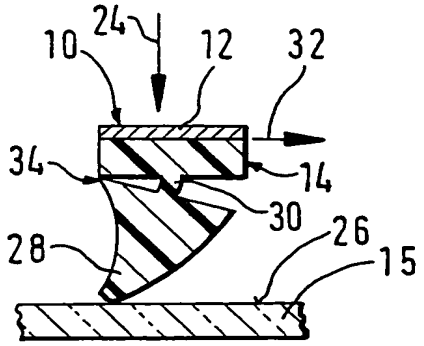


Fig. 4

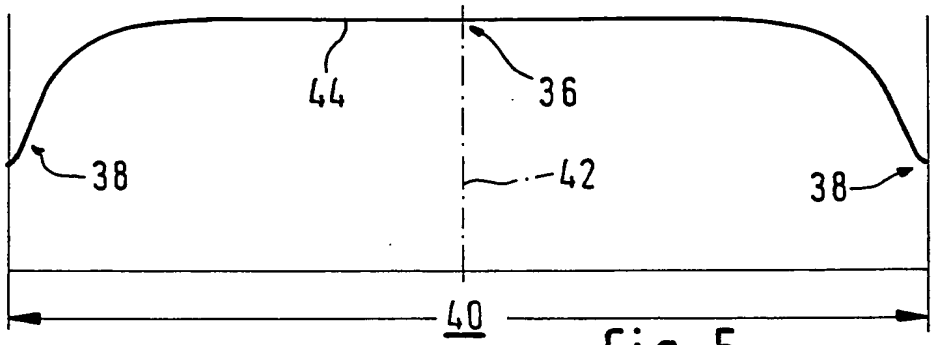


Fig. 5

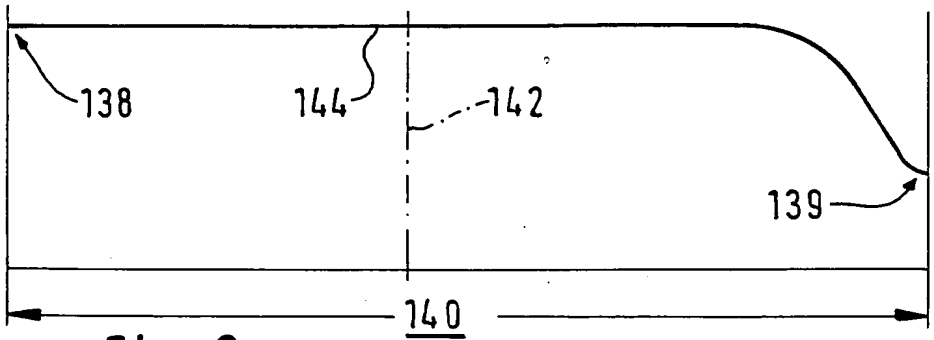


Fig. 6

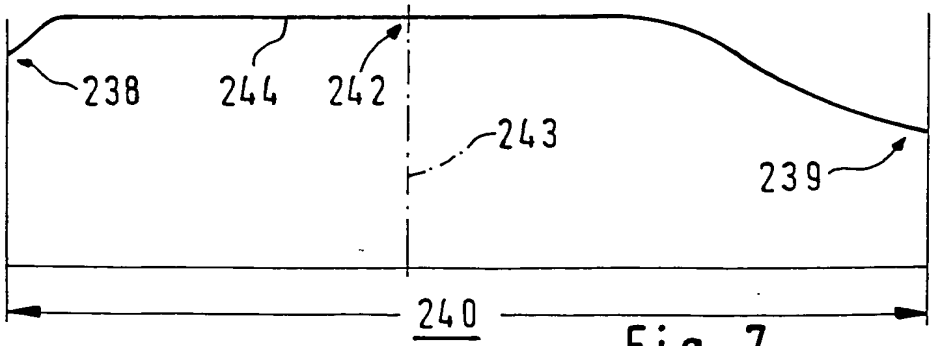


Fig. 7

C17-5A
5/8/00

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Group: Attorney Docket # 989

Applicant(s) : KOTLARSKI, T.

Serial No. :

Filed : Simultaneously

For : WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

SIMULTANEOUS AMENDMENT

December 1, 1999

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

S I R S:

Simultaneously with filing of the above identified application please amend the same as follows:

In the Claims:

Claim 3 line 1 delete "one of claims 1 or 2", substitute with "claim 1".

Claim 4 line 1 delete "one of claims 1 to 3", substitute with "claim 1".

REMARKS:

This Amendment is submitted simultaneously with filing of the above identified application.

With the present Amendment applicant has amended the claims so as to eliminate their multiple dependency.

Consideration and allowance of the present application is most respectfully requested.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant(s)
Reg. No. 27233

PCT WELTORGANISATION FÜR GEISTIGES EIGENTUM
Internationales Büro

INTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)

(51) Internationale Patentklassifikation 6 : B60S 1/38

A1

(11) Internationale Veröffentlichungsnummer: **WO 99/51470**

(43) Internationales Veröffentlichungsdatum: 14. Oktober 1999 (14.10.99)

(21) Internationales Aktenzeichen: PCT/DE98/03721

(22) Internationales Anmeldedatum: 18. Dezember 1998 (18.12.98)

(30) Prioritätsdaten:
198 14 610.8 1. April 1998 (01.04.98) DE

(71) Anmelder *(für alle Bestimmungsstaaten ausser US)*: ROBERT BOSCH GMBH [DE/DE]; Postfach 30 02 20, D–70442 Stuttgart (DE).

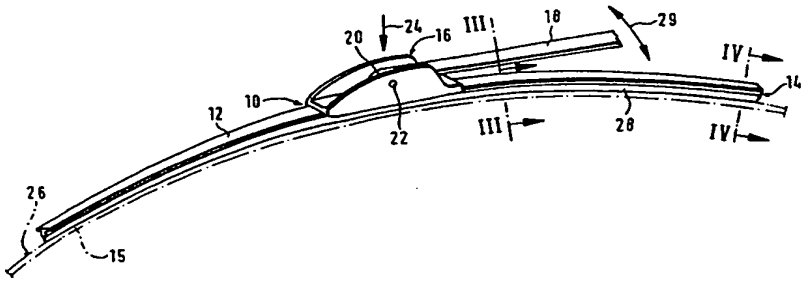
(72) Erfinder; und
(75) Erfinder/Anmelder *(nur für US)*: KOTLARSKI, Thomas [DE/DE]; Hauptstrasse 58a, D–77830 Bühlertal (DE).

(81) Bestimmungsstaaten: JP, KR, US, europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Veröffentlicht
Mit internationalem Recherchenbericht.

(54) Title: WIPER BLADE FOR MOTOR VEHICLE WINDOWS

(54) Bezeichnung: WISCHBLATT FÜR SCHEIBEN VON KRAFTFAHRZEUGEN



(57) Abstract

The invention relates to a wiper blade provided for cleaning motor vehicle windows. The wiper blade (10) is arranged such that it can be reciprocally moved in a transversal manner in relation to the longitudinal extension thereof. Said wiper blade is moved by a wiper arm (18) which can be connected to the wiper blade, is driven, and which can be applied on the window (15). The wiper blade also comprises a wiper blade strip (14). A longitudinally extended, elastic support element (12) is provided which comprises the connecting means (16) for the wiper blade (18) and is provided for distributing the application force over the entire length of the wiper blade strip. Said support element is arranged on the side of the wiper blade strip which faces away from the window and is arranged in such a way that it is parallel to the longitudinal axis. An especially effective and quiet operation of the wiper system is provided when the application force (arrow 24) of the wiper blade strip (14) on the window (15) is greater in the middle section thereof than on at least one of both end sections (38 or 138, 139 or 238, 239) thereof.

(57) Zusammenfassung

Es wird ein Wischblatt vorgeschlagen, das zum Reinigen von Scheiben von Kraftfahrzeugen dient. Das Wischblatt (10) ist quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen, zur Scheibe (15) belasteten Wischerarm (18) hin– und hergehend bewegbar und hat eine an der Scheibe anlegbare langgestreckte Wischleiste (14), an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm (18) aufweisendes Tragelement (12) zur Verteilung der Anlegekraft über die gesamte Wischleistenlänge längsachsenparallel angeordnet ist. Ein besonders effektiver und geräuscharmer Betrieb der Wischanlage wird erreicht, wenn die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt grösser ist als an wenigstens einem ihrer beiden Endabschnitte (38 bzw. 138, 139 bzw. 238, 239).

Wischblatt für Scheiben von Kraftfahrzeugen

Stand der Technik

Bei Wischblättern der im Oberbegriff des Anspruchs 1 bezeichneten Art soll das Tragelement über das gesamte vom Wischblatt bestrichene Wischfeld eine vorbestimmte Verteilung der vom Wischerarm ausgehenden Wischblatt-Anpresskraft - oft auch als Anpreßdruck bezeichnet - an der Scheibe gewährleisten. Durch eine entsprechende Krümmung des unbelasteten Tragelements - also wenn das Wischblatt nicht an der Scheibe anliegt - werden die Enden der im Betrieb des Wischblatts vollständig an der Scheibe angelegten Wischleiste durch das dann gespannte Tragelement zur Scheibe belastet, auch wenn sich die Krümmungsradien von sphärisch gekrümmten Fahrzeugscheiben bei jeder Wischblattposition ändern. Die Krümmung des Wischblatts muß also etwas stärker sein als die im Wischfeld an der zu wischenden Scheibe gemessene stärkste Krümmung. Das Tragelement ersetzt somit die aufwendige Tragbügelkonstruktion mit zwei in der Wischleiste angeordneten Federschienen, wie sie bei herkömmlichen Wischblättern praktiziert wird (DE-OS 15 05 357).

Die Erfindung geht aus von einem Wischblatt nach dem Oberbegriff des Anspruchs 1. Bei einem bekannten Wischblatt dieser Art (DE-PS 12 47 161) sind zur Erzielung einer

möglichst gleichmäßigen Druckbelastung des Wischblatts an einer ebenen Scheibe über seine gesamte Länge mehrere Ausgestaltungen des Tragelements als Problemlösung vorgesehen.

Bei einem anderen bekannten Wischblatt gemäß der Gattung des Anspruchs 1 (EP 05 28 643 B1) nimmt - zur Erzielung einer gleichmäßigen Druckbelastung des Wischblatts an sphärisch gekrümmten Scheiben - die Druckbelastung an den beiden Endabschnitten wesentlich zu, wenn das Wischblatt auf eine ebene Scheibe gepreßt wird.

Die in beiden Fällen angestrebte gleichmäßige Druckverteilung über die gesamte Wischblattlänge führt jedoch zu einem schlagartigen Umspringen der zum Wischblatt gehörenden, die eigentliche Wischarbeit ausführenden Wischlippe über deren gesamte Länge aus ihrer einen in ihre andere Schlepplage, wenn das Wischblatt seine Arbeitsrichtung umkehrt. Diese Schlepplage ist unabdingbar für einen effektiven und geräuscharmen Betrieb der Wischanlage. Das schlagartige Umspringen der Wischlippe - welches zwangsläufig mit einer Auf- Abbewegung des Wischblatts verbunden ist - erzeugt jedoch unerwünschte Klopfgeräusche. Auch ist die Abstimmung der Tragelementspannung auf die gewünschte, von Fall zu Fall andersartige Druckverteilung bei sphärisch gekrümmten Scheiben problematisch.

Vorteile der Erfindung

Bei dem erfindungsgemäßen Wischblatt mit den Merkmalen des Anspruchs 1 ergibt sich im Bereich der verminderten Anlegekraft eine steilere Schlepplage der Wischlippe gegenüber dem Bereich mit der größeren Anlagekraft. Diese steilere Stellung der Wischlippe begünstigt deren

Umlegevorgang in den Wischrichtungsumkehrpositionen des Wischblatts, welcher dort eingeleitet wird und sich dann in den Bereich mit der größeren Anlegekraft fortsetzt. Dadurch wird das schlagartige Umschnappen der gesamten Wischlippe und das damit verbundene störende Klopfgeräusch vermieden. Auch entfallen die Probleme bei der Auslegung des Tragelements hinsichtlich der Anlagedruckverteilung bei sphärisch gekrümmten Scheiben. Es hat sich nämlich gezeigt, daß mit der Verringerung des Anlegedrucks am Endabschnitt des Wischblatts nicht zwangsläufig auch eine Minderung der Wischqualität einhergeht.

Besonders vorteilhaft ist es, wenn der Anlegedruck der Wischleiste an der Scheibe an deren beiden Endabschnitten kleiner ist als in deren Mittelabschnitt, weil dann der Umlegevorgang der Wischlippe von beiden Enden her erfolgt und dadurch schneller abgeschlossen ist.

Bei besonders problematischen Scheibenkrümmungen kann es zweckdienlich sein, wenn der Anlegedruck der Wischleiste an der Scheibe in deren Mittelabschnitt zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

Eine bevorzugte Ausführung des Tragelements zum Erreichen der angestrebten Verteilung des Anlegedrucks sieht vor, daß das Tragelement an seiner der Scheibe zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe im Bereich des vom Wischblatt überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt des Tragelements stärker ist als an dessen Endabschnitt/Endabschnitten.
Weitere vorteilhafte Weiterbildungen und Ausgestaltungen der Erfindung sind in der nachfolgenden Beschreibung eines in

der dazugehörigen Zeichnung dargestellten Ausführungsbeispiels angegeben.

Zeichnung

In der Zeichnung zeigen: Figur 1 eine perspektivische Darstellung eines an der Scheibe angelegten, mit einem zur Scheibe belasteten Wischerarm verbundenen Wischblatts, Figur 2 eine Prinzipdarstellung einer Seitenansicht eines unbelastet auf die Scheibe aufgesetzten Wischblatts, gegenüber Figur 1 verkleinert dargestellt, Figur 3 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1, entlang der Linie III-III in vergrößerter Darstellung, Figur 4 die Schnittfläche eines Schnitts durch das Wischblatt gemäß Figur 1 entlang der Linie IV-IV in vergrößerter Darstellung, Figur 5 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer ersten möglichen Ausführungsform der Erfindung, Figur 6 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer anderen möglichen Ausführungsform der Erfindung, Figur 7 eine graphische Darstellung des Wischblatt-Anlegedrucks über die Wischblattlänge, gemäß einer weiteren möglichen Ausführungsform der Erfindung und Figur 8 eine unmaßstäbliche Prinzipdarstellung eines zum Wischblatt gehörenden Tragelements in Seitenansicht.

Beschreibung des Ausführungsbeispiels

Ein in Figur 1 dargestelltes Wischblatt 10 weist ein langgestrecktes, federelastisches Tragelement 12 für eine Wischleiste 14 auf, das in Figur 8 separat dargestellt ist. Wie aus den Figuren 1, 3 und 4 ersichtlich ist, sind das Tragelement 12 und die Wischleiste 14 längsachsenparallel

miteinander verbunden. An der von der zu wischenden Scheibe 15 - in Figur 1 strichpunktiert gezeichnet - abgewandten Oberseite des Tragelements 12 ist eine Anschlußvorrichtung 16 angeordnet, mit deren Hilfe das Wischblatt 10 mit einem an der Karosserie eines Kraftfahrzeugs geführten, angetriebenen Wischerarm 18 lösbar verbunden werden kann. An der der Scheibe 15 zugewandten Unterseite des Tragelements 12 ist die langgestreckte, gummielastische Wischleiste 14 angeordnet. An dem freien Ende 20 des Wischarms 18 ist ein als Gegenanschlußmittel dienender Haken angeformt, welcher einen zur Anschlußvorrichtung 16 des Wischblatts 10 gehörenden Gelenkbolzen 22 umgreift. Die Sicherung zwischen dem Wischerarm 18 und dem Wischblatt 10 wird durch nicht näher dargestellte, an sich bekannte, als Adapter ausgebildete Sicherungsmittel übernommen. Der Wischerarm 18 und damit auch dessen Hakenende 20 sind in Richtung des Pfeiles 24 zur zu wischenden Scheibe 15 belastet, deren zu wischende Oberfläche in den Figuren 1 und 2 durch eine strichpunktierte Linie 26 angedeutet ist. Die Kraft (Pfeil 24) legt das Wischblatt 10 über dessen gesamte Länge an der Oberfläche 26 der zu wischenden Scheibe 15 an. Da die in Figur 2 dargestellte strichpunktierte Linie 26 die stärkste Krümmung der Scheibenoberfläche im Bereich des Wischfeldes darstellen soll ist klar ersichtlich, daß die Krümmung des mit seinen beiden Enden an der Scheibe anliegenden, noch unbelasteten Wischblatts 10 stärker ist als die maximale Krümmung der sphärisch gekrümmten Scheibe 15. Unter dem Anpressdruck (Pfeil 24) legt sich das Wischblatt 10 mit seiner zur Wischleiste 14 gehörenden Wischlippe 28 über seine gesamte Länge an der Scheibenoberfläche 26 an. Dabei baut sich im bandartigen federelastischen Tragelement 12 eine Spannung auf, welche für eine ordnungsgemäße Anlage der Wischleiste 14 bzw. der Wischlippe 28 über deren gesamte Länge an der Kraftfahrzeugscheibe 15 sorgt. Während des Wischbetriebs bewegt der Wischerarm 18 das Wischblatt 10

quer zu dessen Längserstreckung über die Scheibe 15. Diese Wisch- oder Arbeitsbewegung ist in Figur 1 mit dem Doppelpfeil 29 bezeichnet.

Im folgenden soll nun auf die besondere Ausgestaltung des erfindungsgemäßen Wischblatts näher eingegangen werden. Wie die unmaßstäblich dargestellten Figuren 3 und 4 zeigen, ist die Wischleiste 14 an der unteren, der Scheibe 15 zugewandten Bandfläche des Tragelements 12 angeordnet. Mit Abstand von dem Tragelement 12 ist die Wischleiste 14 von ihren beiden Längsseiten her so eingeschnürt, daß in ihrem Längsmittelbereich ein Kippsteg 30 verbleibt, der sich über die gesamte Länge der Wischleiste 14 erstreckt. Der Kippsteg 30 geht in die Wischlippe 28 über, die einen im wesentlichen keilförmigen Querschnitt aufweist. Durch die Anlegekraft (Pfeil 24) wird das Wischblatt beziehungsweise die Wischlippe 28 gegen die zu wischende Oberfläche 26 der Scheibe 15 gedrückt, wobei sie unter dem Einfluß der Wischbewegung - von der in den Figuren 3 und 4 speziell die eine der beiden gegenläufigen Wischbewegungen (Doppelpfeil 29) betrachtet wird und die durch den Richtungspfeil 32 angedeutet ist - in eine sogenannte Schlepplage kippt, in der sich die Wischlippe an dem am Tragelement 12 gehaltenen Teil der Wischleiste 14 über ihre gesamte Länge abstützt. Dieser Abstützung welche in den Figuren 3 und 4 mit dem Pfeil 34 gekennzeichnet ist erfolgt stets - in Abhängigkeit von der jeweiligen Wischrichtung (Doppelpfeil 29 bzw. Pfeil 32) an der in der jeweiligen Wischrichtung hintenliegenden Oberkante der Wischlippe 28, sodaß diese stets in einer sogenannten Schlepplage über die Scheibe geführt wird. Diese Schlepplage ist für einen effektiven und geräuscharmen Betrieb der Wischvorrichtung notwendig. Die Umkehrung der Schlepplage erfolgte in der sogenannten Umkehrposition des Wischblatts 10, wenn dieses seine Wischbewegung (Doppelpfeil 29) umkehrt. Dabei führt das Wischblatt eine Auf- Abbewegung

aus, welche durch das Umkippen der Wischlippe 28 bedingt ist. Die Aufbewegung erfolgt entgegen Richtung des Pfeiles 24 und somit auch entgegen der Anlegekraft. In der entgegen dem Pfeil 32 gerichteten anderen Wischbewegung ergibt sich somit ein Spiegelbild der Figuren 3 und 4.

Um ein möglichst geräuscharmes Umlegen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage zu erreichen, wird das zur Verteilung der Anlegekraft (Pfeil 24) dienende Tragelement 12 so ausgelegt, daß der Anlegedruck der Wischleiste 24 beziehungsweise der Wischlippe 28 an der Scheibenoberfläche 26 in deren Mittelabschnitt 36 (Figur 8) größer ist als an wenigsten einen der beiden Endabschnitten 38. Dieser Grundgedanke kann beispielsweise so umgesetzt werden, wie dies in den graphischen Darstellungen gemäß den Figuren 5 bis 7 aufgezeigt ist.

Gemäß Figur 5 ist das Tragelement 12 so ausgelegt, daß über die Länge 40 des Wischblatts gesehen dessen Mittelbereich 36 eine annähernd gleichstarke Anlegekraft (Linie 44) vorhanden ist und daß diese Anlegekraft 44 an den beiden Endabschnitten 38 des Wischblatts stark abfällt. Die strichpunktierte Linie 42 soll eine mögliche Lage des Gelenkbolzens 22, das heißt den Angriffspunkt der vom Wischerarm ausgehenden Anlegekraft zeigen.

Bei einer anderen Ausführungsform (Figur 6) ist das Tragelement 12 so ausgelegt, daß über die Länge 140 des Wischblatts gesehen die Anlegekraft 24 ausgehend von dem einen Ende 138 des Wischblatts bis weit über dessen Anlenkpunkt (Linie 142) hinaus gleichbleibend groß ist (Linie 144), bis sie im Bereich des anderen Ende 139 des Wischblatts stark abfällt. In Figur 6 ist der mögliche

Anlenkpunkt des Wischblatts am Wischerarm mit 142 bezeichnet worden.

Eine weitere, in Figur 7 dargestellte mögliche Auslegung des erfindungsgemäßen Wischblatts sieht vor, daß der Anlegedruck oder die Anlegekraft (244) der Wischlippe 28 an der Scheibenoberfläche 26 im Mittelbereich 242 des Wischblatts - wo sich der Anlenkpunkt des Wischerarms 18 befindet - im wesentlichen gleich groß ist und daß sie zum einen Ende 238 des Wischblatts leicht abfällt, während sie im Bereich des anderen Endes 239 des Wischblatts erheblich geringer wird. Bei dieser Auslegung des Wischblatts ist der Angriffspunkt 243 des Wischerarms 18 am Wischblatt wie bei der Auslegung gemäß Figur 6 außerhalb der Mitte der Wischblattlänge 240 angeordnet. Eine solche Positionierung der Anlenkstelle kann unter Umständen natürlich auch bei Wischblättern die gemäß Figur 5 ausgelegt sind angewendet werden. Die verschiedenen Auslegungen des Wischblatts können durch bestimmte Scheibentypen, die sich beispielsweise durch die Art der sphärischen Krümmungen der Scheiben voneinander unterscheiden, bedingt sein.

Figur 8 zeigt einen möglichen Krümmungsverlauf des Tragelements 12, der eine Druckverteilung der Wischlippe 28 an der Scheibe 15 ergeben kann, wie sie in Figur 5 graphisch dargestellt ist. Bei diesem federelastischen Tragelement 12, das unbelastet eine stärkere Hohlkrümmung gegenüber der Scheibe aufweist als diese im Bereich des vom Wischblatt überstrichenen Wischfeldes gekrümmt ist, ist der Krümmungsverlauf so ausgeführt, daß dieser im Mittelabschnitt 36 des Tragelements stärker ist als an dessen Endabschnitten 38. Zur Erlangung der angestrebten Anlegekraftverteilung ist es jedoch auch denkbar, die Endabschnitte 38 des Tragelements 12 im Querschnitt so zu reduzieren, daß eine vergleichbare Wirkung erreicht wird.

Selbstverständlich läßt sich diese Möglichkeit auch mit entsprechend abgestimmten Veränderungen des Krümmungsverlaufs des Tragelements 12 kombinieren.

Durch die Verringerung der Anlegekraft der Wischlippe 28 an der Scheibenoberfläche 26 im Bereich eines Wischblattendes oder an beiden Wischblattenden wird ein schlagartiges Umspringen oder Umschnappen der Wischlippe 28 aus ihrer einen Schlepplage in ihre andere Schlepplage vermieden. Vielmehr erfolgt beim erfindungsgemäßen Wischblatt ein vergleichsweise sanftes Umlegen der Wischlippe vom Wischblattende aus fortschreitend zur Wischlippenmitte beziehungsweise bis zum anderen Wischlippenende. Die Figuren 3 und 4 zeigen in Verbindung mit Figur 1, daß auch bei sphärisch gekrümmten Scheiben die geringer belasteten Endabschnitte der Wischlippe 28 noch wirksam an der Scheibenoberfläche anliegen. Dies zeigt ein Vergleich der Figuren 3 und 4, aus dem klar ersichtlich ist, daß im geringer belasteten Endbereich (Figur 4) die Wischlippe 28 steiler zur Scheibenobenfläche 26 steht als in deren Mittelabschnitt (Figur 3) wo die größere Anlegekraft zur Wirkung kommt. Dieses steilere Anstellen der Wischlippe 28 begünstigt den Beginn des Umlegens der Wischlippe, wenn der Gegenlauf der Wischbewegung (Doppelpfeil 29) einsetzt.

Allen Ausführungsbeispielen ist gemeinsam, daß der Anlegedruck (Pfeil 24) der Wischleiste 14 an der Scheibe 15 in deren Mittelabschnitt 36 größer ist als an wenigstens einem ihrer beiden Endabschnitte 38. Dies gilt auch dann, wenn - abweichend vom gegenständlich gezeigten Wischblatt 10 mit einem einteiligen, als Federschiene dargestelltem Tragelement 12 - das Tragelement mehrteilig aufgebaut ist. Entscheident ist alleine die erfindungsgemäße Verteilung des Anlegedrucks.

Ansprüche

1. Wischblatt (10) für Scheiben (15) von Kraftfahrzeugen, das quer zu seiner Längserstreckung von einem mit diesem verbindbaren, angetriebenen, zur Scheibe belastenden Wischerarm (18) hin- und hergehend über die Scheibe bewegbar ist und das Wischblatt eine an der Scheibe anlegbare, langgestreckte Wischleiste (14) hat, an deren von der Scheibe abgewandten Seite ein langgestrecktes, federelastisches, die Verbindungsmittel (16) für den Wischerarm aufweisendes Tragelement (12) zur Verteilung der Anlegekraft (Pfeil 24) über die gesamte Wischleistenlänge (40) längsachsenparallel angeordnet ist, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in dessen Mittelabschnitt (36) größer ist als an wenigstens einem ihrer beiden Endabschnitte (38, bzw. 138, 139 bzw. 238, 239).

2. Wischblatt nach Anspruch 1, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) an deren beiden Endabschnitten (38) kleiner ist als in deren Mittelabschnitt (36).

3. Wischblatt nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, daß die Anlegekraft (Pfeil 24) der Wischleiste (14) an der Scheibe (15) in deren Mittelabschnitt (36) zumindest annähernd gleichbleibend groß ist und an dem Endabschnitt/den Endabschnitten abfällt.

4. Wischblatt nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß das Tragelement (12) an seiner der Scheibe (15) zugewandten Seite eine Hohlkrümmung aufweist, die stärker ist als die stärkste Krümmung der sphärisch gekrümmten Scheibe (15) im Bereich des vom Wischblatt (10) überstreichbaren Wischfeldes und daß die Hohlkrümmung im Mittelabschnitt (36) des Tragelements (12) stärker ist als an dessen Endabschnitt/Endabschnitten (38).

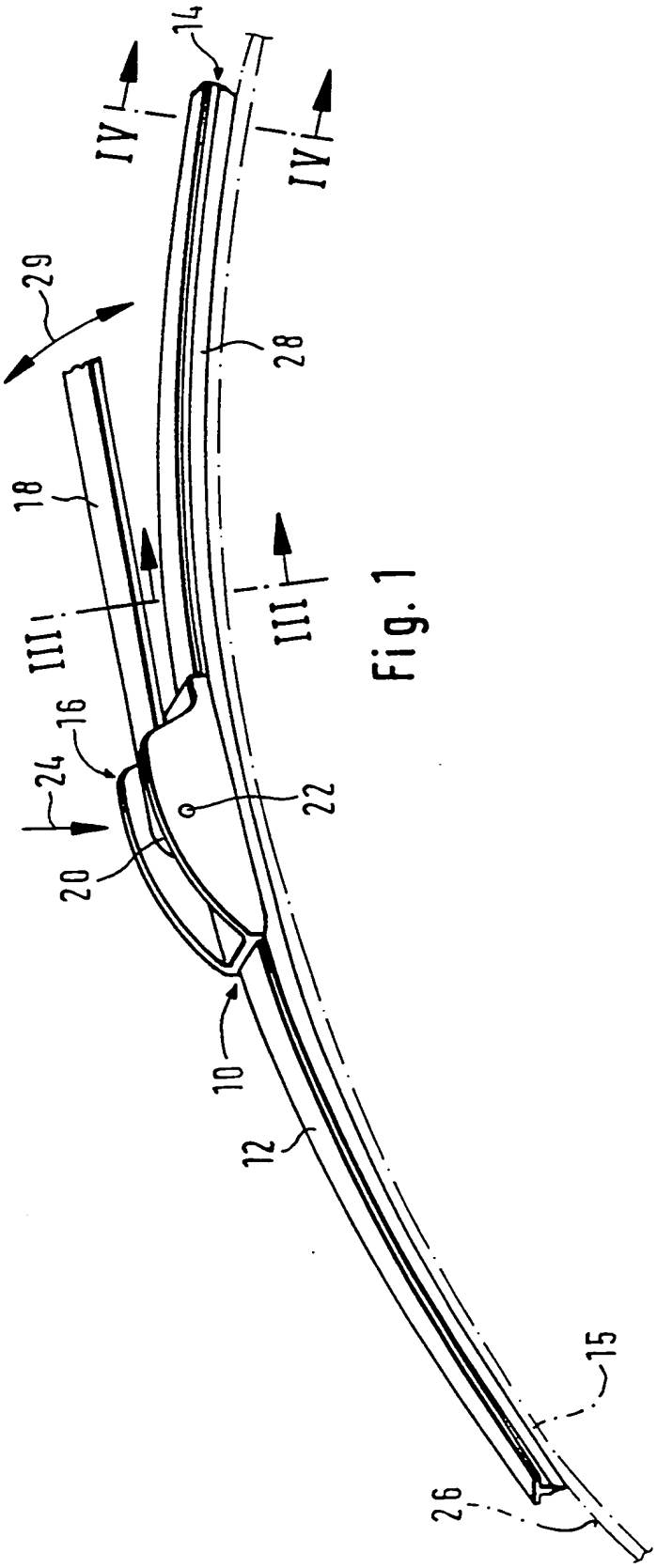


Fig. 1

This Page Blank (uspto)

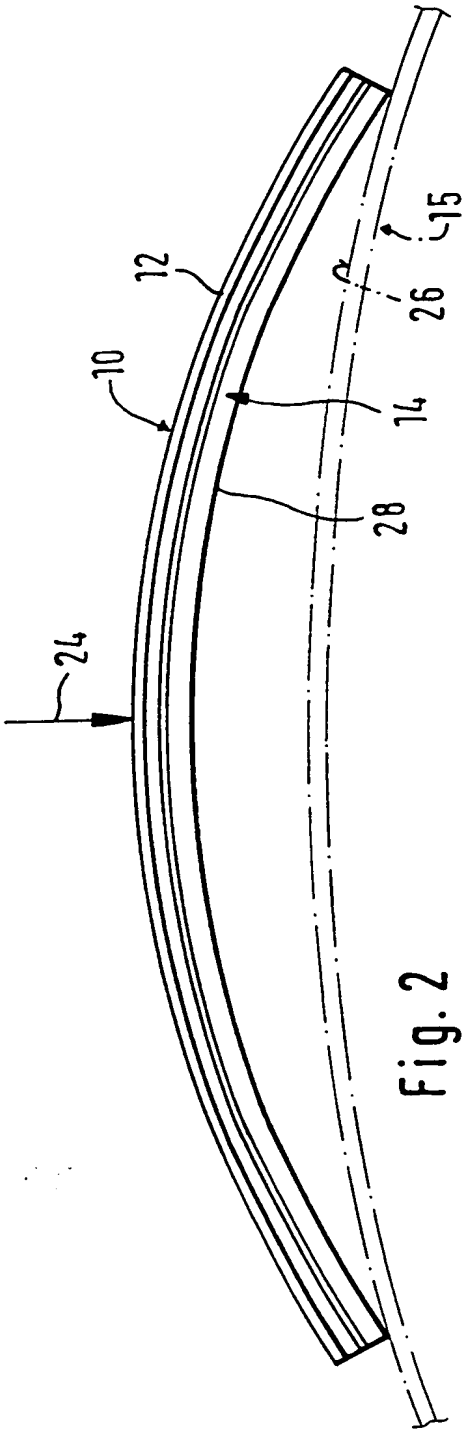


Fig. 2

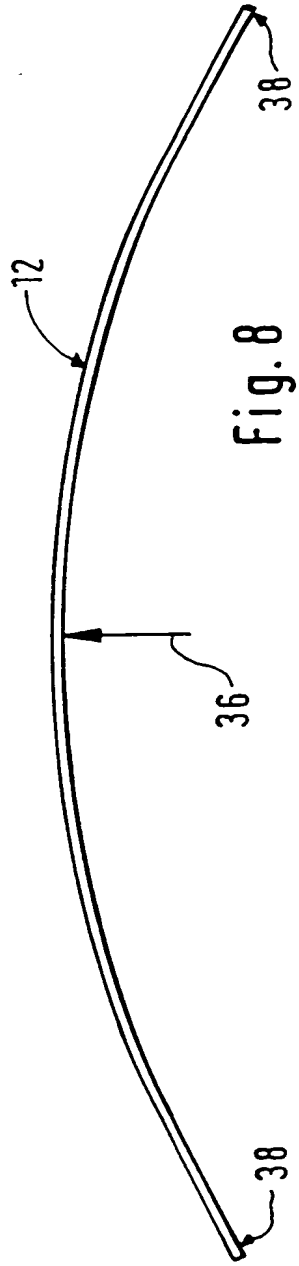


Fig. 8

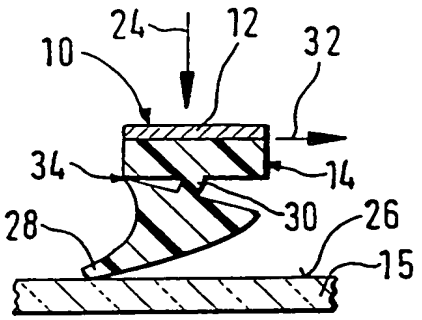


Fig. 3

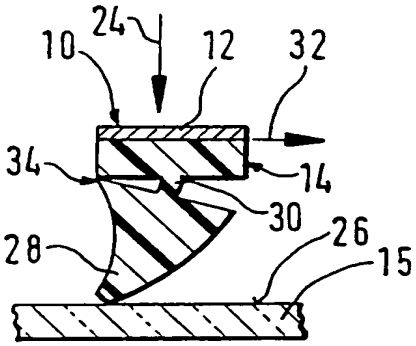


Fig. 4

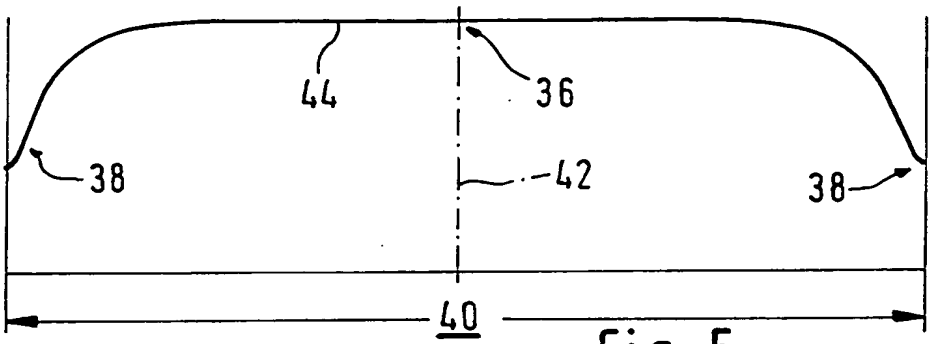


Fig. 5

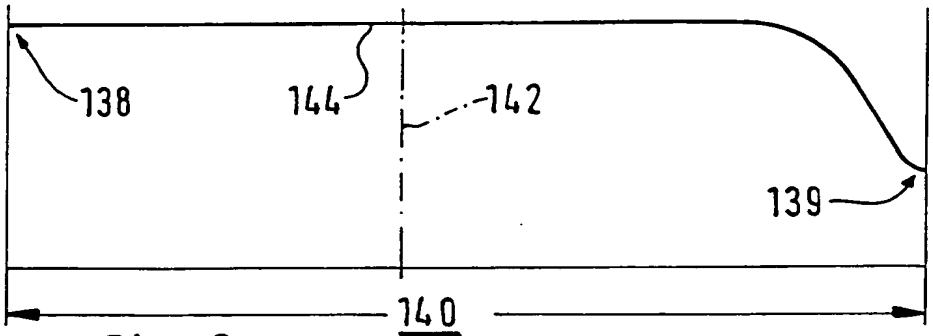


Fig. 6

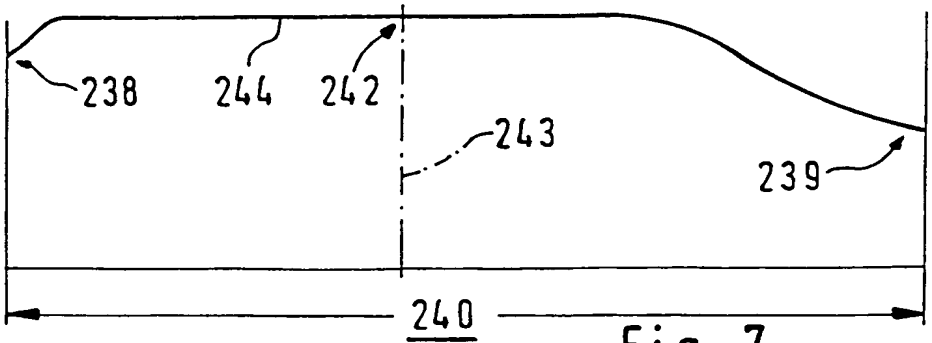


Fig. 7

INTERNATIONAL SEARCH REPORT

International Application No
PCT/DE 98/03721

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B60S1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B60S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category '	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 279 640 A (NIPPON WIPER BLADE CO LTD) 24 August 1988 see the whole document ---	1-4
A	US 4 343 063 A (BATT RICHARD A) 10 August 1982 see column 5, line 15-36; figure 12 ---	1
A	EP 0 528 643 A (ANGLO AMERICAN IND CORP LTD) 24 February 1993 cited in the application see the whole document -----	1-4

☐ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex.

' Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 June 1999	08/07/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Blandin, B

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/DE 98/03721

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0279640 A	24-08-1988	US 4807326 A	28-02-1989
US 4343063 A	10-08-1982	NONE	
EP 0528643 A	24-02-1993	AU 651237 B	14-07-1994
		AU 2108092 A	25-02-1993
		CA 2076268 A	17-02-1993
		DE 69203303 D	10-08-1995
		DE 69203303 T	14-03-1996
		ES 2077984 T	01-12-1995
		JP 5254399 A	05-10-1993
		MX 9204682 A	31-05-1994
		RU 2091257 C	27-09-1997
		US 5325564 A	05-07-1994
		ZA 9206186 A	01-03-1993

INTERNATIONALER RECHERCHENBERICHT

In. .nationales Aktenzeichen
PCT/DE 98/03721

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
IPK 6 B60S1/38

Nach der Internationalen Patentklassifikation (IPK) oder nach der nationalen Klassifikation und der IPK

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
IPK 6 B60S

Recherchierte aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP 0 279 640 A (NIPPON WIPER BLADE CO LTD) 24. August 1988 siehe das ganze Dokument ---	1-4
A	US 4 343 063 A (BATT RICHARD A) 10. August 1982 siehe Spalte 5, Zeile 15-36; Abbildung 12 ---	1
A	EP 0 528 643 A (ANGLO AMERICAN IND CORP LTD) 24. Februar 1993 in der Anmeldung erwähnt siehe das ganze Dokument -----	1-4

☐ Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

☒ Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen
"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist
"E" älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist
"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)
"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht
"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist
"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist
"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden
"Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist
"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
30. Juni 1999	08/07/1999

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Blandin, B

1

Formblatt PCT/ISA/210 (Blatt 2) (Juli 1992)

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen die zur selben Patentfamilie gehören

In. ..ationales Aktenzeichen
PCT/DE 98/03721

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
EP 0279640 A	24-08-1988	US 4807326 A	28-02-1989
US 4343063 A	10-08-1982	KEINE	
EP 0528643 A	24-02-1993	AU 651237 B	14-07-1994
		AU 2108092 A	25-02-1993
		CA 2076268 A	17-02-1993
		DE 69203303 D	10-08-1995
		DE 69203303 T	14-03-1996
		ES 2077984 T	01-12-1995
		JP 5254399 A	05-10-1993
		MX 9204682 A	31-05-1994
		RU 2091257 C	27-09-1997
		US 5325564 A	05-07-1994
		ZA 9206186 A	01-03-1993

Address: ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

U.S. APPLICATION NO.		FIRST NAMED APPLICANT	ATTY. DOCKET NO.
09/445,046		KOTLARSKI	T 989

INTERNATIONAL APPLICATION NO.
PCT/DE98/03721

5071

STRIKER STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

I.A. FILING DATE	PRIORITY DATE
12/18/98	04/01/98

DATE MAILED: 02/07/00

NOTIFICATION OF A DEFECTIVE OATH OR DECLARATION

This application fails to contain an oath or declaration acceptable under 35 U.S.C. 371 (c)(4) for entry into the national stage in the United States of America. The period within which to correct these requirements and avoid abandonment is set in the accompanying Office action.

A new oath or declaration, identifying this application by the international application number and international filing date is required. The oath or declaration does not comply with 37 CFR 1.497(a) and (b) in that it:

1. ☑ is not executed in accordance with either 37 CFR 1.66 or 37 CFR 1.68.
2. ☐ does not identify the specification to which it is directed.
3. ☐ does not identify the inventor(s).
4. ☐ does not identify the citizenship of each inventor.
5. ☐ does not state the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

FAILURE TO SUBMIT AN OATH OR DECLARATION IN COMPLIANCE WITH 37 CFR 1.497(a) AND (b) WITHIN THE TIME PERIOD SET WILL RESULT IN FAILURE TO ENTER THE NATIONAL STAGE AND THE ABANDONMENT OF THE APPLICATION.

Additionally, the oath or declaration does not comply with 37 CFR 1.63 in that it:

1. ☐ does not identify the city and state or city and foreign country of residence or each inventor.

2. ☐ does not state that the person making the oath or declaration:

   a. ☐ has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

   b. ☐ acknowledges the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

3. ☐ does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application serial number, country, day, month, and year of its filing.

4. ☐ does not state that the person making the oath or declaration acknowledges the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and filing date of the continuation in part application which discloses and claims subject matter in addition to that disclosed in the prior application (37 CFR 1.63(d)).

Lamont Hunter
National Stage Processing
Telephone: (703) (703) 305-3838

FORM PCT/DO/EO/917 (September 1996)

Address: ASSISTANT COMMISSIONER FOR PATENTS
Box PCT
Washington, D.C. 20231

U.S. APPLICATION NO.		FIRST NAMED APPLICANT	ATTY. DOCKET NO.
09/445,046		KOTLARSKI	989

INTERNATIONAL APPLICATION NO.
PCT/DE98/03721

I.A. FILING DATE	PRIORITY DATE
12/18/98	04/01/98

5071

STRIKER STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

DATE MAILED 02/07/00

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

1. The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as
   - ☑ a Designated Office (37 CFR 1.494),
   - ☐ an Elected Office (37 CFR 1.495):

   ☑ U.S. Basic National Fee.
   ☑ Copy of the international application in:
   - ☑ a non-English language.
   - ☐ English.

   ☑ Translation of the international application into English.
   ☐ Oath or Declaration of inventors(s) for DO/EO/US.
   ☐ Copy of Article 19 amendments.
   ☐ Translation of Article 19 amendments into English.
   ☐ The International Preliminary Examination Report in English and its Annexes, if any.
   ☐ Translation of Annexes to the International Preliminary Examination Report into English.
   ☑ Preliminary amendment(s) filed 01 Dec 1999 and _____.
   ☐ Information Disclosure Statement(s) filed _____ and _____.
   ☐ Assignment document.
   ☐ Power of Attorney and/or Change of Address.
   ☐ Substitute specification filed _____.
   ☐ Statement Claiming Small Entity Status.
   ☐ Priority Document.
   ☑ Copy of the International Search Report ☑ and copies of the references cited therein.
   ☐ Other:

2. The following items MUST be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:
   - ☐ a. Translation of the application into English. Note a processing fee will be required if submitted later than the appropriate 20 or 30 months from the priority date.
     - ☐ The current translation is defective for the reasons indicated on the attached Notice of Defective Translation.
   - ☐ b. Processing fee for providing the translation of the application and/or the Annexes later that the appropriate 20 or 30 months from the priority date (37 CFR 1.492(f)).
   - ☑ c. Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
     - ☑ The current oath or declaration does not comply with 37 CFR 1.497(a) and (b) for the reasons indicated on the attached PCT/DO/EO/917.
   - ☑ d. Surcharge for providing the oath or declaration later that the appropriate 20 or 30 months from the priority date (37 CFR 1.492(e)).

3. Additional claim fees of $_____ as a ☐ large entity ☐ small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due (37 CFR 1.492(g)). See attached PTO-875.

ALL OF THE ITEMS SET FORTH IN 2(a)-2(d) AND 3 ABOVE MUST BE SUBMITTED WITHIN ONE MONTH FROM THE DATE OF THIS NOTICE OR BY ☐ 21 OR ☐ 31 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

4. Translation of the Annexes MUST be submitted no later that the time period set above or the annexes will be cancelled. Note processing fee will be required if submitted later than 30 months from the priority date.
5. ☐ The Article 19 amendments are cancelled since a translation was not provided by the appropriate 20 (37 CFR 1.494(d)) or 30 (37 CFR 1.495(d)) months from the priority date.

Applicant is reminded that any communication to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above. (37 CFR 1.5)

A copy of this notice MUST be returned with this response.

Enclosed: ☐ PCT/DO/EO/917 ☐ Notice of Defective Translation
☐ PTO-875

FORM PCT/DO/EO/905 (December 1997)

Lamont Hunter
National Stage Processing
Telephone: (703) (703) 305-3686

520 Rec'd PCT/PTO 31 DEC 1999

FORM PTO-1390 (Modified) (REV 10-95) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	
989	
U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	
09/445046	

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/DE 98/03721	DECEMBER 18, 1998	APRIL 1, 1998

TITLE OF INVENTION
WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

APPLICANT(S) FOR DO/EO/US
Thomas KOTLARSKI

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ A copy of the International Search Report (PCT/ISA/210).
8. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
    A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☒ Certificate of Mailing by Express Mail
19. ☐ Other items or information:

EK 069304987 US

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
09/445046	PCT/DE 98/03721	989

20. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐ Search Report has been prepared by the EPO or JPO	**$930.00**	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482)	**$720.00**	
☐ No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))	**$790.00**	
☒ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO	**$1,070.00**	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	**$98.00**	

ENTER APPROPRIATE BASIC FEE AMOUNT =	**$970.00**	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	**$0.00**	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	4 - 20 =	0	x $22.00	**$0.00**	
Independent claims	1 - 3 =	0	x $80.00	**$0.00**	
Multiple Dependent Claims **(check if applicable).**			☐	**$0.00**	
TOTAL OF ABOVE CALCULATIONS =				**$970.00**	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable).**			☐	**$0.00**	
SUBTOTAL =				**$970.00**	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +				**$0.00**	
TOTAL NATIONAL FEE =				**$970.00**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).**			☐	**$0.00**	
TOTAL FEES ENCLOSED =				**$970.00**	
				Amount to be: refunded	$
				charged	$

☒ A check in the amount of **$970.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. in the amount of to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4675** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NEW YORK 11743

SIGNATURE

MICHAEL J. STRIKER
NAME

27233
REGISTRATION NUMBER

DECEMBER 1, 1999
DATE

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Group: Attorney Docket # 989

Applicant(s) : KOTLARSKI, T.

Serial No. :

Filed : Simultaneously

For : WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

SIMULTANEOUS AMENDMENT

December 1, 1999

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

S I R S:

Simultaneously with filing of the above identified application please amend the same as follows:

In the Claims:

Claim 3 line 1 delete "one of claims 1 or 2", substitute with "claim 1".

Claim 4 line 1 delete "one of claims 1 to 3", substitute with "claim 1".

REMARKS:

This Amendment is submitted simultaneously with filing of the above identified application.

With the present Amendment applicant has amended the claims so as to eliminate their multiple dependency.

Consideration and allowance of the present application is most respectfully requested.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant(s)
Reg. No. 27233

3 pgs

[PCT/DE 98/03721 Translated by David Clayberg]

Wiper Blade for Windows of Motor Vehicles

Prior Art

In wiper blades of the type described in the preamble to claim 1, the carrying element is intended to assure a predetermined distribution of the wiper arm-induced wiper blade pressing force - often also called pressure - against the window over the entire wiping field swept across by the wiper blade. Through a corresponding curvature of the unstressed carrying element - i.e. when the wiper blade is not resting against the window - the ends of the wiper strip, which is placed completely against the window during the operation of the wiper blade, are loaded toward the window by the carrying element which is then stressed, even when the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be slightly sharper than the sharpest curvature measured in the wiping field on the window to be wiped. The carrying element consequently replaces the expensive support bracket construction with two spring rails disposed in the wiper strip, as is the practice in conventional wiper blades (published, non-examined German patent application 15 05 357).

The invention is based on a wiper blade according to the preamble to claim 1. In a known wiper blade of this type (German patent 12 47 161), in order to produce as uniform as possible a pressure loading of the wiper blade against a flat window over its entire length, a number of embodiments of the carrying element are provided as attainments of this object.

In another known wiper blade according to the preamble to claim 1 (EP 05 28 643 B1), in order to produce a uniform pressure loading of the wiper blade against spherically curved windows, the pressure loading at the two end sections increases significantly when the wiper blade is pressed against a flat window.

The uniform pressure distribution over the entire wiper blade length desired in both instances, however, causes the wiper lip, which belongs to the wiper blade and does the actual wiping work, to abruptly flip over along its entire length from its one drag position into the other when the wiper blade reverses its working direction. This drag position is essential for an effective and low-noise operation of the wiper system. However, the abrupt flipping over of the wiper lip - which is inevitably connected with a back and forth movement of the wiper blade - produces undesirable knocking noises. Also, the matching of the carrying element stress to the desired pressure distribution, which is different from case to case, is problematic in the case of spherically curved windows.

Advantages of the Invention

In the wiper blade according to the invention with the features of claim 1, in the vicinity of the reduced contact force, a steeper drag position of the wiper lip is produced in comparison to the region with the greater contact force. This steeper position of the wiper lip encourages its tilting-over process in the wiping direction reversal positions of the wiper blade, which is initiated there and then continued in the region

that has the greater contact force. This prevents the abrupt snapping over of the entire wiper lip and the unpleasant knocking noise connected with it. This also eliminates the problems in the design of the carrying element with regard to the contact pressure distribution in spherically curved windows. Namely, it has turned out that the reduction of the contact pressure at the end section of the wiper blade does not inevitably also attend a reduction in the wiping quality.

It is particularly advantageous if the contact pressure of the wiper strip against the window is lower at its two end sections than in its center section because the tilting-over process of the wiper lip then takes place starting from both ends and is therefore finished more quickly.

With particularly problematic window curvatures, it can be useful if the contact pressure of the wiper strip against a window in its center section is at least almost uniform in magnitude and decreases at the end section(s).

A preferred embodiment of the carrying elements for achieving the desired distribution of the contact pressure provides that the carrying element has a concave curvature on its side oriented toward the window which is sharper than the sharpest curvature of the spherically curved window in the vicinity of the wiping field that can be swept across by the wiper blade and that the concave curvature in the center section of the carrying element is sharper than that of its end section(s).

Other advantageous embodiments and updates of the invention are disclosed in the following description of an exemplary embodiment shown in the respective drawings.

Drawings

Fig. 1 is a perspective depiction of a wiper blade that is resting against the window and is connected to a wiper arm that is loaded in the direction of the window,

Fig. 2 is a schematic representation of a side view of an unloaded wiper blade placed against the window, shown at a reduced scale in comparison to Fig. 1,

Fig. 3 shows the sectional plane of the section through the wiper blade according to Fig. 1, along the line III - III in an enlarged depiction,

Fig. 4 shows the sectional plane of a section through the wiper blade according to Fig. 1 along the line IV - IV in an enlarged depiction,

Fig. 5 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to a first possible embodiment of the invention,

Fig. 6 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to a different possible embodiment of the invention,

Fig. 7 is a graphic representation of the wiper blade contact pressure over the wiper blade length according to another possible embodiment of the invention, and

Fig. 8 is a schematic representation, not to scale, of a side view of a carrying element belonging to the wiper blade.

Description of the Exemplary Embodiment

A wiper blade 10 shown in Fig. 1 has an elongated, spring-elastic carrying element 12 for a wiper strip 14, and this carrying element 12 is shown separately in Fig. 8. As can be seen from Figs. 1, 3, and 4, the carrying element 12 and the wiper strip 14 are connected to each other so that their longitudinal axes are parallel. A connecting device 16 is disposed on the top side of the carrying element 12 remote from the window 15 to be wiped - indicated with dot-and-dash lines in Fig. 1 - and with the aid of this connecting device 16, the wiper blade 10 can be detachably connected to a driven wiper arm 18 that is supported on the body of a motor vehicle. The elongated, rubber-elastic wiper strip 14 is disposed on the underside of the carrying element 12 oriented toward the window 15. A hook, which is used as a reciprocal connecting means, is formed onto the free end 20 of the wiper arm 18 and encompasses a pivot bolt 22 belonging to the connecting device 16 of the wiper blade 10. The retention between the wiper arm 18 and the wiper blade 10 is performed by an intrinsically known securing means that is embodied as an adapter and is not shown in detail. The wiper arm 18 and therefore also its hook end 20 are loaded in the direction of the arrow 24 in relation to the window 15 to be wiped, whose surface to be wiped is indicated in Figs. 1 and 2 by means of a dot-and-dash line 26. The force (arrow 24) places the wiper blade 10 over its entire length against the surface 26 of the window 15 to be wiped. Since the dot-and-dash line 26 depicted in Fig. 2 is intended to represent the sharpest curvature of the window surface in the region of the wiping field, it is clearly evident that the curvature of the as yet unloaded wiper blade 10 resting with both of its ends against

the window is sharper than the maximal curvature of the spherically curved window 15. Due to the pressure (arrow 24), the wiper blade 10 rests over its entire length against the window surface 26 with its wiper lip 28 that belongs to the wiper strip 14. This produces a stress in the band-like spring-elastic carrying element 12, which assures a proper contact of the wiper strip 14 or the wiper lip 28 over its entire length against the motor vehicle window 15. During wiper operation, the wiper arm 18 moves the wiper blade 10 lateral to its longitudinal span, across the window 15. This wiping or working motion is indicated in Fig. 1 with the double arrow 29.

The particular embodiment of the wiper blade according to the invention will now be discussed in detail. As shown by the not-to-scale Figs. 3 and 4, the wiper strip 14 is disposed on the lower band surface of the carrying element 12 oriented toward the window 15. Spaced apart from the carrying element 12, the wiper strip 14 is constricted from its two long sides in such a way that a tilting piece 30 remains in its longitudinal center region and extends over the entire length of the wiper strip 14. The tilting piece 30 transitions into the wiper lip 28, which has an essentially wedge-shaped cross section. Because of the contact force (arrow 24), the wiper blade or the wiper lip 28 is pressed against the surface 26 of the window 15 to be wiped, wherein due to the influence of the wiping movement - one of the two opposing wiping motions (double arrow 29) in particular is considered in Figs. 3 and 4 and is indicated by the direction arrow 32 -, this wiper lip 28 tilts into a so-called drag position in which the wiper lip is supported over its entire length against the part of the wiper strip 14 that is secured to the carrying element 12. This support, which is indicated in Figs. 3 and 4 with the arrow 34, is always produced

- depending on the respective wiping direction (double arrow 29 or arrow 32) - against the upper edge of the wiper lip 28 disposed toward the rear in the respective wiping direction so that it is always guided across the window in a so-called drag position. This drag position is required for an effective and low-noise operation of the wiper apparatus. The reversal of the drag position takes place in the so-called reversal position of the wiper blade 10 when this reverses its wiping motion (double arrow 29). The wiper blade executes a back and forth motion, which is induced by the tilting over of the wiper lip 28. The upward motion occurs counter to the direction 24 and consequently also counter to the contact force. In the other wiping direction directed counter to the arrow 32, a mirror image of the Figs. 3 and 4 is consequently produced.

In order to produce as low-noise as possible a tilting over of the wiper lip 28 from its one drag position into its other drag position, the carrying element 12 used for distributing the contact force (arrow 24) is designed so that the contact force of the wiper strip 24 or the wiper lip 28 against the window surface 26 is greater in its center section 36 (Fig. 8) than in at least one of the two end sections 38. This fundamental concept, for example, can be incorporated, as shown in a graphic representations according to Figs. 5 to 7.

According to Fig. 5, the carrying element 12 is designed so that viewed in terms of the length 40 of the wiper blade, its center region 36 has a virtually uniform contact force (line 44) and that this contact force 44 sharply decreases at both end sections 38 of the wiper blade. The dot-and-dash line 42 is intended to indicate a possible position of the pivot bolt 22,

i.e. the engagement point of the wiper arm-induced contact force.

In another embodiment (Fig. 6), the carrying element 12 is designed so that viewed in terms of the length 140 of the wiper blade, starting from the one and 138 of the wiper blade until well beyond its linkage point (line 142), the contact force 24 is of a uniform magnitude (line 144) until it decreases sharply in the region of the other and 139 of the wiper blade. The possible linkage point of the wiper blade to the wiper arm has been labeled 142 in Fig. 6.

Another possible design of the wiper blade according to the invention, which is shown in Fig. 7, provides that the contact pressure or contact force (244) of the wiper lip 28 against the window surface 26 is essentially uniform in the center region 242 of the wiper blade - where the linkage point of the wiper arm 18 is disposed - and that it decreases slightly toward one and 238 of the wiper blade whereas it decreases considerably in the vicinity of the other and 239 of the wiper blade. With this design of the wiper blade, the engagement point 243 of the wiper arm 18, is disposed on the wiper blade outside the center of the wiper blade length 240, as in the design according to Fig. 6. Naturally, it is possible to use such a positioning of the linkage point even in wiper blades that are designed in accordance with Fig. 5. The different designs of the wiper blade can be required by particular window types, which differ from one another, for example due to the type of spherical curvatures of the windows.

Fig. 8 shows a possible curvature course of the carrying element 12, which can produce a pressure distribution of the

wiper lip 28 against the window 15, as is graphically depicted in Fig. 5. With this spring-elastic carrying element 12, which when unloaded has a sharper concave curvature than the window in the region of the wiping field being swept across by the wiper blade, the curvature course is embodied so that it is sharper in the center section 36 of the carrying element than at its end sections 38. In order to achieve the desired contact force distribution, however, it is also conceivable to reduce the end sections 38 of the carrying element 12 cross sectionally so that a comparable effect is achieved.

Naturally, this possibility can also be combined with correspondingly coordinated changes in the curvature course of the carrying element 12.

The reduction of the contact force of the wiper lip 28 against the window surface 26 in the region of one or both wiper blade ends, prevents an abrupt flipping over or snapping over of the wiper lip 28 from its one drag position into its other drag position. In contrast, with the wiper blade according to the invention, a comparatively gentle tilting over of the wiper lip is produced, starting from the wiper blade end and continuing to the wiper lip center or to the other wiper lip end. Figs. 3 and 4, in connection with Fig. 1, show that even with spherically curved windows, the less-loaded end sections of the wiper lip 28 still rest effectively against the window surface. A comparison of Figs. 3 and 4 shows this, from which it is clear that in the less-loaded end region (Fig. 4), the wiper lip 28 is disposed more steeply in relation to the window surface 26 than in its center section (Fig. 3), where the greater contact force is in effect. This steeper disposition of the wiper lip 28 encourages

the beginning of the tilting over of the wiper lip when the reverse motion of the wiping motion begins (double arrow 29).

It is common to all of the exemplary embodiments that the contact pressure (arrow 24) of the wiper strip 14 against the window 15 is greater in its center section 36 than in at least one of its two end sections 38. This is true even if in contrast to the currently shown wiper blade 10 with a one-piece carrying element 12 depicted as a spring rail, the carrying element is embodied as having a number of parts. The only crucial thing is the distribution of the contact pressure according to the invention.

Claims

1. A wiper blade (10) for windows (15) of motor vehicles, which can be moved back and forth across the window lateral to its longitudinal span by a driven wiper arm (18), which can be connected to it and loads it in relation to the window, and the wiper blade has an elongated wiper strip (14) that can be placed against the window, on whose side remote from the window, an elongated, spring-elastic carrying element (12) is disposed, which has connecting means (16) for the wiper arm and is disposed parallel to the longitudinal axis in order to distribute the contact force (arrow 24) over the entire wiper strip length (40), characterized in that the contact force (arrow 24) of the wiper strip (14) against the window (15) is greater in its center section (36) than in at least one of its two end sections (38 or 138, 139 or 238, 239).

2. The wiper blade according to claim 1, characterized in that the contact force (arrow 24) of the wiper strip (14) against the window (15) is lower at its two end sections (38) than in its center section (36).

3. The wiper blade according to one of claims 1 or 2, characterized in that contact force (arrow 24) of the wiper strip (14) against the window (15) is at least almost of uniform magnitude in its center section (36) and decreases at the end section(s).

4. The wiper blade according to one of claims 1 to 3, characterized in that on its side oriented toward the window (15), the carrying element (12) has a concave curvature that is sharper than the sharpest curvature of the spherically curved

window (15) in the region of the wiping field that can be swept across by the wiper blade (10) and that the concave curvature in the center section (36) of the carrying element (12) is sharper than in its end section(s) (38).

Abstract

A wiper blade is proposed, which is used for cleaning windows of motor vehicles. The wiper blade (10) can be moved back and forth lateral to its longitudinal span by a driven wiper arm (18), which can be connected to it and loads it in relation to the window (15), and the wiper blade has an elongated wiper strip (14) that can be placed against the window, on whose side remote from the window, an elongated, spring-elastic carrying element (12) is disposed, which has connecting means (16) for the wiper arm (18) and is disposed parallel to the longitudinal axis in order to distribute the contact force over the entire wiper strip length. A particularly effective and low-noise operation of the wiper system is achieved if the contact force (arrow 24) of the wiper strip (14) against the window (15) is greater in its center section than in at least one of its two end sections (38 or 138, 139 or 238, 239).

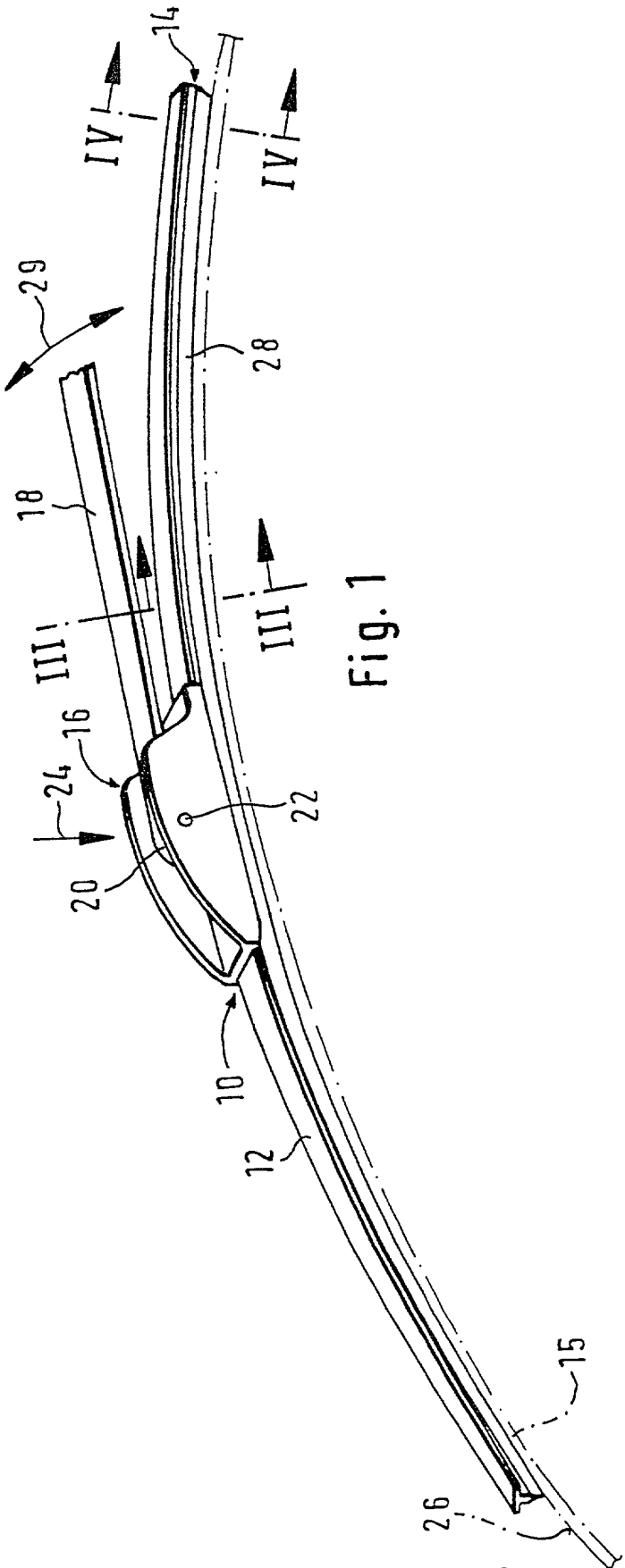


Fig. 1

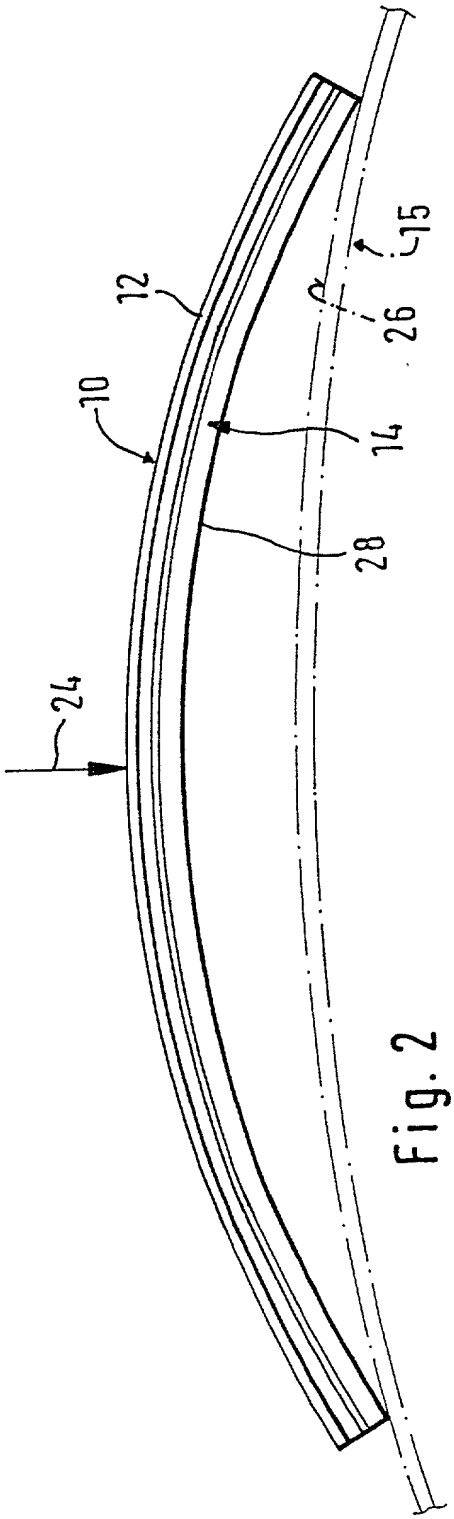


Fig. 2

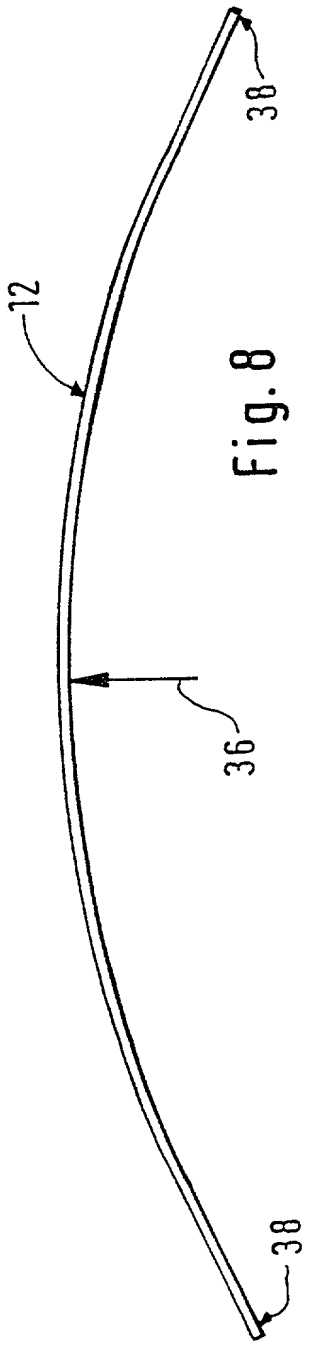


Fig. 8

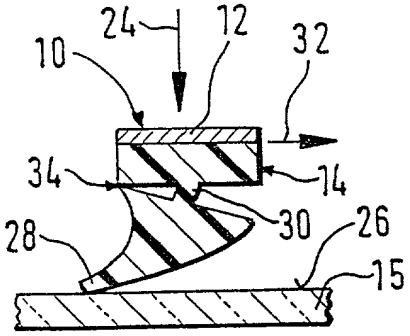


Fig. 3

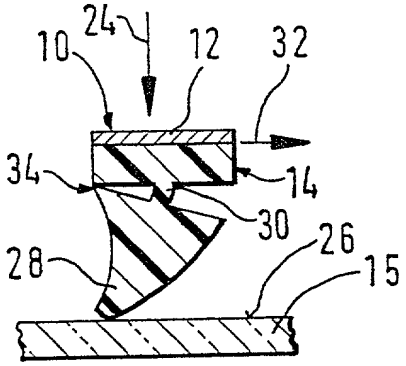


Fig. 4

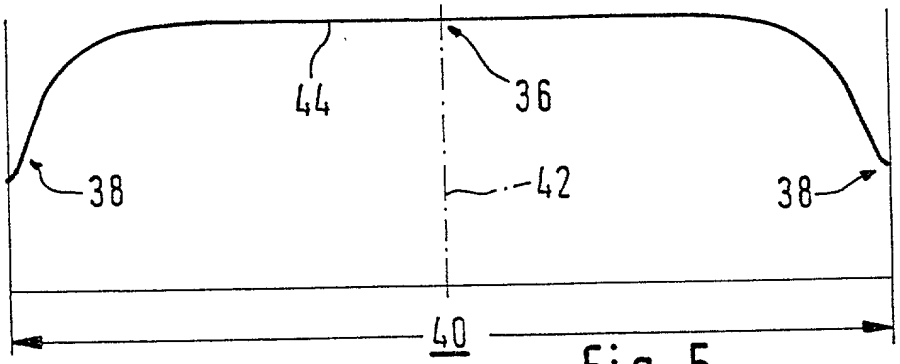


Fig. 5

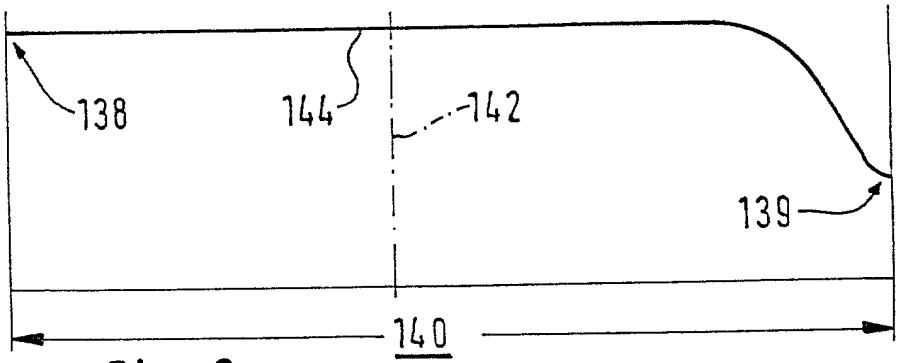


Fig. 6

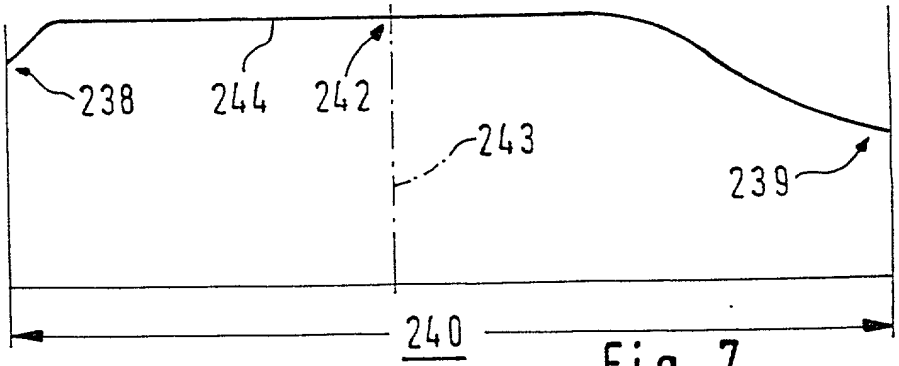


Fig. 7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first, joint inventor (if more than one name is listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title

OVERFEED BURNER FOR SOLID FUEL AND METHOD OF ITS OPERATION

a [ ] copy of which is being filed herewith, or [X] was filed **23 June 1998** under the PCT and given application no. **PCT/SE98/01218.**

I hereby claim foreign priority benefits under Title 35, United States Code, section 119 of the foreign application for patent or inventor's certificate listed below:

Prior Foreign Application

Number	Country	Day/Month/Year Filed
9702515-9	**Sweden**	**30 June 1997**

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, section 1.56.

Power of Attorney

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, **Paul A. Fattibene**, Registration No. 31,694, and **Arthur T. Fattibene**, Registration No. 17,804. Please address all telephone calls and correspondence to:

~~Fattibene and Fattibene~~
~~2480 Post Road~~
~~Southport, Connecticut 06490~~
Telephone (203)~~255-4400~~

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor	*Inventor's Signature*	
Tore GUSTAFSSON	Tore Gustafsson	
Post Office Address **Lersta Bro** **S-731 95 KOPING** **SWEDEN**	*Citizenship* **SWEDEN**	*Date* 16/12-99
	Residence **KOPING, SWEDEN** SE	
Full Name of Second Joint Inventor, if any	*Second Inventor's Signature*	
Ture MARKLUND	Ture Lkl	
Post Office Address **Humlegatan 17** **S-931 39 SKELLEFTEA** **SWEDEN**	*Citizenship* **SWEDEN**	*Date* 17/12-99
	Residence **SKELLEFTEA, SWEDEN** SE	

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 9398

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/445,046	02/18/2000 RULE		1744	989

APPLICANTS

TORE KOTLARSKI, KOPING, SWEDEN;
TURE MARKLUND, SKELLEFTEA, SWEDEN;

**** CONTINUING DATA ***************************

THIS APPLICATION IS A 371 OF PCT/DE98/03721 12/18/1998

**** FOREIGN APPLICATIONS *********************

GERMANY 198 14 610.8 04/01/1998

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 04/12/2000

Foreign Priority claimed	☐ yes ☐ no	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119 (a-d) conditions met	☐ yes ☐ no ☐ Met after Allowance	SWEDEN	3	4	1
Verified and Acknowledged	Examiner's Signature Initials				

ADDRESS

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON ,NY 11743

TITLE

WIPER BLADE FOR MOTOR VEHICLE WINDOWS

FILING FEE RECEIVED		
1180	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

UNITED STATES PATENT AND TRADEMARK OFFICE

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

Bib Data Sheet

CONFIRMATION NO. 9398

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/445,046	02/18/2000 RULE	015	1744	989

APPLICANTS

Thomas Kotlarski, Hauptstrasse 58a 77830 Buehlertal, GERMANY;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/DE98/03721 12/18/1998

GnG yes

**** FOREIGN APPLICATIONS *********************

GERMANY 198 14 610.8 04/01/1998

GnG yes

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

** 04/12/2000

Foreign Priority claimed ☑ yes ☐ no 35 USC 119 (a-d) conditions met ☑ yes ☐ no ☐ Met after Allowance Verified and Acknowledged GnG Examiner's Signature Initials	STATE OR COUNTRY GERMANY	SHEETS DRAWING 3	TOTAL CLAIMS 4	INDEPENDENT CLAIMS 1

ADDRESS

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON ,NY 11743

TITLE

WIPER BLADE FOR MOTOR VEHICLE WINDOWS

FILING FEE RECEIVED		
1180	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Int. Cl.: B 60 p

BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENTAMT

Deutsche Kl.: 63 c, 39

U1

U8 / 1

Offenlegungsschrift 1505357

(21) Aktenzeichen: P 15 05 357.3 (B 80245)

(22) Anmeldetag: 23. Januar 1965

(43) Offenlegungstag: **29. Mai 1969**

Ausstellungspriorität: —

(30) Unionspriorität

(32) Datum: —

(33) Land: —

(31) Aktenzeichen: —

(54) Bezeichnung: Fahrzeug zur Beförderung von pulverigem Schüttgut

(61) Zusatz zu: —

(62) Ausscheidung aus: —

(71) Anmelder: Blötz, Otto, 3300 Braunschweig

Vertreter: —

(72) Als Erfinder benannt: Erfinder ist der Anmelder

Benachrichtigung gemäß Art. 7 § 1 Abs. 2 Nr 1 d. Ges. v. 4. 9. 1967 (BGBl. I S. 960): 10. 5. 1968

DT 1505357

1505357

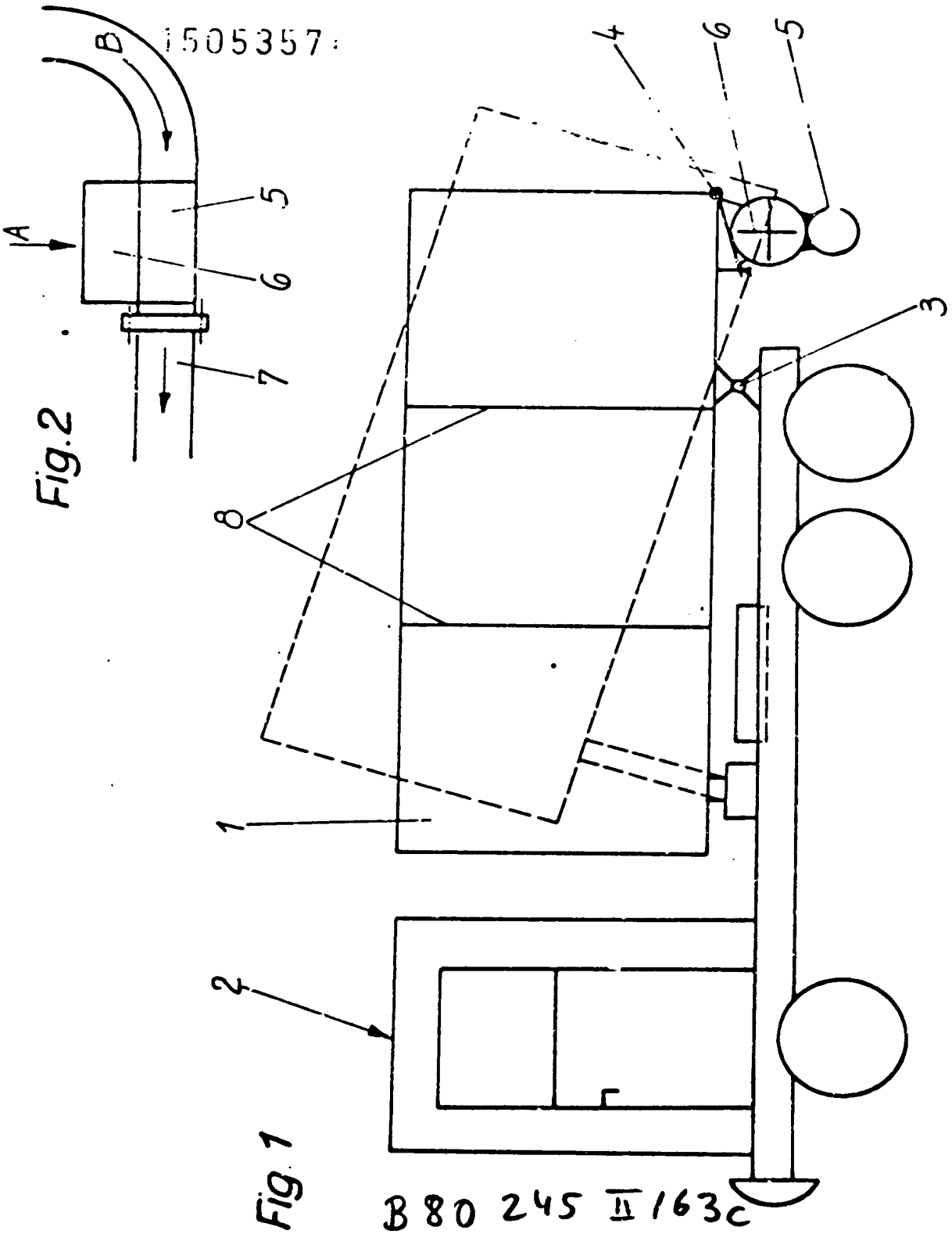


Fig.2

Fig 1

Otto Blötz, Braunschweig, Böcklerstraße 21/22

U3

Dr. Expl

Patentansprüche.

1. Fahrzeug zur Beförderung von körnigem oder pulverigem Schüttgut, insbesondere Zement, Mehl o.dgl., gekennzeichnet durch einen Kipper (2), dessen Wagenkasten (1) unter seiner der Kippachse (3) benachbarten und zu dieser parallel liegenden Kante (4) eine als Auslaß dienende, in einen Luftförderkanal (5) mündende Zellenradschleuse (6) trägt.

2. Fahrzeug nach Anspruch 1, dadurch gekennzeichnet, daß die mit dem Luftförderkanal (5) versehene Zellenradschleuse (6) an die Rückseite des Wagenkastens (1) verschwenkbar und dort festlegbar ist.

3. Fahrzeug nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Luftförderkanal (5) für einen im Niederdruckbereich liegenden Druck, vorzugsweise um 0,6 atü ausgelegt ist.

4. Fahrzeug nach Anspruch 1, 2 oder 3, gekennzeichnet durch automatisch sich nacheinander öffnende Trennwände (8) im Wagenkasten (1).

909822/0734

(Dr. Joob)
Patentanwalt

Kl.

PATENTANWALT
DR.-ING. HELMUT JOOSS

33 BRAUNSCHWEIG
STEINWEG 5 (Rathaus)
RUF 33430
NACH BÜROSCHLUSS 34980

1505357

Dr. Expl.

Otto B l ö t z
Braunschweig, Bücklerstraße 21/22

"Fahrzeug zur Beförderung von pulverigem Schüttgut"

Patentbeschreibung.

Die Erfindung betrifft ein Fahrzeug zur Beförderung von körnigem oder pulverigem Schüttgut, insbesondere Zement, Mehl o.dgl.

Anfangs hatte man versucht, für den Transport derartiger Güter offene Lastkraftwagen zu verwenden. Das Entladen dieser Fahrzeuge verursachte aber scheinbar unüberwindliche Hindernisse. Die Ladung einfach auf die Erde zu schütten, war meist wegen der dadurch bedingten Staubentwicklung undurchführbar. Das Leerschaufeln dagegen verteuerte die Transportkosten so wesentlich, daß man sich nach anderen Transportmöglichkeiten umsehen mußte.

So wurden schließlich Silofahrzeuge konstruiert, die im wesentlichen aus einem oder mehreren, gegebenenfalls kippbaren Druckkesseln bestehen und durch an dem vorderen Silo-Ende eingeblasene Druckluft entleert werden. Infolge des cirka 2 atü betragenden Überdrucks wurde die pulverige Ladung aus einem am Siloausgang vorgesehenen Rohrstutzen über eine Förderleitung in einen Bunker gedrückt.

Aber auch diese Transportmittel zeigten in der Praxis verschiedene Nachteile, die insbesondere ihren wirtschaftlichen Einsatz stark beeinträchtigten. So sind diese Lastkraftwagen ihrer speziellen Ausbildung wegen ausschließlich zum Transport pulveri-

ger

riger Schüttgüter geeignet. Infolge dieser Einseitigkeit müssen die Silofahrzeuge nach ihrer Entladung die Heimfahrt meist leer antreten, da nur in den seltensten Fällen geeignetes Material für die Rückfahrt zur Verfügung steht. So muß z.B. ein Kalksandsteinwerk mit losem Kalk beliefernde Transportunternehmer für seine vielen Lastkraftwagen meist eine Leerrückfahrt in Kauf nehmen, da die zum Versand bereitliegenden Steine mit den Spezialfahrzeugen nicht transportiert werden können.

Die beteiligten Kreise scheinen sich mit diesem gewaltigen wirtschaftlichen Nachteil abgefunden zu haben, indem sie einmal die Transportkosten entsprechend hoch berechnen, zum anderen aber einen zusätzlichen Fuhrpark anschaffen, von dem die mit Silofahrzeugen nicht zu erfüllenden Aufgaben übernommen werden können.

Darüberhinaus aber bedeuten die langen Entladezeiten der genannten Fahrzeuge einen zusätzlichen Nachteil. Um den Aufwand der benötigten Luftkompressoranlage in wirtschaftlich vertretbaren Grenzen zu halten, kann bei einem verwendeten Überdruck von etwa 2 atü der Durchmesser des Materialauslaßrohres nur verhältnismäßig klein sein. Neben dem genannten Nachteil können dadurch auch Verstopfungen o.dgl. begünstigt werden.

Alle diese Nachteile werden erfindungsgemäß in einfacher und vollkommener Weise durch einen Kipper vermieden, dessen Wagenkasten unter seiner der Kippachse benachbarten und zu dieser parallel liegenden Kante eine als Auslaß dienende, in einen Luftförderkanal mündende Zellenradschleuse trägt.

Bei Verwendung des Fahrzeugs als Zugmaschine für einen Anhänger kann die mit dem Luftförderkanal versehene Zellenradschleuse vorteilhaft an die Rückseite des Wagenkastens verschwenkt und dort festgelegt werden, um die Anhängerkupplung freizugeben. Somit ergibt sich eine Kombination von Silo-Fahrzeug, Hinterkipper

der und

und Stückgut-Lastkraftwagen.

Um mit möglichst geringem Aufwand eine hohe Förderleistung zu erzielen und dennoch eine Entmischung der zu fördernden körnigen oder mehligen Güter, wie beispielsweise Futtermittel, zu vermeiden, ist es zweckmäßig, den Luftförderkanal für einen im Niederdruckbereich liegenden Druck, vorzugsweise 0,6 atü, auszulegen.

Durch den Einbau sich automatisch öffnender Trennwände im Wagenkasten ist es möglich, mehrere verschiedenartige Schüttgüter gleichzeitig zu befördern, die sich wegen der selbsttätigen Reinigung der Förderrohre auch nicht untereinander vermischen können.

In der Zeichnung ist eine als Beispiel dienende Ausführungsform der Erfindung dargestellt.

Es zeigen:

Fig. 1 eine Seitenansicht des Fahrzeugs und

Fig. 2 in Vergrößerung den Ausfall der Zellenradschleuse.

Danach trägt der Wagenkasten 1 eines Kippers 2 unter seiner der Kippachse 3 benachbarten und zu dieser parallel liegenden Kante 4 eine als Auslaß dienende, in einen Luftförderkanal 5 mündende Zellenradschleuse 6. Diese kann durch einen nicht dargestellten Elmotor bekannter Bauart angetrieben sein.

Der geringe Luftdruck von circa 0,6 atü ermöglicht es, den Durchmesser des Luftförderkanals 5 verhältnismäßig groß zu wählen, wodurch sich die Entladezeiten wesentlich verkürzen.

An das freie Ende des Kanals 5 wird die zu einem Speicherbunker führende Leitung 7 angeschlossen.

Das durch den Pfeil A (s.Fig.2) gekennzeichnete Schüttgut gelangt also über die Zellenradschleuse 6 in den Luftförderkanal 5, von wo es mittels der Förderluft (Pfeil B) durch die Leitung 7 in den Speicherbunker gefördert wird.

Beim Einbau von sich automatisch nacheinander öffnenden Trennwänden 8 im Wagenkasten 1 können verschiedenartige Schüttgüter gleichzeitig befördert werden.

Kl.

(Dr. Jooß)
Patentanwalt

412 Rec'd PCT/PTO 22 FEB 2000

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT (Under 37 CFR 1.97(b) or 1.97(c))		Docket No. 989	
In Re Application Of: KOTLARSKI, T.			
Serial No. 09/445,046	Filing Date 12/01/99	Examiner	Group Art Unit
Title: WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES			

OIPE JC63 FEB 22 2000 PATENT & TRADEMARK OFFICE

RECEIVED AUG 18 2000 TC1700 MAIL ROOM

Address to:
Assistant Commissioner for Patents
Washington, D.C. 20231

37 CFR 1.97(b)

1. ☒ The Information Disclosure Statement submitted herewith is being filed within three months of the filing of a national application; within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or before the mailing date of a first Office Action on the merits, whichever event occurs last.

37 CFR 1.97(c)

2. ☐ The Information Disclosure Statement submitted herewith is being filed after three months of the filing of a national application, or the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or after the mailing date of a first Office Action on the merits, whichever occurred last but before the mailing date of either:

    1. a Final Action under 37 CFR 1.113, or

    2. a Notice of Allowance under 37 CFR 1.311,

    whichever occurs first.

Also submitted herewith is:

☐ a certification as specified in 37 CFR 1.97(e);

OR

☐ the fee set forth in 37 CFR 1.17(p) for submission of an Information Disclosure Statement under 37 CFR 1.97(c).

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT (Under 37 CFR 1.97(b) or 1.97(c))	Docket No. 989

In Re Application Of: **KOTLARSKI, T.**

Serial No.	Filing Date	Examiner	Group Art Unit
09/445,046	12/01/99		

Title: **WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES**

OIPE JC63 FEB 22 2000 PATENT & TRADEMARK OFFICE

RECEIVED AUG 18 2000 TC 1700 MAIL ROOM

Payment of Fee

(Only complete if Applicant elects to pay the fee set forth in 37 CFR 1.17(p))

- ☐ A check in the amount of is attached.
- ☒ The Assistant Commissioner is hereby authorized to charge and credit Deposit Account No. 19-4675 as described below. A duplicate copy of this sheet is enclosed.
  - ☐ Charge the amount of
  - ☐ Credit any overpayment.
  - ☒ Charge any additional fee required.

Certificate of Transmission by Facsimile*

I certify that this document and authorization to charge deposit account is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No.) on (Date)

Signature

Typed or Printed Name of Person Signing Certificate

Certificate of Mailing by First Class Mail

I certify that this document and fee is being deposited on **FEB. 17, 2000** with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Signature of Person Mailing Correspondence

MICHAEL J. STRIKER

Typed or Printed Name of Person Mailing Correspondence

***This certificate may only be used if paying by deposit account.**

Signature

Dated: **FEB. 17, 2000**

RECEIVED JUL 28 2000 TC 1700 MAIL ROOM

cc:

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Group: Attorney Docket # 989

Applicant(s) : KOTLARSKI, T.

Serial No. : 09/445,046

Filed : 12/01/99

For : WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

INFORMATION DISCLOSURE STATEMENT

February 16, 2000

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

S I R S:

_____ In accordance with the Duty of Disclosure, Applicant(s) submit(s) herewith a copy of a Foreign Search Report and copies of the reference(s) indicated therein.

_____ In the event that the Foreign Search Report is in a foreign language, a translation thereof is herewith submitted.

__X__ Attached hereto is a FORM PTO 1449 listing the references.

__X__ Attached hereto is a copy of a reference cited in the specification of the application as filed. The specification itself recites the relevance of these documents.

_____Applicant petitions for consideration of this Information Disclosure Statement since it is being submitted after receipt of an office action and submits herewith the required fee. If this fee is missing or insufficient, then authorization is given to debit the account of the undersigned: 19-4675.

_____ Attached hereto are copies of references cited which may be pertinent to this application. Since the references are in the English language, no statement of relevance is submitted.

_____ Attached hereto is a copy of the Office Action issued in the corresponding German application, together with a translation thereof and copies of the references cited therein. A list of the cited references is also attached.

_____ Attached hereto copies of references cited which may be pertinent to this application. An English translation of the references is also attached.

_____ Attached hereto is a Statement of Relevancy and copies of references cited therein.

____ Relevancy indicated in WIPO Documents.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant(s)
Reg. No. 27233

UNITED STATES PATENT AND TRADEMARK OFFICE

1744

Examiner: Group: Attorney Docket # 989

#7

Applicant(s): KOTLARSKI, T.

Serial No.: 09/445,046

Filed: 12/01/99

For : WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

February 16, 2000

Sir:

The subject application was filed without the signature of the inventors.

Declaration papers executed by the inventors are submitted herewith.

The required surcharge is submitted herewith.

Should the enclosed amount not be sufficient, then is respectfully requested that the required amount be charged to the account of the undersigned (19-4675).

Box: PCT

Certificate of Mailing
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.
On 2/17/00

Respectfully submitted,

Michael J. Striker
Attorney for Applicant(s)
Reg. No. 27233

BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENTAMT

Int. Cl.: B60s

Deutsche Kl.: 63 c - 82

PATENTSCHRIFT

1 247 161

Nummer: 1 247 161
Aktenzeichen: P 12 47 161.3-21 (A 43139)
Anmeldetag: 18. Mai 1963
Auslegetag: 10. August 1967
Ausgabetag: 22. Januar 1970,
Patentschrift stimmt mit der Auslegeschrift überein

Scheibenwischer, insbesondere für Kraftfahrzeuge

Patentiert für:
Walter D. Appel, Orchard Lake, Mich. (V.St.A.)
Vertreter:
Dr.-Ing. H. Negendank, Patentanwalt,
2000 Hamburg 36, Neuer Wall 41

Als Erfinder benannt:
Walter D. Appel, Orchard Lake, Mich. (V. St. A.)

Beanspruchte Priorität:
V. St. v. Amerika vom 21. Mai 1962 (196 254)

Die Erfindung bezieht sich auf Scheibenwischer, insbesondere für Kraftfahrzeuge, mit einem federnden Wischblatt, das aus einer biegsamen Federschiene, in der etwa in der Mitte der Wischerarm angeschlossen ist und deren Querschnitt nach den Enden zu verringert ist, und einem mit der Federschiene verbundenen Wischgummi od. dgl. besteht und eine gleichsinnige, jedoch stärkere Krümmung als die Scheibe aufweist.

Zur Verwendung an gekrümmten Windschutzscheiben sind Scheibenwischer bekannt, deren Wischblätter aus Gummi an je zwei Bügeln lose befestigt sind, die wiederum an einem Bügel angelenkt sind, in dessen Mitte der Betätigungsarm angreift. Zur Befestigung des Wischblattes an den beiden Bügeln dient eine Federschiene, in welche das Wischblatt eingeschoben ist und die eine zu der Krümmung der Scheibe gleichsinnige oder gegensinnige Krümmung aufweist, um ein besseres Anliegen des Wischblattes an der gekrümmten Scheibe zu ermöglichen. Diesem Zweck dienen auch beispielsweise Zugfedern, die zwischen den Bügeln angeordnet sind, um insbesondere die Enden des Wischblattes gegen die Scheibenoberfläche ziehen zu können. Ferner hat man auch die Breite der Federschiene zum Halten des Wischblattes gegen die Enden zu verringert, um die Enden biegsamer zu gestalten und ein besseres Anliegen zu ermöglichen. Diese Maßnahmen haben sich aber als unzureichend erwiesen, da die Anordnung der Bügel insbesondere eine verhältnismäßig große Steifigkeit der Enden des Wischblattes zur Folge hatte. Ferner wird zur Herstellung dieser bekannten Scheibenwischer eine verhältnismäßig große Anzahl von Einzelteilen benötigt, für deren Montage Spezialmaschinen erforderlich sind. Ferner ist die Bauhöhe infolge der Bügel verhältnismäßig groß, so daß die Wischer bei starkem Fahrtwind zum Abheben neigen, da der Wind eine verhältnismäßig große seitliche Angriffsfläche findet.

Ferner sind für gewölbte Windschutzscheiben Scheibenwischer bekannt, bei denen der Wischerarm etwa in der Mitte unmittelbar an dem Wischer angelenkt ist. Damit kann zwar eine erhebliche Zahl von Einzelteilen eingespart werden. Andererseits mußte jedoch Vorsorge getroffen werden, ein möglichst gleichmäßiges Anliegen des Wischers an der Scheibe zu vermitteln. Hierfür ist es beispielsweise bekannt, auf der Rückseite des Wischblattes aus Gummi wendelförmige Federn anzuordnen, durch deren Elastizität das Wischblatt gegen die Scheibe gedrückt werden soll. Eine gleichmäßige Flächenpressung des Wischblattes gegen die Scheibe läßt sich

aber auch hiermit nicht erzielen, auch wenn die Krümmung des Blattes im unbelasteten Zustand kleiner als die Wölbung der Scheibe ist.

Bei einer anderen bekannten Ausführung wird die Druckverteilung sowie die Biegsamkeit der Enden des Wischblattes dadurch verbessert, daß über eine Federschiene, an welcher das Wischblatt befestigt ist, eine zweite, kürzere Federschiene gelegt wird. Der Angriffspunkt des Wischerarmes ist etwa in der Mitte des Wischblattes gelegen. Die beiden Federschienen weisen ebenfalls eine Krümmung im unbelasteten Zustand auf, die kleiner als die Scheibenwölbung ist und sind mit einem Gummiüberzug versehen. Dadurch leidet aber die freie Beweglichkeit der beiden Federschienen gegeneinander. Ferner läßt sich mit dieser bekannten Querschnittsverringerung der Federschiene vom Angriffspunkt des Wischerarmes gegen die Enden zu eine gleichmäßige Flächenpressung nicht erzielen.

Der Erfindung liegt deshalb die Aufgabe zugrunde, einen Scheibenwischer bei einem geringstmöglichen Bauaufwand derart auszubilden, daß die Flächenpressung des Wischblattes gegen die Scheibe konstant ist.

Erfindungsgemäß ist diese Aufgabe bei einem Scheibenwischer der eingangs genannten Art dadurch gelöst, daß zur Erzielung einer gleichbleibenden Flächenpressung des Wischblattes gegen die Scheibe der Krümmungsradius der Federschiene im unbelasteten Zustand, die vom Angriffspunkt des Wischerarmes nach beiden Enden fortschreitende Querschnittsverringerung und der Elastizitätsmodul des Materials der Federschiene in Abhängigkeit von der Länge so aufeinander abgestimmt sind, daß die Federkonstante von den Enden zum Angriffspunkt des Wischerarmes mit dem Quadrat der Entfernung von den Enden zunimmt.

909 684/9

Der erfindungsgemäße Scheibenwischer weist somit lediglich eine einzige Federschiene auf, an der das Wischblatt befestigt ist. Dazu kommt noch ein an der Federschiene befestigter Halter, an der der Wischerarm angreift. Die Herstellung der Federschiene sowie die Montage des Wischers kann in besonders einfacher Weise erfolgen. Außerdem weist der erfindungsgemäße Scheibenwischer eine sehr niedrige Bauhöhe auf, so daß ein Abheben bei starkem Fahrtwind auch bei den üblichen Andruckkräften des Wischerarmes in der Größenordnung von etwa 11 g/cm der Blattlänge vermieden ist. Im Gegensatz zu den bekannten Scheibenwischern mit Bügeln können im Winterbetrieb Eis und Schnee, die sich an dem Scheibenwischer ansetzen, diesen nicht behindern.

Der Erfindung liegt die Überlegung zugrunde, daß die Flächenpressung des Wischblattes gegen die Scheibe bei einem Wischer mit etwa in der Mitte liegendem Angriffspunkt des Wischerarmes dann konstant ist, wenn die Federkonstante der Federschiene von den Enden zum Angriffspunkt des Wischerarmes mit dem Quadrat der Entfernung von den Enden zunimmt. Somit verändert sich die Federkonstante parabolisch.

In vorteilhafter Ausgestaltung der Erfindung verjüngt sich die Breite der Federschiene zu den Enden hin parabelförmig. In weiterer vorteilhafter Ausgestaltung kann aber auch die Dicke der Federschiene zu den Enden hin stetig abnehmen. Weitere Ausgestaltungen der Erfindung sind in den übrigen Unteransprüchen gekennzeichnet.

Mehrere Ausführungsbeispiele der Erfindung sind nachstehend an Hand der Zeichnung näher erläutert. Es zeigt

Fig. 1a bis 1c eine Darstellung zur Erläuterung der Erfindung,

Fig. 2a bis 2c eine erste Ausführungsform der Federschiene mit veränderlicher Breite,

Fig. 3a bis 3c eine zweite Ausführungsform der Federschiene mit veränderlicher Dicke,

Fig. 4 eine Draufsicht auf ein Wischerblatt mit einer Federschiene gemäß Fig. 2,

Fig. 5 eine Seitenansicht des Wischerblattes nach Fig. 4,

Fig. 6 einen Schnitt längs der Linie 6-6 in Fig. 4.

Fig. 7 einen Schnitt durch eine Federschiene gemäß Fig. 2 mit geklebtem Wischblatt und

Fig. 8 einen Schnitt durch eine Federschiene gemäß Fig. 3 mit angeklebtem Wischblatt.

Der Versuch, mit einer einfachen Federschiene einen im wesentlichen gleichmäßigen Druck zu schaffen, wird am besten verständlich, wenn zunächst einmal die Bedingungen betrachtet werden, welche auf einer flachen Windschutzscheibenoberfläche einen gleichmäßigen Druck erzeugen würden. Nach den Fig. 1a bis 1c könnte eine gleichmäßige Druckbelastung über die Länge einer Federschiene **20** mit gleichmäßiger Breite **21** und gleichmäßiger Stärke **22** dadurch erreicht werden, daß der Federschiene eine Parabelform im unbelasteten Zustand gegeben wird, deren Hauptachse senkrecht zu einer Tangente im Angriffspunkt des Wischerarmes der Federschiene liegt. Bei einer Bewegung der Federschiene senkrecht auf eine flache Windschutzscheibenoberfläche **25** würden bei zunehmendem Druck auf den Angriffspunkt des Wischerarmes die Enden **26** eine Anfangsberührung bei fortschreitender Anpassung der Federschiene an die Windschutzscheibe von den Enden in Richtung auf die Mitte zu herstellen, wie es in den Fig. 1b und 1c dargestellt ist. Die freie, unbelastete Parabelform, die erforderlich ist, um bei einer gegebenen Gesamtbelastung *P* im Angriffspunkt des Wischerarmes eine vollständig gleichmäßige Druckverteilung zu erzielen, ist von der Länge, der Stärke, der Breite und dem Elastizitätsmodul des verwendeten Materials abhängig. Bei einem gegebenen Elastizitätsmodul erfordern verhältnismäßig dünnere oder schmälere Ausschnitte eine verhältnismäßig größere Durchbiegung und tiefere freie Parabelform, um eine gegebene gleichmäßige Druckbelastung zu erzeugen.

Gemäß Fig. 2a bis 2c weist der freigeformte Längsabschnitt zur Erzeugung einer gleichmäßigen Lastverteilung eine Verminderung der Breite **27** *a* der Federschiene **27** von einem Maximum am Angriffspunkt **29** des Wischerarmes zu einem Minimum an den Enden **28** auf, wobei diese Verjüngung die Form von Parabelbögen hat, deren Hauptachsen senkrecht zu den Enden **28** der Federschiene **27** liegen (siehe auch Fig. 4, Federschiene **36** und Enden **39**). Die Krümmung der Federschiene **27** im unbelasteten Zustand ist dann nicht mehr parabelförmig wie in Fig. 1, sondern kreisbogenförmig, so daß sich wiederum die Federschiene **27** von den Enden **28** her bei zunehmender Druckbelastung im Angriffspunkt **29** des Wischerarmes zu diesem hin auf die Scheibe auflegt, wie es in den Fig. 2b und 2c gezeigt ist. Im vollkommen abgeflachten Zustand ist sowohl die Biegebeanspruchung als auch die Druckbelastung der Federschiene **27** je Einheit überall gleichmäßig, im Gegensatz zu der erörterten Parabelform der Federschiene mit gleichmäßiger Breite, bei der die Biegebeanspruchung ungleichmäßig ist und ihren Höchstwert im Angriffspunkt des Wischerarmes hat.

Die Fig. 3a bis 3c zeigen, daß ein ähnliches Ergebnis erzielt werden kann, wenn man eine Federschiene **32** mit gleichmäßiger Breite **31** vorsieht, welche eine gleichmäßig verminderte Dicke **33**, und zwar von einem Maximum am Angriffspunkt **34** des Wischerarmes zu einem Minimum an jedem Ende **35** hat. Auch in diesem Fall führt eine kreisbogenförmige Krümmung zu einem gleichmäßig fortschreitenden »Anpassen« von den Enden **35** zum Angriffspunkt **34** des Wischerarmes bei gleichmäßiger Drucklastberührung auf der Länge der Federschiene **32** von einer am Angriffspunkt **34** des Wischerarmes aufgebrachten Last *P* gemäß der Darstellung in den Fig. 3b und 3c.

Die Wirkung dieser Verjüngung kann auch dadurch hergestellt werden, daß man das Federausgangsmaterial von gleichmäßiger Stärke mit einer Verstärkungsrippe oder Rippen (nicht gezeigt) mit fortschreitend zunehmender Tiefe von den Enden zum Angriffspunkt des Wischerarmes hin, die parallel zur Längsmittellinie der Federschiene gebildet sind, vorsieht. Es können aber auch Flansche (nicht gezeigt) mit von den Enden her zunehmender Flanschhöhe an den Rändern der Federschiene gebildet werden, um einen fortschreitend zunehmenden Widerstand gegenüber einer Biegung von den Enden zum Angriffspunkt des Wischerarmes vorzusehen.

Es ist offenbar auch möglich, diese verschiedenen Ausführungsmöglichkeiten zur Schaffung einer einzigen Federschiene mit gleichmäßiger Druckbelastung beim Andrücken gegen eine flache Windschutzscheibe in verschiedenen Weisen zu kombinieren. Welche

ausführung auch immer benutzt wird, es wird immer die Kombination eines biegsamen Wischerblattes aus Gummi mit einer Federschiene sein, welche die endgültige Druckkennlinie zwischen dem Wischerblatt und der Windschutzscheibenoberfläche bestimmt. Aus diesem Grund muß die Form und der Querschnitt des biegsamen Wischerblattes aus Gummi bei der Bestimmung der richtigen Maße der Ausführung zusätzlich zu der Federschiene auch mit in Betracht gezogen werden.

Infolge der parabelförmigen Verringerung der Federschienenbreite nach Fig. 2 bzw. der gleichmäßigen Verringerung der Federschienendicke nach Fig. 3 nimmt die Federkonstante von den Enden zum Angriffspunkt des Wischerarmes im wesentlichen mit dem Quadrat der Entfernung von den Enden zu. Wird die Federschiene mit Rippen oder Flanschen versehen, so muß ebenfalls dieses Kriterium erfüllt sein. Dann ist die Flächenpressung des Wischblattes gegen die Scheibe konstant. Anders ausgedrückt, nimmt das Biegemoment der Federschiene von den Enden zum Angriffspunkt des Wischerarmes mit dem Quadrat der Entfernung von jedem Ende zu.

Bei gekrümmten Windschutzscheiben läßt sich eine im wesentlichen gleichmäßige Druckbelastung dadurch erzielen, daß zu der Kurvenform, welche auf einer flachen Oberfläche eine gleichmäßige Druckbelastung erzeugt, die zusätzliche Kurve der gekrümmten Windschutzscheibenoberfläche hinzugefügt wird. Auf diese Weise vermittelt eine einfache Federschiene auf jeder beliebigen durchschnittlich oder stark gekrümmten Fläche oder bei einem mittleren Krümmungsabschnitt einer verschieden stark gekrümmten Windschutzscheibe einen gleichmäßigen Druck. Wenn der Wischer innerhalb eines erheblich veränderlichen Krümmungsbereiches arbeiten muß, kann ein vollständig gleichmäßiger Druck nur für eine bestimmte Krümmung vorgesehen werden, wobei der Wischerarm eine feste, vorbestimmte Gesamtdruckbelastung ausübt, Druckveränderungen jedoch auf verschiedene Weisen vermindert werden, so daß der Wischer vollständig zufriedenstellend arbeitet. Ein Weg besteht darin, eine gleichmäßige Druckkurve zwischen den äußeren Werten der größten und kleinsten Kurvenkonturen, die der Wischer überstreicht, anzunehmen; ein anderer Weg besteht darin, ein Federmaterial zu verwenden, welches einen hohen Elastizitätsmodul, eine hohe Ermüdungsfestigkeit und ein hohes Maß der freien Krümmung für die erwünschte Gesamtbelastung hat, so daß die Federkonstante ein Minimum bildet und die Veränderungen in der Krümmung der Windschutzscheibe ein Mindestbruchteil der gesamten Durchbiegung sind. Die Federkonstante ist das Verhältnis der Last zur Durchbiegung.

Nach den Fig. 4 bis 6 kann eine Federschiene **36** der in den Fig. 2a bis 2c beschriebenen Art ein bekanntes Wischblatt **37** aus Gummi aufnehmen, indem ein Schlitz **38** vorgesehen wird, der sich fast über die ganze Länge erstreckt und kurz vor dem Ende **39** aufhört, um eine mit einem Flansch versehene Rippe **40** des Wischblattes **37** aufzunehmen, die sich von ihm forterstreckt. Die Seiten der Federschiene **36** können gegen Federkraft auseinandergehalten werden, um die Befestigung des Wischblattes **37** zu ermöglichen, bevor die Befestigungsschelle **41***a* des Wischerarmes durch Niete **42** daran befestigt wird, wodurch ein dauerhafter Zusammenbau zum Halten des Wischblattes **37** in seiner Stellung vorgesehen wird. Gemäß der Darstellung in Fig. 5 haben die Federschiene **36***a* und das Wischblatt **37***a* eine freie Kreisbogenform, die einen gleichmäßigen Berührungsdruck über die gesamte Berührungslänge mit einer flachen Windschutzscheibe **43** vorsieht, wenn sie von dem Wischerarm (nicht gezeigt) ganz heruntergedrückt wird.

Fig. 7 zeigt eine Abwandlung in der Einzelausführung eines Gummiwischblattes und der Betätigungsmittel, bei welcher eine Federschiene **45**, die so ähnlich ausgebildet ist wie diejenige der Fig. 4 bis 6, ein Wischblatt **46** aufweist, das in bekannter Weise durch Verkleben bei **47** daran befestigt ist. Die Abwandlung gemäß der Fig. 8 zeigt ein Wischblatt **48**, das in ähnlicher Weise durch Verkleben bei **49** an einer Federschiene **50** mit verminderter Dicke gemäß der Darstellung in den Fig. 3a bis 3c befestigt ist.

Patentansprüche:

1. Scheibenwischer, insbesondere für Kraftfahrzeuge, mit einem federnden Wischblatt, das aus einer biegsamen Federschiene, an der etwa in der Mitte der Wischerarm angeschlossen ist und deren Querschnitt nach den Enden zu verringert ist, und einem mit der Federschiene verbundenen Wischgummi od. dgl. besteht und eine gleichsinnige, jedoch stärkere Krümmung als die Scheibe aufweist, dadurch gekennzeichnet, daß zur Erzielung einer gleichbleibenden Flächenpressung des Wischblattes gegen die Scheibe der Krümmungsradius der Federschiene (27, 32, 36) im unbelasteten Zustand, die vom Angriffspunkt (29, 34, 41) des Wischerarmes nach beiden Enden fortschreitende Querschnittsverringerung und der Elastizitätsmodul des Materials der Federschiene in Abhängigkeit von der Länge so aufeinander abgestimmt sind, daß die Federkonstante von den Enden zum Angriffspunkt des Wischerarmes mit dem Quadrat der Entfernung von den Enden zunimmt.

2. Scheibenwischer nach Anspruch 1, dadurch gekennzeichnet, daß sich die Breite (27*a*) der Federschiene (27) zu den Enden (28) hin parabelförmig verjüngt.

3. Scheibenwischer nach Anspruch 1, dadurch gekennzeichnet, daß die Dicke (33) der Federschiene (32) zu den Enden (35) hin stetig abnimmt.

4. Scheibenwischer nach den Ansprüchen 1 bis 3, dadurch gekennzeichnet, daß die Steifigkeit der Federschiene in an sich bekannter Weise durch Rippen oder Flansche verändert werden kann.

5. Scheibenwischer nach den Ansprüchen 1 bis 4, dadurch gekennzeichnet, daß die Krümmung der Federschiene im unbelasteten Zustand kreisbogenförmig ist.

In Betracht gezogene Druckschriften:
Französische Patentschriften Nr. 820 156, 1 033 521, 1 039 421, 1 124 116, 1 145 640, 1 217 680;
britische Patentschrift Nr. 593 775.

Hierzu 1 Blatt Zeichnungen

709 620/311 7.67 ⊖ Bundesdruckerei Berlin

ZEICHNUNGEN BLATT 1

Numnier: 1 247 161
Int. Cl.: B 62 d
Deutsche Kl.: 63 c - 82
Auslegetag: 10. August 1967

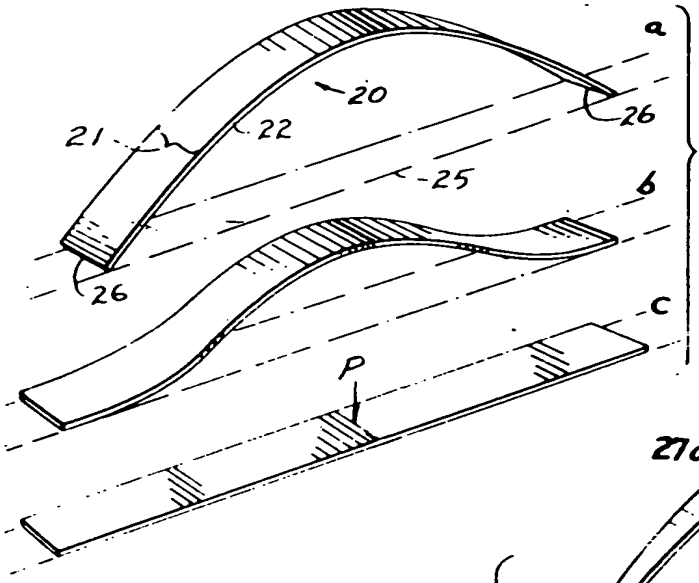


FIG. 1

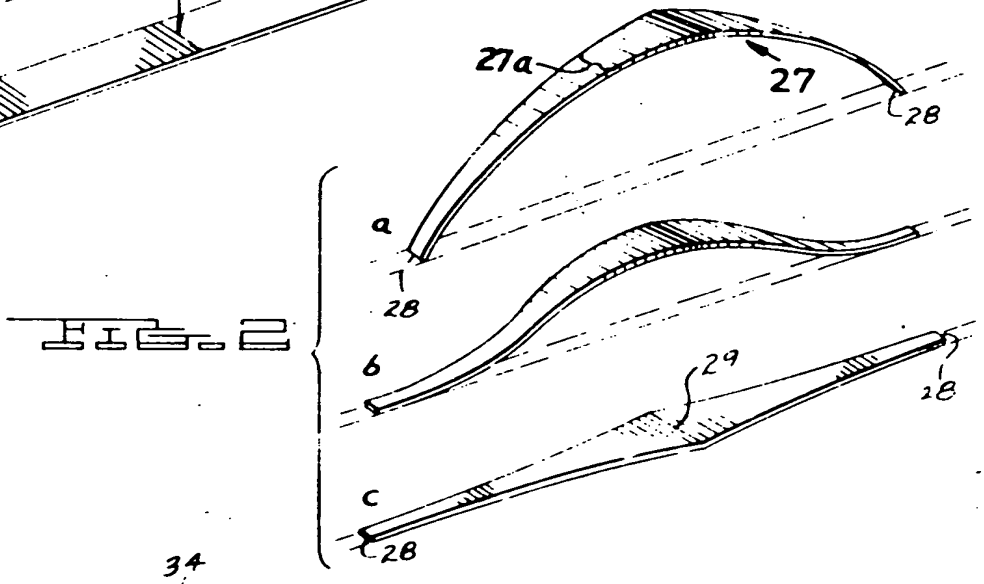


FIG. 2

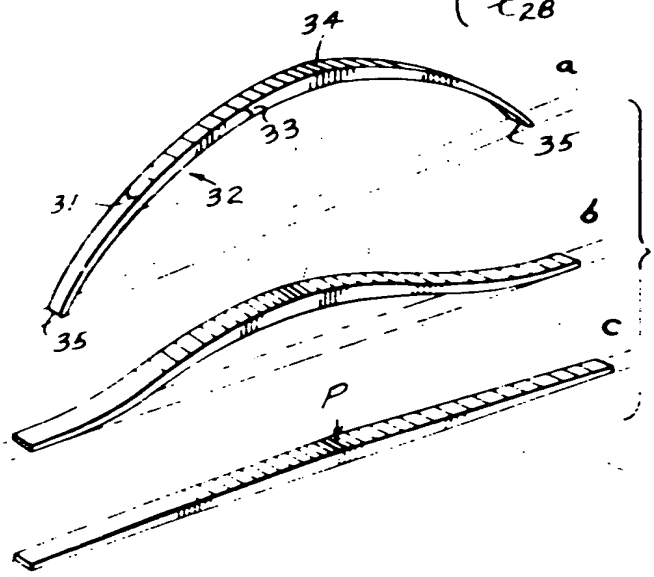


FIG. 3

Nummer: 1 247 161
Int. Cl.: B 62 d
Deutsche Kl.: 63 c - 82
Auslegetag: 10. August 1967

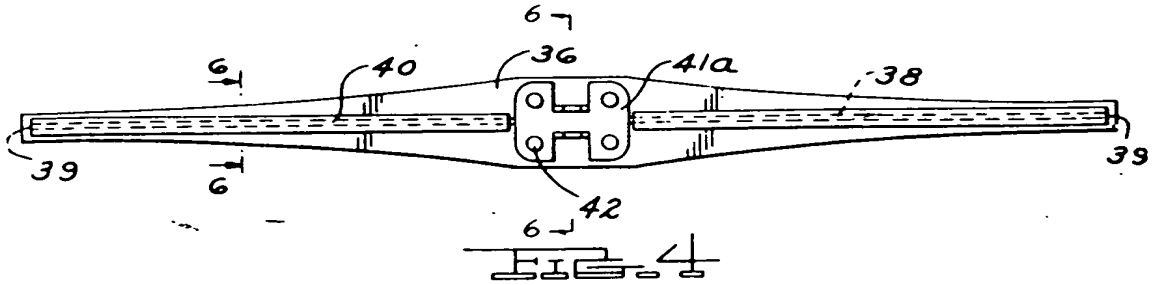


FIG. 4

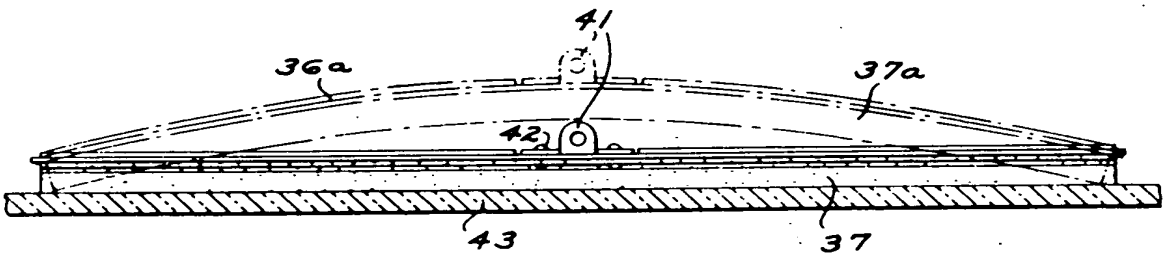


FIG. 5

FIG. 7

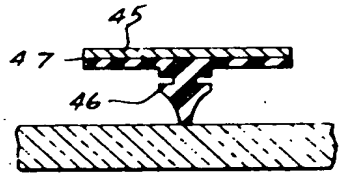


FIG. 6

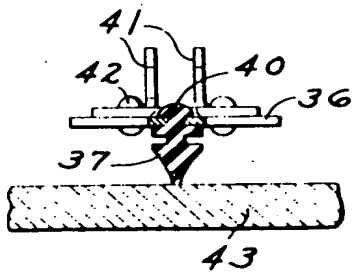
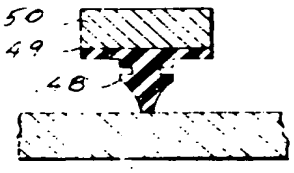


FIG. 8



709 620/311

09/448046

Address: ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

U.S. APPLICATION NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
09/448046	KOTLARSKI	787

5071

STRIKER STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

INTERNATIONAL APPLICATION NO.	
PCT/DE98/03721	

I.A. FILING DATE	PRIORITY DATE
12/18/98	04/01/98

DATE MAILED: 03/06/00

NOTIFICATION OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C. 371 AND 37 CFR 1.494 OR 1.495

1. The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as ☒ a Designated Office (37 CFR 1.494), ☐ an Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is **ACCEPTED** for national patentability examination in the United States Patent and Trademark Office.

2. The United States Application Number assigned to the application is shown above and the relevant dates are:

18 Feb 00
35 U.S.C. 102(e) DATE

18 Feb 00
DATE OF RECEIPT OF 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE "FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371(C) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).* Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

3. ☐ A request for immediate examination under 35 U.S.C. 371(f) was received on _____ and the application will be examined in turn.

4. The following items have been received:
- ☒ U.S. Basic National Fee.
- ☒ Copy of the international application in:
  - ☒ a non-English language.
  - ☐ English.
- ☒ Translation of the international application into English.
- ☒ Oath or Declaration of inventors(s) for DO/EO/US.
- ☐ Copy of Article 19 amendments. ☐ Translation of Article 19 amendments into English.
  The Article 19 amendments ☐ have ☐ have not been entered.
- ☐ The International Preliminary Examination Report in English and its Annexes, if any.
- ☐ Copy of the Annexes to the International Preliminary Examination Report (IPER).
  - ☐ Translation of Annexes to the IPER into English.
  The Annexes ☐ have ☐ have not been entered.
- ☒ Preliminary amendment(s) filed 01 Dec 99 and _____.
- ☐ Information Disclosure Statement(s) filed _____ and _____.
- ☐ Assignment document.
- ☐ Power of Attorney and/or Change of Address.
- ☐ Substitute specification filed _____.
- ☐ Statement Claiming Small Entity Status.
- ☐ Priority Document.
- ☒ Copy of the International Search Report ☒ and copies of the references cited therein.
- ☐ Other:

Applicant is reminded that any communication to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above. (37 CFR 1.5)

Patricia Booker
National Stage Processing
Paralegal Specialist
(703) 308-6788

Telephone: (703)

FORM PCT/DO/EO/903 (December 1997)

1744

UNITED STATES PATENT AND TRADEMARK OFFICE,

#6

Examiner: Art Unit:

In re:

Applicant	:	KOTLARSKI
Serial No.	:	09/445,046
Filed.	:	12/01/99

NOTICE OF CHANGE OF TELEPHONE NUMBER

May 25, 2000

Honorable Commissioner
of Patents and Trademarks
Washington, DC 20231

Sir:

Please take notice that the telephone number of the attorney for the applicant has been changed.

The new telephone number is 631 549 4700.

Please further note that the Fax number for the attorney for the applicant has also changed. The new number is 631 549 0404.

Respectfully submitted,

Michael J. Striker
103 East Neck Road
Huntington, New York
11743

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/445,046	02/18/00	GUSTAFSSON T	989

IM61/1221

FATTIBENE & FATTIBENE
2480 POST ROAD
SOUTHPORT CT 06490

EXAMINER	
GRAHAM, G	
ART UNIT	**PAPER NUMBER**
1744	4

DATE MAILED: 12/21/00

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

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/445,046	GUSTAFSSON ET AL
Examiner	**Group Art Unit**
Gary K. Graham	1744

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-4* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-4* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☒ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Reference to the claims from the disclosure is improper, for example see page 1, lines 3 and 22. The disclosure should not look to the claims to define the invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 10, there is no antecedent basis for "the contact force". Lines 10-14 appear improper since applicant has not positively claimed a window or wiper arm. Absent the wiper arm pushing the wiper strip against the window, no force exists on the wiper strip. It appears applicant must claim the wiper strip, wiper arm and window to enable development of a contact force.

In claim 4, line 8, use of "(s)" is indefinite since it cannot be determined from such exactly what is to be claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Arai et al '326.

The patent to Arai discloses the invention as is claimed. Note figures 5, 6 and 7 which shows, at least under high pressure, the end sections having a lower contact force compared with the center section.

With respect to claim 3, Arai appears to meet the limitation of the center section having a contact force of "almost uniform magnitude". Such does not appear to define any particular structure or function not disclosed by Arai.

With respect to claim 4, note figure 6 which shows the center section having a greater curvature than at least the right end sections.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Note EP patent '643 which discloses the end sections having a lesser curvature than the center section. See figure 7.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Gary K. Graham at 703-308-1270. The Examiner's fax number is 703-872-9546. The fax phone number for this Group is (703) 305-7719. The Examiner can normally be reached Tuesday through Friday.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0651.

December 18, 2000
GKG

GARY K. GRAHAM
PRIMARY EXAMINER
GROUP 1700

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 279 640 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **88301301.3**

(22) Date of filing: **17.02.88**

(51) Int. Cl.[4]: **B 60 S 1/38**

(30) Priority: **20.02.87 JP 22798/87**

(43) Date of publication of application:
24.08.88 Bulletin 88/34

(84) Designated Contracting States: **DE FR GB**

(71) Applicant: **Nippon Wiperblade Co., Ltd.**
998, Oaza Kamiochiai
Yono-shi Saitama-ken (JP)

(72) Inventor: **Arai, Masaru c/o Nippon Wiperblade Co., Ltd.**
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken (JP)

Saita, Itsuro c/o Nippon Wiperblade Co., Ltd.
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken (JP)

(74) Representative: **Spall, Christopher John et al**
BARKER, BRETTELL & DUNCAN 138 Hagley Road
Edgbaston Birmingham B16 9PW (GB)

(54) Backing member in wiperblade of windshield wiper.

(57) A backing member (3) of a wiperblade of a windshield wiper is disclosed. The member comprises two elongated body elements (4, 5) extending parallel at a spaced apart relationship and extending substantially along the entire length of a blade rubber (1) to which the backing member is mounted, a plurality of bridge portions (6) spaced apart in the longitudinal direction of the backing member and connecting the body elements, the space between the body elements being adapted to receive a neck portion (1B) of the blade rubber, the bridge portions extending in the sidewise direction and above the body elements so as to define a space above the body elements for receiving a head portion of the blade rubber, and two longitudinally spaced apart pivotal connections (2A, 2B) for connecting with a yoke member (2) of the wiper. At least one of the pivot connections is adapted to permit relative longitudinal displacement of corresponding pivot connection of the yoke member. The curvature and the rigidity of the backing member are changed in the longitudinal direction.

FIG. 2

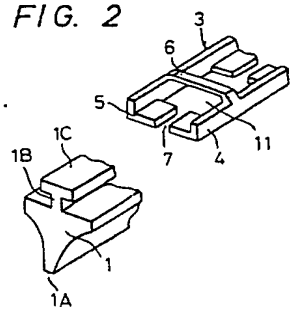
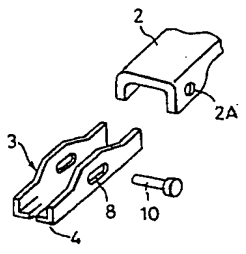


FIG. 3



EP 0 279 640 A2

Description

BACKING MEMBER in WIPERBLADE of WINDSHIELD WIPER

Field of the Invention

The present invention relates to a windshield wiper and, particularly to a backing member in a wiperblade of the windshield wiper.

Description of Prior Art

It is important that a blade rubber contacts with the surface of a windshield being wiped under a uniform pressure distribution along the length thereof or in the longitudinal direction for enabling satisfactory wiping effects. Usually, one or more resilient metal strips are disposed on the upper surface of the blade rubber so that a pressing force transmitted from a yoke member is dispersed in the longitudinal direction and is transmitted to the tip or the lower end of the blade rubber. It is also known to form the yoke member of a plurality of pivotally connected yoke elements so that the force is transmitted to the wiperblade through plural locations. When the force is transmitted from the yoke member to the wiperblade through a small number of locations, it is difficult to obtain uniform pressure distribution. And the yoke member including a multiple number of mutually pivotally connected yoke elements is complicated in construction and is expensive.

The present invention has been made in view of the circumstances aforementioned, and aims to provide a backing member for enabling uniform pressure distribution along the length of the blade rubber.

Summary of the Invention

A backing member according to the invention comprises two elongated body elements extending substantially along the entire length of a blade rubber to which the backing member is mounted and extending parallel at a spaced apart relationship, a plurality of bridge portions being spaced apart in the longitudinal direction of the backing member and connecting the body elements, the space between the body elements being adapted to receive a neck portion of the blade rubber, the bridge portions extending in the sidewise direction and above the body elements so as to define a space above the body elements for receiving a head portion of the blade rubber, two longitudinally spaced apart pivot connections for connecting with a yoke member of a wiper, at least one of the pivot connections being adapted to permit relative longitudinal displacement of corresponding pivot connection of the yoke member, and the curvature of the lower surfaces of the body elements and the rigidity of the backing member being changed in the longitudinal direction.

Preferably, the rigidity is high at the pivot connections and is low at the longitudinally central portion and at opposite end portions.

The curvature is preferably small at opposite end portions and is large at the central portion. Further, the curvature at the longitudinally central portion may be opposite sense or downwardly convex.

The backing member may be used together with metal strips, otherwise, metal strips may be embedded in the backing member of synthetic resin material.

Preferably, cutout portions are formed in the body elements at locations where the bridge portions are connected to the body elements, whereby the backing member can easily formed by die forming process.

According to the invention, the backing member can easily be formed to have desired rigidity against bending, thus, it is not required to connect the wiperblade to the yoke member through three or more points for obtaining uniform pressure distribution, thus, it is simple in the construction and cheap in the cost.

Brief Description of the Drawings

Further objects and effects of the invention will become apparent from the following detailed description taken in conjunction with the drawings, in which:

Fig. 1 is a schematic side view of a wiperblade having a backing member according to present invention;

Fig. 2 is a partial perspective view showing portions of a blade rubber and the backing member of Fig. 1;

Fig. 3 is a partial perspective view showing portions pivotally connecting the backing member of Fig. 1 with a yoke member;

Fig. 4 is a sectional view showing the backing member of the invention and a blade rubber;

Fig. 5 is a side view of the backing member under no load condition;

Fig. 6 is a view similar to Fig. 5 but showing a modified backing member;

Fig. 7 is a graph showing change in the pressure distribution at the tip end of the blade rubber according to the invention, and

Fig. 8 is a graph similar to Fig. 7 but showing a prior art backing member.

Detailed Description of Preferred Embodiments

Referring particularly to Figs. 1-3, shown at numeral 1 is a blade rubber, at 2 is a yoke member connected to a wiper arm (only a part is shown) and, at 3 is a backing member according to the invention. The blade rubber 1 comprises a tip end or a wiping end 1A, a neck portion 1B and a head portion 1C. The yoke member 2 is connected to the backing member 3 through pivot connections 2A and 2B. The backing member 3 comprises two elongated body elements 4 and 5 extending substantially along the entire length of the blade rubber 1 to which the backing member 3 is mounted. The backing member 3 and the blade rubber 1 are the major components of a wiperblade. The body elements 4 and 5 define a space 7 therebetween, and the space 7 is adapted to receive the neck portion 1B of

the blade rubber 1. A plurality of bridge portions 6, 6.... being spaced apart in the longitudinal direction of the backing member 3 act to connect the body elements 4 and 5 to each other. The bridge portions extend in the sidewise direction and above the body elements 4 and 5 so as to define a space above the body elements for receiving the head portion 1C of the blade rubber 1. There are provided on the backing member 3 two longitudinally spaced apart pivot connections 8 and 9 for connecting with the yoke member 2. As shown in Fig. 1, the pivot connection 8 corresponds to the pivot connection 2A of the yoke member and the pivot connection 9 corresponds to the pivot connection 2B of the yoke member 2. At least one of the pivot connections 8 and 9 is formed to permit a relative longitudinal displacement of corresponding pivot connection of the yoke member 2. In the embodiment, the pivot connection 8 is formed of elongated openings. Shown at 10 is a pivot pin, however, the pivot pin may be substituted by other suitable means.

As shown in Fig. 2, cutouts 11 are formed in the body elements 4 and 5 at locations corresponding to the bridge portions 6, whereby the backing member 3 can easily be formed by die forming process and of synthetic resin material. Further, there is provided means for restricting relative longitudinal displacement between the backing member 3 and the blade rubber 1. Such means may include a clip mounted on the backing member 3 preferably at one longitudinal end for clamping the blade rubber. Otherwise, it is possible to form the space 7 to zero at one or both longitudinal ends of the backing member 3, and the blade rubber is inserted through one of the cutouts 11 adjacent to one end.

Preferably, the backing member 3 is formed to have the cross-sectional configuration as shown in a backing member 3' of Fig. 4, so as to have a suitable rigidity against bending or against bending along a plane perpendicular to the sheet of Fig. 4, whereby the force transmitted from the yoke member can uniformly dispersed along the length of the blade rubber.

The wiperblade shown in Fig. 4 has metal strips 12 and 13 inserted between the backing member 3' and the blade rubber 1' to augment the resiliency. The resilient metal strip may be embedded integrally in the backing member.

Fig. 5 shows a side view of the backing member 3 at no load condition. The curvature is gradually decreased at longitudinally opposite end portions 3A and 3A, and the rigidity against bending is large at and adjacent to the pivot connections 8' and 9', and is small at opposite end portions 3A and 3A and at the central portion 3B. Thus, the pressure distribution along the length of the blade rubber is uniform, and the wiperblade can follow a curved windshield.

Fig. 6 shows a modified form, wherein the curvature at the longitudinally central portion is of opposite sense or convex in the downward direction. The curvature is small at zones D adjacent to opposite end portions 3A, medium at zones E adjacent to pivot connections 8 and 9, and large at zones F and F adjacent to the central portion 3B. The embodiment enables to obtain relatively uniform pressure distribution with respect to a wide range between a low pressure and a high pressure and, further, it is possible to prevent excessive decrease of the pressure at the central portion.

Figs. 7 and 8 show the change in the pressure distribution at the tip end or the wiping end 1A of the blade rubber 1 when the pressing force applied on the wiperblade from the yoke member is changed. Fig. 7 shows the result according to the invention, and Fig. 8 shows prior art wiperblade. According to the invention, the pressure change in the longitudinal direction is small, and pressure change at opposite end portions when the pressing force is changed is also small. Thus, the blade rubber contacts with the surface of the windshield within a suitable range of inclination angle. Therefore, the wiping property is good, and since a wide range of pressing force can be applied, it is possible to decrease the types of the wiperblade.

Claims

1. A backing member in a wiperblade of a windshield wiper, said backing member comprises two elongated body elements extending parallel at a spaced apart relationship and extending substantially along the entire length of a blade rubber to which the backing member is mounted, a plurality of bridge portions being spaced apart in the longitudinal direction of the backing member and connecting the body elements, the space between the body elements being adapted to receive a neck portion of the blade rubber, the bridge portions extending in the sidewise direction and above the body elements so as to define a space above the body elements for receiving a head portion of the blade rubber, and two longitudinally spaced apart pivot connections for connecting with a yoke member of the wiper, at least one of the pivot connections being adapted to permit relative longitudinal displacement of corresponding pivot connection of the yoke member, and the curvature of the lower surfaces of the body elements and the rigidity of the backing member being changed in the longitudinal direction.

2. A backing member as set forth in claim 1, wherein the rigidity is high at the pivot connections and is low at the longitudinally central portion and at opposite end portions.

3. A backing member as set forth in claim 1, wherein the curvature is small at opposite end portions and is large at the central portion.

4. A backing member as set forth in claim 1, wherein the curvature at the longitudinally central portion is downwardly convex.

5. A backing member as set forth in claim 1, wherein metal strips are embedded in the backing member of synthetic resin material.

6. A backing member as set forth in claim 1, wherein cutout portions are formed in the body elements at locations where the bridge portions

are connected to the body elements, whereby the backing member can easily formed by die forming process.

7. A backing member as set forth in claim 1, wherein means for restricting relative displacement of the blade rubber is provided on one longitudinal end portion of the backing member.

EPODOC: <EP 0279640A2>

FIG. 1

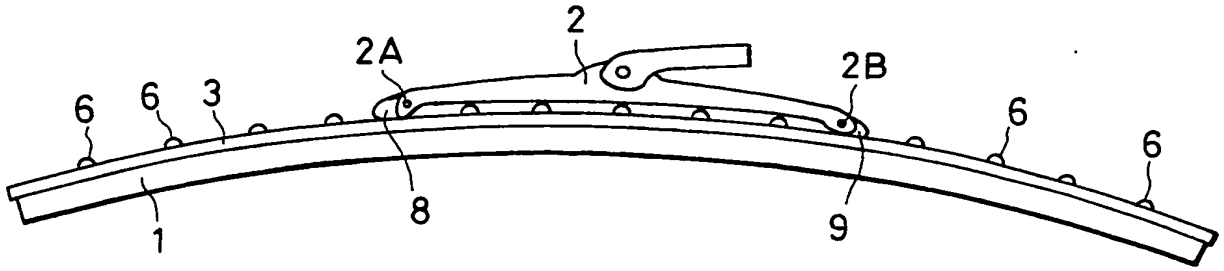


FIG. 2

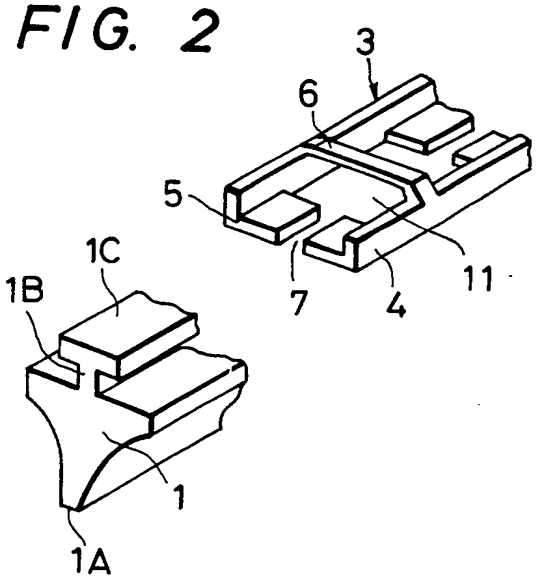


FIG. 3

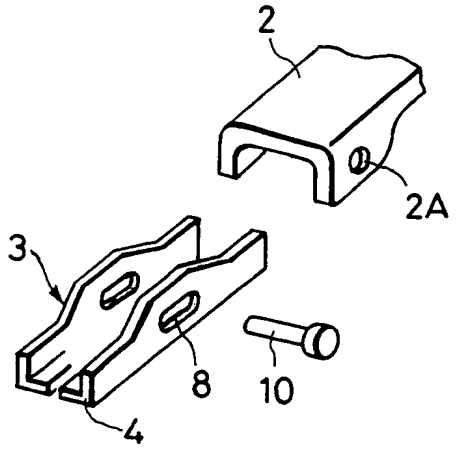


FIG. 4

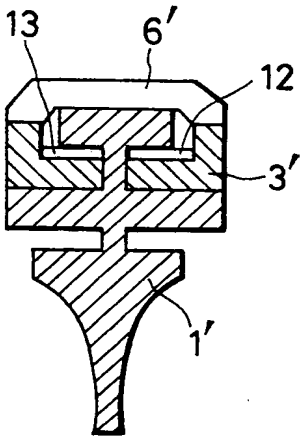


FIG. 5

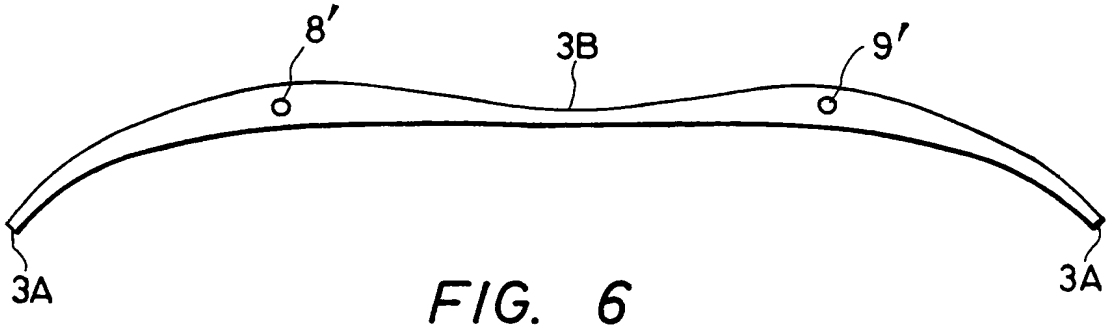


FIG. 6

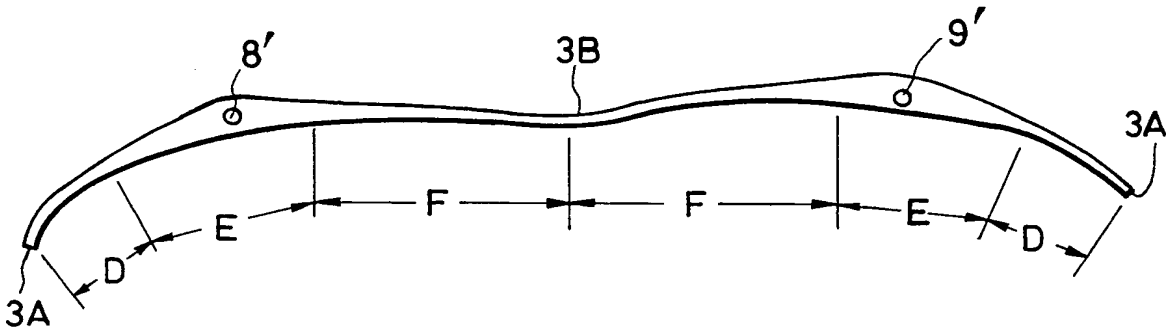


FIG. 7

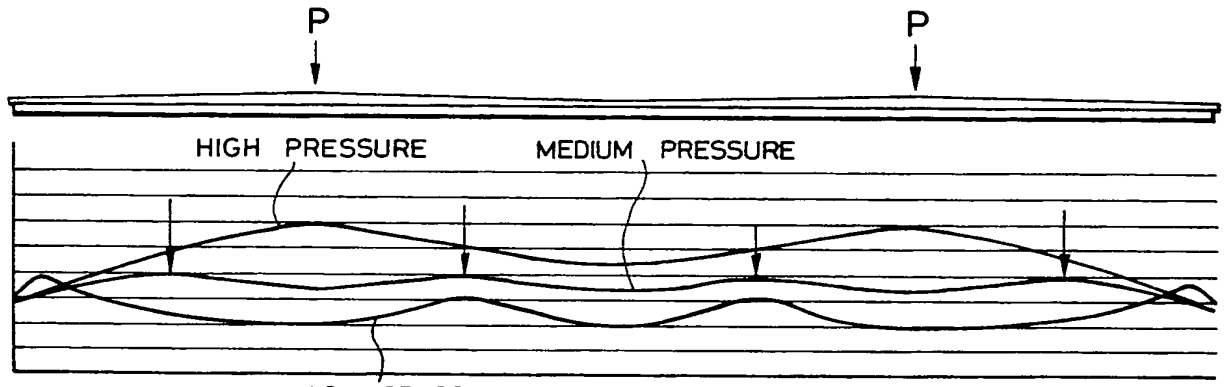
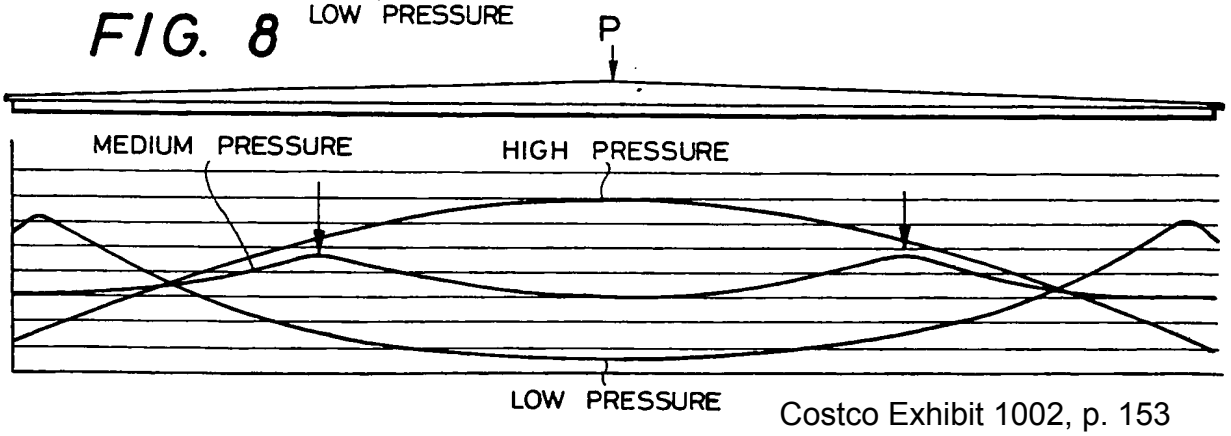


FIG. 8



(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 279 640 A3**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **88301301.3**

(51) Int. Cl.4: **B60S 1/38**

(22) Date of filing: **17.02.88**

(30) Priority: **20.02.87 JP 22798/87 U**

(43) Date of publication of application:
24.08.88 Bulletin 88/34

(84) Designated Contracting States:
DE FR GB

(88) Date of deferred publication of the search report:
20.12.89 Bulletin 89/51

(71) Applicant: **Nippon Wiperblade Co., Ltd.**
998, Oaza Kamiochiai
Yono-shi Saitama-ken 338(JP)

(72) Inventor: **Arai, Masaru c/o Nippon Wiperblade Co., Ltd.**
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken(JP)
Inventor: **Saita, Itsuro c/o Nippon Wiperblade Co., Ltd.**
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken(JP)

(74) Representative: **Spall, Christopher John et al**
BARKER, BRETTELL & DUNCAN 138 Hagley Road
Edgbaston Birmingham B16 9PW(GB)

(54) Backing member in wiperblade of windshield wiper.

(57) The member (3) comprises two elongated body elements (4, 5) extending parallel at a spaced apart relationship and extending substantially along the entire length of a blade rubber (1) to which the backing member (3) is mounted, a plurality of bridge portions (6) spaced apart in the longitudinal direction of the backing member (3) and connecting the body elements (4, 5), the space between the body elements (4, 5) being adapted to receive a neck portion (1B) of the blade rubber (1), the bridge portions (6) extending in the sidewise direction and above the body elements (4, 5) so as to define a space above the body elements (4, 5) for receiving a head portion (1B) of the blade rubber (1), and two longitudinally spaced apart pivotal connections (2A, 2B) for connecting with a yoke member (2) of the wiper. At least one of the pivot connections (2A, 2B) is adapted to permit relative longitudinal displacement of corresponding pivot connection of the yoke member (2). The curvature and the rigidity of the backing member (3) are changed in the longitudinal direction.

FIG. 1

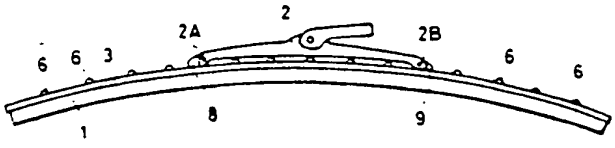
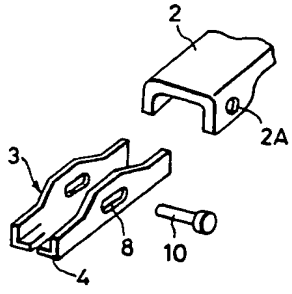


FIG. 3



EP 0 279 640 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 30 1301

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	FR-A-2217191 (TRAPEZ) * page 1, line 27 - page 2, line 16 * * page 3, line 23 - page 4, line 4 * * page 4, line 21 - page 5, line 20; figures 1-5, 11 *	1, 3, 6, 7	B60S1/38
A		2	
Y	FR-A-1124116 (VOLIX) * the whole document *	1, 3, 6, 7	
A		2	
A	US-A-2601664 (NESSON) * column 2, line 17 - column 3, line 24; figures 1-3 *	1	
A	FR-A-2199302 (FISTER) * the whole document *	1, 2, 5, 7	
A	FR-A-2306854 (ARMAN) * the whole document *	1, 2, 5, 7	
A	DE-C-942072 (FIAT) * the whole document *	1, 4, 7	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2482540 (CARBONI) * page 4, lines 1 - 17 * * page 5, lines 21 - 34 * * page 6, line 33 - page 7, line 6 * * page 7, line 27 - page 8, line 16; figures 1, 5-7, 12-14 *	1, 5	B60S
A	US-A-3317945 (LUDWIG)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 OCTOBER 1989	VERLEYE J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 528 643 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **92307416.5**

(51) Int. Cl.[5] : **B60S 1/38**

(22) Date of filing : **13.08.92**

(30) Priority : **16.08.91 ZA 916473**
17.01.92 ZA 920354

(43) Date of publication of application :
24.02.93 Bulletin 93/08

(84) Designated Contracting States :
DE ES FR GB IT

(71) Applicant : **ANGLO AMERICAN INDUSTRIAL CORPORATION LIMITED**
44 Main Street
Johannesburg, Transvaal (ZA)

(72) Inventor : **Swanepoel, Adriaan Retief**
309 Aries Street, Waterkloof Ridge
Pretoria, Transvaal (ZA)

(74) Representative : **Godwin, Edgar James**
MARKS & CLERK 57-60 Lincoln's Inn Fields
London, WC2A 3LS (GB)

(54) Windscreen wiper.

(57) A curved elongate backbone (10) for a windscreen wiper has a loading profile that increases substantially from a central connector (14) towards one or both ends of the backbone. The second differential of the bending moment also increases substantially from the connector towards the ends. The loading may increase right to the ends of the backbone or the backbone may have end portions with constant loading. In order to obtain the desired loading profile the width, thickness, and free-form radius of curvature are suitably selected. In preferred embodiments, the backbone (10) has a rectangular cross-sectional profile and the thickness and width decrease uniformly from the connector (14) to the ends. However, the thickness may also be constant for end portions.

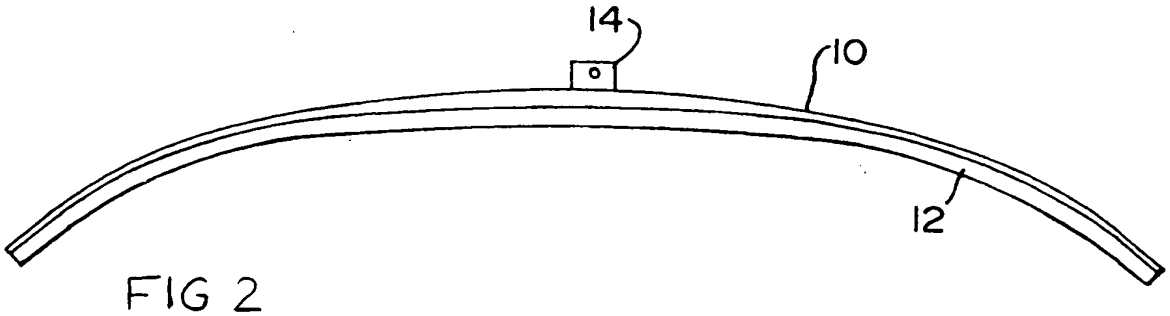


FIG 2

EP 0 528 643 A1

THIS INVENTION relates to a windscreen wiper and more particularly to an elongate curved backbone for a windscreen wiper which is of a suitably resiliently flexible material.

According to the invention there is provided a windscreen wiper which includes

an elongate curved backbone which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member,

the backbone having a suitably varying transverse cross-sectional profile along its length and a suitable free-form curvature for the backbone to achieve, when it is pressed downwardly at the connecting formation onto a flat surface by a force sufficient to straighten the backbone, a force per unit length exerted perpendicularly to the surface which increases substantially from the position of the connecting formation towards at least one end of the backbone.

The backbone may be curved in a plane- the plane of curvature.

Further according to the invention there is provided a windscreen wiper which includes

an elongate backbone which is curved in a plane, which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member, the backbone having a suitably varying cross-sectional profile along its length and a suitable free-form curvature, such that the second differential of the function M(x) increases substantially from the said position towards at least one end of the backbone, where

$$M(x) = \frac{E * I(x)}{R(x)}$$

with E = modulus of elasticity

I(x) = cross-section moment of inertia of the backbone about a neutral axis transverse to the plane of curvature, at a distance x from the said position; and

R(x) = free-form radius of curvature of the backbone in the plane of curvature at x.

The wiper may include a wiper blade attached to the backbone and the sufficient force referred to above may be that force which causes the blade to contact the surface in a straight operative manner.

Persons skilled in the art will appreciate that the backbone will have a concave side and a convex side, the wiper blade being attached to the concave side and the displacing and force applying member on the convex side.

The backbone may conveniently be of a metal such as spring steel and may be in the form of a single strip or may be in the form of a laminate.

The connecting formation may be centrally located or the wiper may be asymmetric. The force per unit length may increase towards only one end of the backbone, but preferably it increases towards both ends of the backbone. Further, the force per unit length may increase towards both ends in a similar or dissimilar manner. Similarly, the second differential of M(x) may increase substantially from the connecting formation towards only one end or towards both ends. If it increases towards both ends this may be in a substantially similar or dissimilar manner.

The force per unit length and the second differential of M(x) may increase progressively towards the ends of the backbone until a short distance from each end and the backbone may then have two small portions at each end where the force per unit length and the second differential are a constant value. Further, the backbone may be such that in these small portions the force per unit length and the second differential are constant right to the tips of the backbone, or, at tip regions the backbone may be such that the force per unit length and the second differential decrease from the constant value to zero at the extremities of the backbone.

The force per unit length may increase, at least in the central region of the backbone, in an exponential manner. Conveniently,

$$f(x) = A|x|^n + C$$

where

f(x) = force per unit length at a distance x from the connecting formation,

A and C are determinable constants, and

n is greater than unity.

Conveniently, n may be at least 3, is generally at least 6 and is preferably about 10.

Those skilled in the art will appreciate that I (x) is determined by the transverse dimensions of the backbone at any position along its length. In most cases, the backbone will have a regular cross-sectional profile which may, for example be rectangular or ellipsoidal. Thus, in most instances, the backbone will have a width and a thickness. It will be understood that the width dimension will be that dimension which extends perpendicularly to the plane of curvature and the thickness will be the dimension which lies in the plane of curvature.

The thickness of the backbone may decrease from the connecting formation towards both ends until a predetermined distance from the ends, with the thickness being constant along these end portions. These end portions may have a length of at least 20 mm.

It can be shown, that with a backbone which has a rectilinear cross-section at all positions along its length, that

$$M(x) = \frac{E * b_x * h_x^3}{12 * R_x}$$

where

b_x equals the width at distance x,

h_x equals thickness at distance x.

Thus, with a backbone having a rectangular cross-section, the width and thickness may vary in a predetermined manner and the radius of curvature may then be varied so that M(x), and its second differential vary in the desired manner.

If the backbone has an elliptical cross-section then it can be shown that

$$M(x) = \frac{\pi * E * b_x * h_x^3}{64 * R_x}$$

If the backbone has any other cross-sectional profile the equation for M(x) may be determined utilising conventional mathematical techniques.

Those skilled in the art will appreciate that there is a relationship between the second differential of M(x) and the force per unit length. Thus, the second differential of M(x) may vary in the same manner as that described above for the force per unit length.

It will be appreciated further that the width, thickness and radius of curvature also determine other characteristics of the backbone. Thus, the radius of curvature of the backbone will determine the extent of curvature of a windscreen that can be cleaned by the wiper. Thus, if the windscreen, in any particular region, has a greater curvature than that portion of the wiper that is to pass thereover, then the wiper will not clean that region of the windscreen in an effective manner.

Similarly, the width and thickness will determine the rigidity of the wiper and if the backbone is too thin at its tips it will be vulnerable to mechanical damage.

Those skilled in the art will also appreciate that M(x) is the bending moment of the backbone.

Further, if a curved beam is uniformly loaded, ie. the force per unit length is a constant along the length of the beam when it is pressed down onto a flat surface, then the bending moment is

$$M_c(x) = \frac{F * (4x^2 - 4Lx + L^2)}{8 * L}$$

where

F = the total force applied to the beam to straighten it against a flat surface, and

L = the length of the beam.

Thus, with a rectilinear backbone if

$$\frac{b_x * h^3_x}{R_x} > \frac{12 * F * (4x^2 - 4Lx + L^2)}{8 * L * E}$$

at all positions along at least a part of the backbone (which is a substantial part), then the backbone will be such that the force per unit length increases along the length of this part of the backbone away from the connecting formation.

Similarly, with an elliptical cross-section, the backbone will have an increasing force per unit length if

$$\frac{b_x * h^3_x}{R_x} > \frac{8 * F * (4x^2 - 4Lx + L^2)}{\pi * E * L}$$

For practical reasons, the backbone should have end portions with a constant radius of curvature, and the tips themselves are preferably straight.

The invention is now described by way of example only with reference to the drawings in which:

Figure 1 is a perspective view from above of the windscreen wiper of the invention with the drawing being shortened for clarity of illustration;

Figure 2 is a side elevation of the Figure 1 windscreen wiper shown in an unloaded free form condition;

Figure 3 is an end elevation of the wiper;

Figure 4 is a force distribution diagram illustrating the lengthwise distribution of the force per unit length on the windscreen wiper of Figures 1 to 3 when it is pressed against a flat surface in an operational manner;

Figure 5 illustrates the curvature requirement to which a wiper blade should conform to operate satisfactorily on a typically curved motor vehicle windscreen;

Figure 6 shows graphically the variation in the radius of curvature of the wiper of Figures 1 and 2 in its free form condition;

Figure 7 shows graphically the variation in the radius of curvature of a further embodiment of a wiper which has a symmetrical backbone with tip portions of constant thickness; and

Figure 8 shows graphically the variation in the radius of curvature of a still further embodiment of a wiper which has an asymmetric backbone with tip portions of constant thickness.

The windscreen wiper of the invention is shown in Figures 1 to 3 to include a spring backbone 10 and a wiper blade 12. The backbone 10 has a centrally located connector 14 for releasably connecting the wiper to a spring loaded wiper arm (not shown). The connector 14 could be of any suitable type. The backbone 10 has suitable attachment formations (also not shown) to ensure that the blade 12 is securely attached to the backbone 10.

The spring backbone of the wiper is preferably made from spring steel and tapers both in width and thickness from its centre towards its free ends or tips. The backbone is pre-curved longitudinally with a predetermined radius of curvature at every point in its length. The backbone 10 defines a plane, which is defined by the sheet of paper in Figure 2. The cross section of the backbone is preferably rectangular but may be of any other suitable shape. Most importantly to the invention the thickness and width of the backbone 10 and its radius of curvature are matched at every point along the length of the backbone so that the backbone will provide a force per unit length distribution in a longitudinal direction which increases towards both tips of the windscreen wiper when the windscreen wiper is, in use, pressed downward intermediate its ends onto a flat surface, as shown in Figure 1, by a force F which is equal in magnitude to the down force required to straighten the backbone. By straighten is meant that the force F must be adequate to render the wiper blade 12 fully functional.

A suitable force per unit length distribution is shown in Figure 4, where the various parameters have the following meaning:

F = downforce applied to wiper by wiper arm.
f(x) = force per unit length distribution between $-X_{LMAX}$ and X_{LMAX} in N/m.
B = Maximum loading acceptable at tips, in N/m.
X_{LMAX} = point where maximum loading starts.
D_{XLMAX} = distance from tip for which the maximum loading B applies
L = length of wiper blade.

In this example, the following values are assumed:-

F = 6,975 N
L = 0,45 m
D_{XLMAX} = 0,02 m, therefor X_{LMAX} = 0,205 m
B = 34,1 N/M

It will be appreciated that the distribution between $-X_{LMAX}$ and $+X_{LMAX}$ is of the form

$$f(x) = A|x|^n + C \quad (1)$$

where

n = 10.

The co-efficient A in equation (1) is determined from the formula

$$A = \frac{(n+1)\,[F - 2Cx_{LMAX} - 2B\,D_{XLMAX}]}{2\,X_{LMAX}^{n+1}} \quad (2)$$

Equation (2) represents a situation where the force distribution balances the total force F. As indicated in the broad description above, the distribution at the ends of the backbone is a constant (B). Further, as indicated above, the loading may decrease right at the tips, although this is not shown in Figure 4.

To achieve the increasing loading (as discussed above) the thickness of the spring backbone at any position in its length must subscribe to the following equation:

$$h(x) > \left[\frac{3R_x F\,(4x^2 - 4Lx + L^2)}{2LEb_x}\right]^{1/3}$$

The above equation relates to a wiper backbone which has a substantially rectangular cross sectional shape. In further experimentation with the wiper backbone of the invention it may, however, as mentioned above, be found that cross sectional shapes other than rectangular may provide the backbone with better

structural characteristics than does the rectangular backbone. In this event, the equation will need to be adapted to suit the particular shape required. For example, in a backbone having an elliptical cross section the equation will need to be adjusted as follows:

$$h(x) > \left[\frac{8R_x F (4x^2 - 4Lx + L^2)}{\pi LEb_x}\right]^{1/3}$$

The wiper blade 12 is made from a suitable rubber or elastomeric material and in the currently preferred embodiment of the invention is shaped in cross section as illustrated in Figure 3. The cross sectional shape of the blade 12 may, however, if required, be made variable at various positions in its length.

EXAMPLE 1

A wiper backbone, which is of spring steel and has a rectangular cross-sectional profile and which has the required loading increase towards its tips, torsional rigidity and wrap around capability has the following dimensional values:

modulus of elasticity	207×10^9 N/m^2
length	450 mm
thickness at the centre of the backbone	1,29 mm
thickness at the tips	0,22 mm
width at the centre	11 mm
width at the tips	6 mm

The backbone tapers uniformly in both thickness and width in a straight line manner from its centre to its tips.

As has been mentioned above it is essential to this invention that the reactive loading on the wiper backbone when pressed onto a flat surface, as illustrated in Figure 4, must increase towards the tips of the backbone as shown in the drawing.

The curvature required to give this loading profile is determined in the following way.

Using equation (1) above, the parameter C in Figure 4 is calculated iteratively until f(x) = B at the point

$$X = X_{LMAX}$$

In this example,

C = 11,64 N/m.

With C known, A can now be determined from equation (2). The value of A is approximately 171 300 000 N/m[11].

From basic Strengths of Material theory, the bending moment equation where $L/2 > |x| > X_{Lmax}$ is

$$M(x) = \tfrac{1}{2} B [X^2 - L|x| + L^2/4] \quad (3)$$

By derivation from Standard Strengths of Material theory, the bending moment equation where $X < X_{LMAX}$ is

$$m(X) = A\left\{\frac{1}{n+1} - \frac{1}{n+2}\right\}x^{n+2} + \frac{C}{2}x^2 - \left\{\frac{AY^{n+1}}{n+1} + CY\right\}x + \left\{\frac{CY^2}{2} + \frac{AY^{n+2}}{n+2}\right\} + \frac{B}{2}\left\{Y(2x - Y) - Lx + \frac{L^2}{4}\right\} \quad (4)$$

where $Y = X_{LMAX}$

At any point x along the length of the backbone, the radius of curvature R is given by

$$R(x) = \frac{EI(x)}{M(x)} \quad (5)$$

where I(x) = cross section moment of inertia at position x,
E = modulus of elasticity (Young's modulus)
M(x) = is given by either equation (3) or (4), depending on the value of x.

Using equation (5) the radius of curvature as shown in Figure 6 is determined.

At all points x (except for the last 45 mm at the tips) the example backbone satisfies the curvature requirements represented by Figure 5, ie. R(x) according to equation (5) is smaller than the required radius of curvature.

EXAMPLE 2

The example described above is of a wiper having a rectangular backbone which tapers uniformly in both thickness and width in a straight line manner from its centre to its tips. As indicated above, the backbone could have tip portions of constant thickness. The dimensions and other values for such a backbone in accordance with the invention are:-

F	= 6,3 N
L	= 44 cms
D_{XLMAX}	=3cms, therefore
X_{LMAX}	=19 cms
B	=20 N/m
n	= 10
modulus of elasticity	= 207×10^9 N/m²
length	= 440 mm
thickness at the centre of the backbone	= 1,15 mm
thickness at the tip portions	= 0,43 mm
distance from the tips for which thickness remains constant	= 45 mm
width at centre	= 11 mm
width at the tips	= 6 mm.

Thus, the backbone tapers uniformly in width from its centre to its tips and uniformly in thickness from its centre to 175 mm from the centre, then the thickness remains constant for the next 45 mm right to the tips.

These parameters produce the following results:-

C = 12,85 N/m

A = 102 000 000 N/m^{11} (approximately).

Using these values in equations (3), (4) and (5) above, the following radius of curvature are obtained:-

X (cm)	Radius of Curvature (m)
0	0,766
2	0,704
4	0,643
6	0,586
8	0,535
10	0,490
12	0,454
14	0,430
16	0,433
18	0,568
20	2
22	826

The radius of curvature of such a wiper is shown graphically in Figure 7.

EXAMPLE 3

Further, as indicated above a rectangular backbone could be assymmetric, having a connector that is not centrally located, and the loading is different towards both ends. The dimensions of, and other values for, such a backbone in accordance with the invention are:-

F = 6,3 N

L = 45 cms.

The connection point is shifted 13 mm longitudinally from the geometric centre, to one side of the backbone. The shorter side of the backbone is therefore 212 mm long and the longer side is 238 mm long.

Dealing firstly with the shorter side. The total force applied to the shorter side of the beam is 3.2 N, therefore for a notional symmetric backbone

F = 2 * 3,2 N = 6,4 N

The length of the shorter side is 212 mm, therefore for a notional symmetric backbone

L = 2 * 212 mm = 424 mm

D_{XLMAX}	= 3cms, therefore
X_{LMAX}	= 18.2 cms
B	= 22 N/m
n	= 10
modulus of elasticity	= $207 * 10^9$ N/m²
thickness at connector	= 1,15 mm
thickness at tips	= 0,43 mm
distance from the tips for which thickness remains the same	= 45 mm
width at connector	= 11 mm
width at the tips	= 6 mm.

Thus the shorter side of the backbone has a width that decreases uniformly to the tip and a thickness that decreases uniformly for a distance of 167 mm from the connector and which then remains constant for the remaining 45 mm right to the tip.

These parameters produce the following results for the short side of the blade:-

C = 13,1 N/m

A = 236 000 000 N/m^{11} (approximately).

Using these above values in equations (3), (4) and (5) above, the following radii of curvature result:-

X (cm)	Radius of Curvature (m)
0	0,778
2	0,709
4	0,641
6	0,579
8	0,522
10	0,472
12	0,433
14	0,408
16	0,416
18	0,777
20	4,657.

Dealing now with the longer side of the backbone.

The total force applied to the longer side of the backbone is 3,1 N, therefore for a notional symmetric back-

bone

$F = 2 * 3.1\ N = 6{,}2\ N$

The length of the longer side is 238 mm therefore for a notional symmetric backbone

L	= 2 * 238 mm = 476 mm
D_{XLMAX}	= 0, therefore
X_{LMAX}	= 238 mm
B	= 13,1 N/m
n	= 10
thickness at connector	= 1,15 mm
thickness at tips	= 0,40 mm
distance from the tips for which thickness remains the same	= 45 mm
width at connector	= 11 mm
width at the tips	= 6 mm.

Thus the longer side of the backbone has a width that decreases uniformly to the tip and a thickness that decreases uniformly from the connector for a distance of 193 mm and then remains constant for the next 45 mm right to the tip.

With this example, the longer side has uniform loading and thus, these parameters produce, for the longer side,

$C = 13{,}1\ N/m$

$A = 0\ N/m^{11}$; and

Using the above values, as before, the following radii of curvature are obtained.

X (cm)	Radius of Curvature (m)
0	0,779
2	0,727
4	0,675
6	0,627
8	0,584
10	0,546
12	0,515
14	0,493
16	0,488
18	0,515
20	0,757
22	2.993.

The radius of curvature of such a wiper is shown graphically in Figure 8.

It will be noted that, with the first two examples, between - X_{LMAX} and X_{LMAX}, the force per unit length exerted perpendicularly when the backbone is straightened increases substantially from the middle towards the ends; the second differential of M(x) also increases substantially; and

$$\frac{b_x * h^3_x}{R_x} > \frac{12 * F(4x^2 - 4Lx + L^2)}{8 * L * E.}$$

at all positions. This is also the case with the shorter side of the third example.

The invention is not limited to the precise details as herein described. For example it is not essential that the backbone of the wiper tapers uniformly from the centre down towards the tips and in some applications the load distribution of the blade on the glass of a specific windshield may need to increase only towards one tip of the wiper. Additionally, as indicated above, to achieve a constant angle of wipe of the blade 12 along its lenght it may be necessary to shed the distributed blade load at the tip portions of the wiper.

Claims

1. A windscreen wiper which includes

an elongate curved backbone which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member;

the backbone having a suitably varying transverse cross-sectional profile along its length and a suitable free-form curvature for the backbone to achieve, when it is pressed downwardly at the connecting formation onto a flat surface by a force sufficient to straighten the backbone, a force per unit length exerted perpendicularly to the surface which increases substantially from the position of the connecting formation towards at least one end of the backbone.

2. The wiper as claimed in Claim 1, in which the backbone is curved in a plane.

3. A windscreen wiper which includes

an elongate backbone which is curved in a plane, which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member, the backbone having a suitably varying cross-sectional profile along its length and a

suitable free-form curvature such that the second differential of the function M(x) increases substantially from the said position towards at least one end of the backbone, where

$$M(x) = \frac{E * I(x)}{R(x)}$$

with

E = the modulus of elasticity

I(x) = the cross-section moment of inertia of the backbone about a neutral axis transverse to the plane of curvature, at a distance x from the said position; and

R(x) = the free-form radius of curvature of the backbone in the plane of curvature at x.

4. The wiper claimed in claim 1, 2, or 3, including a wiper blade attached to the backbone.

5. The wiper claimed in any one of the preceding claims, in which the connecting formation is centrally located.

6. The wiper claimed in any one of Claims 1 to 4, in which the connecting formation is not centrally located.

7. The wiper claimed in any preceding claim, in which the perpendicularly exerted force per unit length increases substantially from the position of the connecting formation towards both ends of the backbone.

8. The wiper claimed in Claim 7, in which the force per unit length increases towards both ends in a substantially similar manner.

9. The wiper claimed in Claim 7, in which the force per unit length increases towards both ends in a dissimilar manner.

10. The wiper claimed in Claim 3, in which the second differential of M(x) increases substantially from the position of the connecting formation towards both ends of the backbone.

11. The wiper claimed in Claim 10, in which the second differential of M(x) increases towards both ends in a substantially similar manner.

12. The wiper claimed in Claim 10, in which the second differential of M(x) increases towards both ends in a dissimilar manner.

13. The wiper claimed in Claim 1 or 2, in which the force per unit length increases progressively towards at least one end of the backbone until a predetermined distance from the tip thereof and the force per unit length along this end portion is substantially constant.

14. The wiper claimed in Claim 3, in which the second differential of M(x) increases progressively towards at least one end of the backbone until a predetermined distance from the tip thereof and the second differential of M(x) along this end portion is substantially constant.

15. The wiper claimed in any one of Claims 1, 2, 7, 8, 9, 13 or 14 in which the force per unit length increases, in at least a central region of the backbone in an exponential manner.

16. The wiper claimed in Claim 15, in which

$$f(x) = A|x|^n + C$$

where

f(x) = force per unit length at a distance x from the connecting formation;
A and C are determinable constants; and
n is greater than unity.

17. The wiper claimed in Claim 3, in which the second differential of M(x) increases in an exponential manner.

18. The wiper claimed in Claim 17, in which $M''(x) = A|x|^n + C$
where

M''(x) is the second differential of M(x);
A and C are determinable constants; and
n is greater than unity.

19. The wiper claimed in Claim 16 or 18, in which n is about 3 or greater than 3, preferably about 6 or greater than 6, and more preferably about 10 or greater than 10.

20. The wiper claimed in any one of the preceding claims in which the backbone has a thickness dimension h which varies from the position of the connecting formation towards at least one end of the backbone until a predetermined distance from the said end and which is constant along said end portion, which preferably has a length of at least 20 mm.

21. A windscreen wiper which includes

an elongate backbone which is curved in a plane, which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member;

the backbone having a rectilinear transverse cross-sectional profile along a substantial part of its length and in which, at all positions along said part

$$\frac{b_x * h^3_x}{R_x} > \frac{12 * F(4x^2 - 4Lx + L^2)}{8 * L * E}$$

where

b_x = width at distance x from the connection formation;
h_x = thickness at x;
R_x = free-form radius of curvature of the backbone in the plane at x;
F = the total force applied to the said part of the backbone to straighten it against a flat surface;
L = the length of said part; and
E = modulus of elasticity.

22. A windscreen wiper which includes

an elongate backbone which is curved in a plane, which is of a resiliently flexible material and which has a connecting formation at a position intermediate its length for connection to a displacing and force applying member;

the backbone having an elliptical transverse cross-sectional profile along a substantial part of its length and in which, at all positions along said part

$$\frac{b_x * h^3_x}{R_x} > \frac{8 * F(4x^2 - 4Lx + L^2)}{\pi * E * L}$$

where

b_x = width at distance x from the connection formation;
h_x = thickness at x;
R_x = free-form radius of curvature of the backbone in the plane at x;
F = the total force applied to the said part of the backbone to straighten it against a flat surface;
L = the length of said part; and
E = modulus of elasticity.

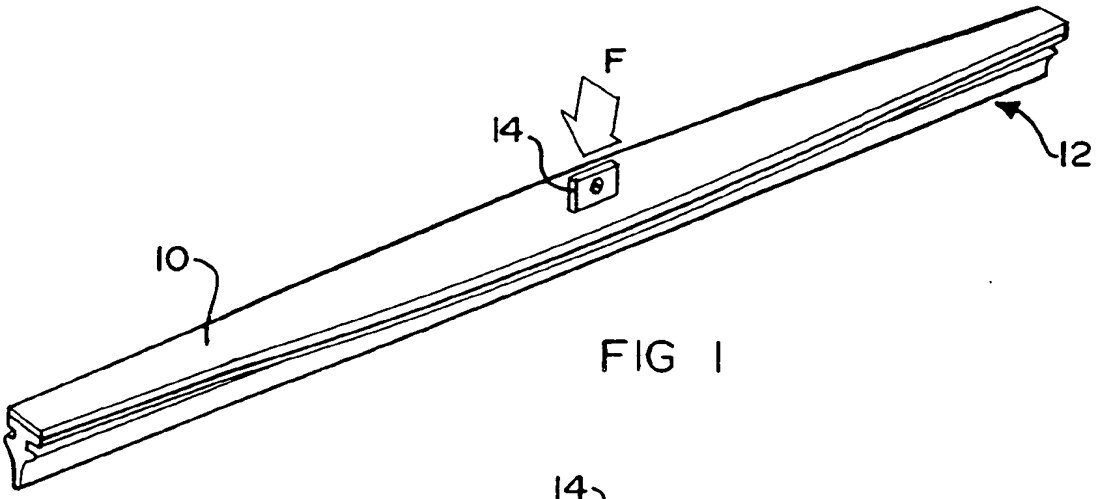


FIG 1

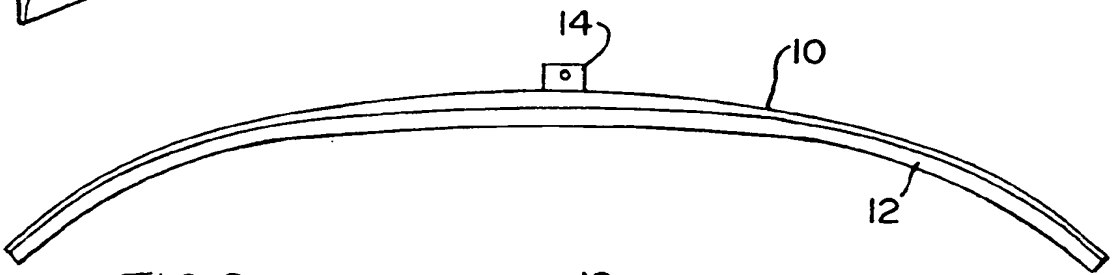


FIG 2

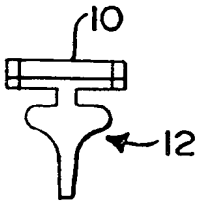


FIG 3

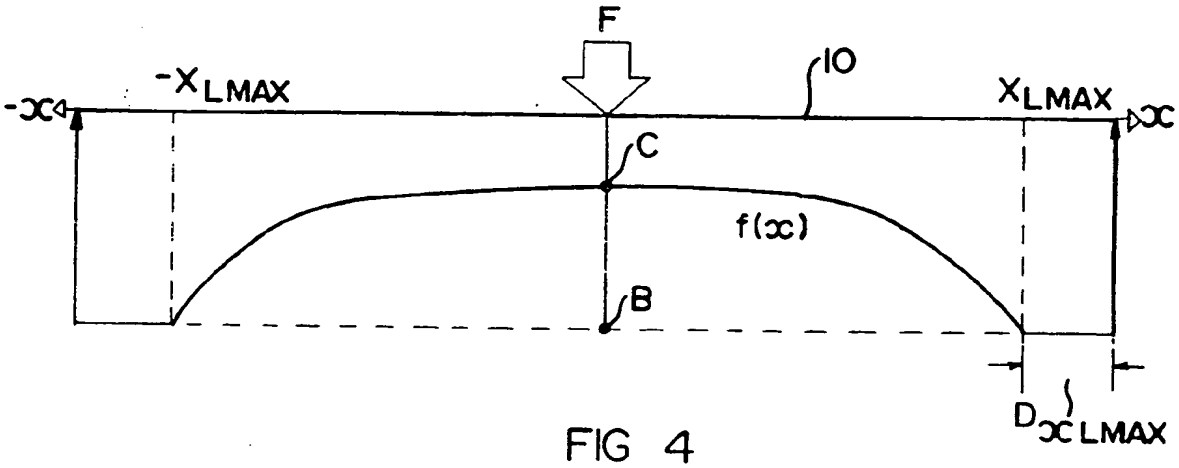


FIG 4

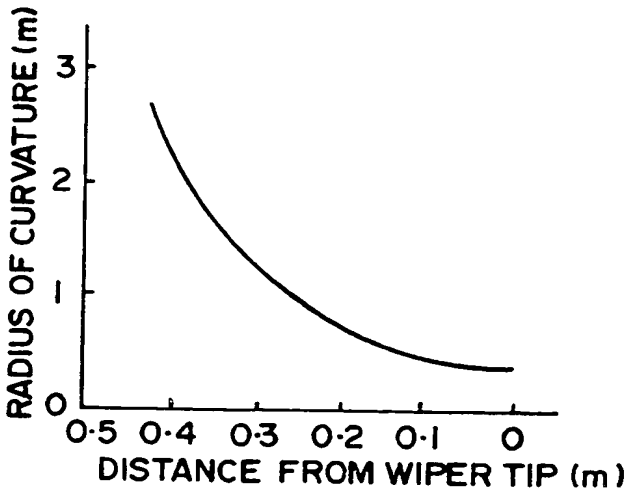


FIG 5

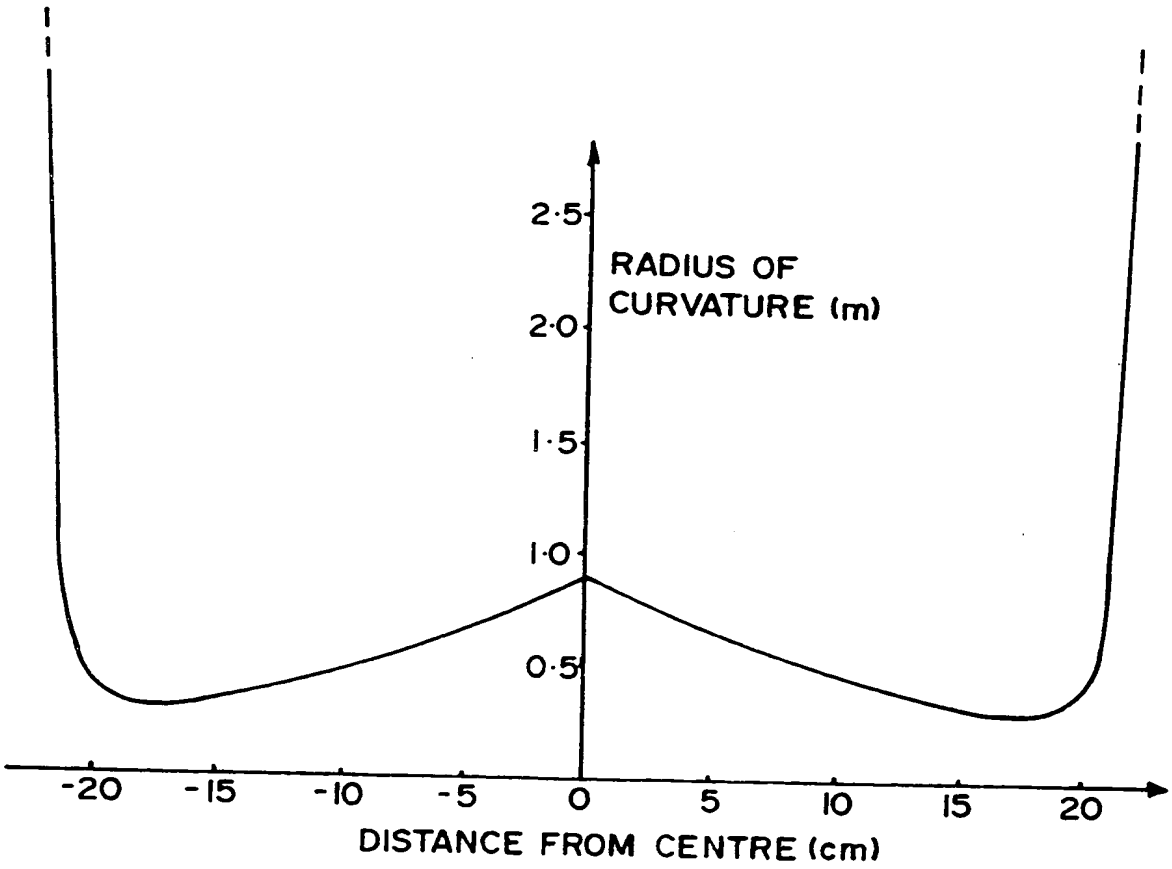


FIG 6

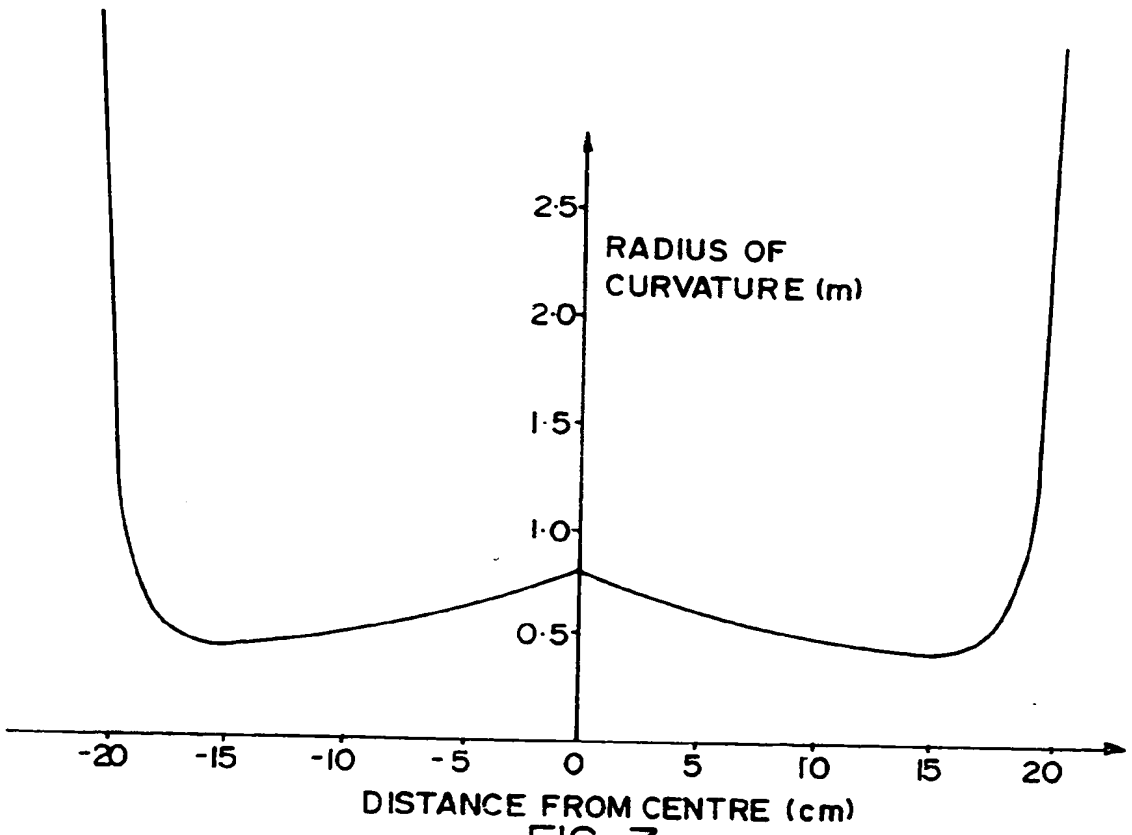


FIG 7

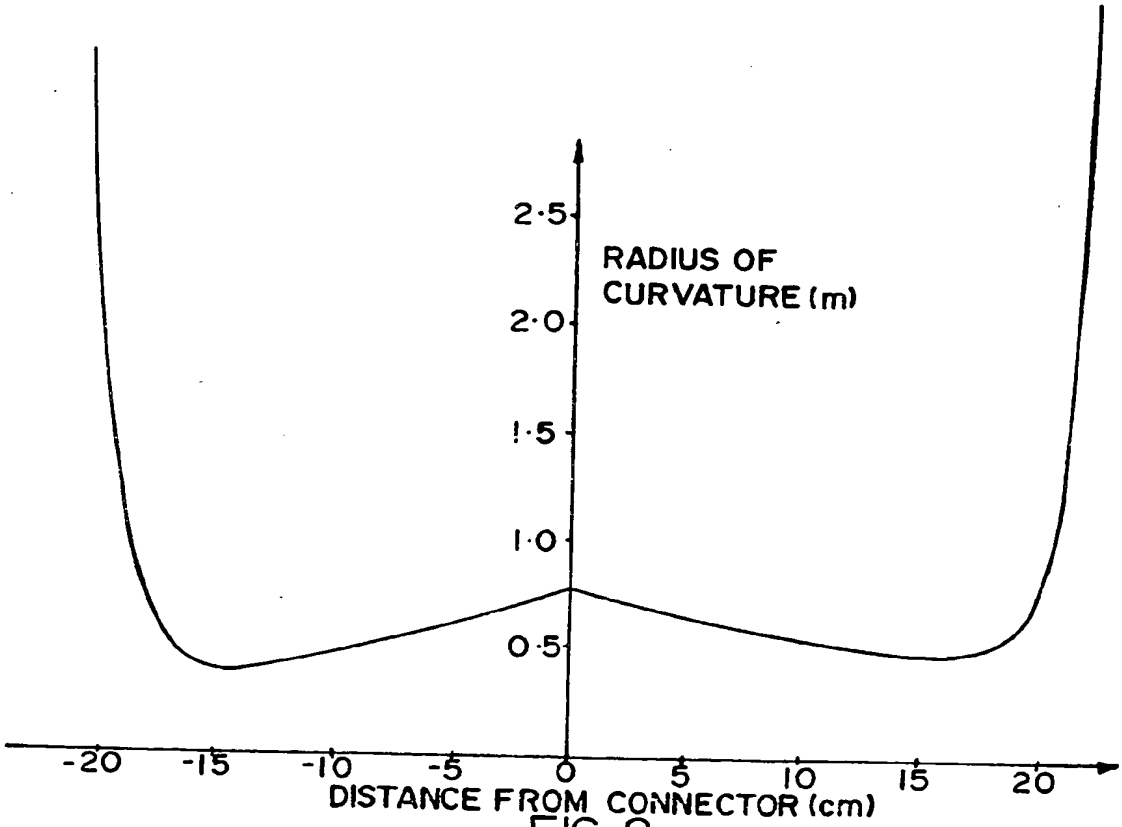


FIG 8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 30 7416

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-1 012 902 (APPEL) * the whole document * ---	1-4,21 22	B60S1/38
A	US-A-4 343 063 (BATT) * abstract; claims 1-7; figures 1,2,4-7,9-11 * * column 2, line 36 - line 57 * * column 3, line 27 - column 5, line 12 * ---	1-5,7,8 21,22	
A	US-A-3 480 986 (FORSTER) * the whole document * ---	1-4,6,21 22	
A	FR-A-2 515 121 (ROBERT BOSCH) * figures * * page 1, line 19 - page 2, line 22 * * page 4, line 27 - page 6, line 11 * -----	1-4,6,21 22	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B60S

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	03 NOVEMBER 1992	WESTLAND P.G.

EPO FORM 1503 03.82 (P0601)

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

Notice of References Cited

Application No.	Applicant(s)		
09/445,046	Gustafsson et al.		
Examiner	Group Art Unit	Page 1 of 1	
G. Graham	1744		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
	A	3,192,551	7-1965	Appel	—	—
	B	4,343,063	8-1982	Batt	—	—
	C	4,807,326	2-1989	Arai et al	—	—
	D	5,485,650	1-1996	Swanepel	—	—
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
	N	279640	8-1988	EP	—	—	—
	O	528643	2-1993	EP	—	—	—
	P						
	Q						
	R						
	S						
	T						

NON-PATENT DOCUMENTS

*		DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
	U		
	V		
	W		
	X		

* A copy of this reference is not being funished with this Office action.
(See Manual of Patent Examining Procedure, Section 707.05(a).)

C.A.
2/26/01

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/445,046	02/18/00	GUSTAFSSON T	989

IM51/0223

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

EXAMINER	
GRAHAM, G	

ART UNIT	PAPER NUMBER
1744	9

DATE MAILED: 02/23/01

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

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95) U.S. G.P.O. 1999 460-693 1- File Copy

Office Action Summary	Application No. 09/445,046	Applicant(s) GUSTAFSSON ET AL
	Examiner Gary K. Graham	Group Art Unit 1744

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-4* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-4* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☒ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Reference to the claims from the disclosure is improper, for example see page 1, lines 3 and 22. The disclosure should not look to the claims to define the invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 10, there is no antecedent basis for "the contact force". Lines 10-14 appear improper since applicant has not positively claimed a window or wiper arm. Absent the wiper arm pushing the wiper strip against the window, no force exists on the wiper strip. It appears applicant must claim the wiper strip, wiper arm and window to enable development of a contact force.

In claim 4, line 8, use of "(s)" is indefinite since it cannot be determined from such exactly what is to be claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Arai et al '326.

The patent to Arai discloses the invention as is claimed. Note figures 5, 6 and 7 which shows, at least under high pressure, the end sections having a lower contact force compared with the center section.

With respect to claim 3, Arai appears to meet the limitation of the center section having a contact force of "almost uniform magnitude". Such does not appear to define any particular structure or function not disclosed by Arai.

With respect to claim 4, note figure 6 which shows the center section having a greater curvature than at least the right end sections.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Note EP patent '643 which discloses the end sections having a lesser curvature than the center section. See figure 7.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Gary K. Graham at 703-308-1270. The Examiner's fax number is 703-872-9546. The fax phone number for this Group is (703) 305-7719. The Examiner can normally be reached Tuesday through Friday.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0651.

January 2, 2001
GKG

GARY K. GRAHAM
PRIMARY EXAMINER
GROUP 1700

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)	Application Number
989	09/445,046
Applicant(s) KOTLARSKI, T.	
Filing Date 12/01/99	**Group Art Unit** 1744

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OIPE JC63 FEB 22 2000 PATENT & TRADEMARK OFFICE

RECEIVED AUG 10 2000 TC 1700 MAIL ROOM

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation YES	Translation NO
GKG		1 505 357	05/29/1969	DE	—	—		✓
GKG		1 247 161	01/22/1970	DE	—	—		✓

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

RECEIVED DEC 22 2000 TC 1700 MAIL ROOM

EXAMINER	DATE CONSIDERED
	12.17.00

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

gp17

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

12/B
21.8.

In re:

Applicant: KOTLARSKI, et al

Serial No.: 09/445,046

Filed:: February 18, 2000

AMENDMENT

June 1, 2001

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Applicant hereby petitions for a one-month extension, a petition pursuant to 37 CFR 1.136(a) and a requisite fee being enclosed.

Responsive to the Office Action dated February 23, 2001, please amend the above-referenced patent application as follows:

IN THE SPECIFICATION

Please replace the first full paragraph beginning at page 1, line 4, with the following written paragraph:

– In wiper blades of the type under consideration, the carrying element is intended to assure a predetermined distribution of the wiper arm-induced wiper blade pressing force - often also called pressure - against the window over the entire wiping field swept across by the wiper blade. Through a corresponding curvature of the unstressed carrying element - i.e. when the wiper blade is not resting against the window - the ends of the wiper strip, which is placed completely against the window during the operation of the wiper blade, are loaded toward the window by the carrying element which is then stressed, even when the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be slightly sharper than the sharpest curvature measured in the wiping field on the window to be wiped. The carrying element consequently replaces the expensive support bracket construction with two spring rails disposed in the wiper strip, as is the practice in conventional wiper blades (published, non-examined German patent application 15 05 357). –

B1

Please replace the second full paragraph beginning at page 1, line 23 with the following written paragraph:

– In a known wiper blade of this type (German patent 12 47 161), in order to produce as uniform as possible a pressure loading of the wiper blade against a flat window over its entire length, a number of embodiments of the carrying element are provided. –

B2

Please replace the subheading "Advantages of the Invention" at page 2 with the following subheading:

B3

- SUMMARY OF THE INVENTION-

Please replace the paragraph beginning at page 2, line 21 and ending at page 3, line 8 with the following paragraph:

- According to the present invention, a wiper blade which can be moved back and forth across the window comprises an elongated wiper strip, and a spring-elastic carrying element wherein a contact force of the wiper strip against the window is greater in its center section then in at least one of two end sections thereof. In the wiper blade according to the present invention, in the vicinity of the reduced contact force, a steeper drag position of the wiper lip is produced in comparison to the region with the greater contact force. This steeper position of the wiper lip encourages its tilting-over process in the wiping direction reversal positions of the wiper blade, which is initiated there and then continued in the region that has the greater contact force. This prevents the abrupt snapping over of the entire wiper lip and the unpleasant knocking noise connected with it. This also eliminates the problems in the design of the carrying element with regard to the contact pressure distribution in spherically curved windows. Namely, it has turned out that the reduction of the contact pressure at the end section of the wiper blade does not inevitably also attend a reduction in the wiping quality. -

B4

IN THE CLAIMS

Please cancel claims 1 to 4 without prejudice.

Please add the following new claims:

– 5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper blade, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections. –

– 6. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section. –

– 7. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at said end sections. –

– 8. The wiper device according to claim 5, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof. –

– 9. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections. –

– 10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section. –

– 11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at the said end sections. –

- 12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof. -

- 13. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said contact force being greater in a center section of said wiper strip than in at least one of two end sections thereof, said wiper strip having a wiper lip which contacts the window and is constructed such that it tilts over in reversal positions in a wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window. -

- 14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an

entire length of said wiper strip, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof. -

B5

Please cancel the original Abstract and add the following new Abstract after the claims:

- ABSTRACT OF THE DISCLOSURE

A wiper device with a wiper blade for cleaning windows of motor vehicles, in which the wiper blade can be moved back and forth laterally to its longitudinal span by a driven wipe arm which can be connected to the wiper blade and loads the same against the window. The wiper blade has an elongated wiper strip that can be placed against the window and an elongated spring-elastic carrying element, which has a connecting unit for the wiper arm and is disposed parallel to the longitudinal axis of the wiper strip to distribute a contact force over the entire wiper strip length. A particularly effective and low-noise operation of the wiper system is achieved because the contact force of the wiper strip against the window is greater in its center section than in at least one of two end sections of the wiper strip. -

B6

REMARKS/ARGUMENTS

The outstanding Office Action has been carefully considered.

The specification has been herein amended to overcome the Examiner's objections thereto.

Claims 1 - 4 have been canceled. New claims 5 - 14 have been added in the application, of which claim 5 sets forth a wiper device of a motor vehicle and new independent claims 9, 13 and 14 set forth a wiper blade. Claims 6 - 8 depend on claim 5 and claims 10 - 12 depend on claim 9. Subject matter of original claim 1 is included in claims 5 and 9, subject matter of claim 13 has antecedent support at page 2, last paragraph to page 3, first paragraph and subject matter of new claim 14 has antecedent support at page 9, first paragraph of the specification. A fee for the additional independent claim is enclosed.

It is believed that the rejection of original claims 1 - 4 under 35 U.S.C. 112, second paragraph has been overcome by this Amendment.

Claims 1 - 4 are rejected under 35 U.S. C. 102(b) by being anticipated by Arai et al.

This rejection is being respectfully traversed.

Arai et al teaches a wiper blade which has one bracket element receiving a wiper arm and connected to a backing member of a wiper blade. The curvature and the rigidity of the backing member are changed in the longitudinal direction.

It should be noted that it is important for Arai et al that the blade rubber contacts the surface of a windshield being wiped under a uniform pressure distribution along the length of the blade rubber to enable satisfactory wiping effects (see col. 1, lines 11 - 16, lines 31 - 33 and col. 3, lines 20 - 23, 34 - 36 and 43 - 47 of the Arai et al disclosure). In order to attain such wiping effects the backing member has two elongated spaced-apart pivot connection points which cooperate with the bracket to receive and distribute the load applied by a wiper arm. In the region of the pivot connection points, the backing member has a greater width than that in the middle or in the end parts. The load is distributed as shown in Fig. 7. Thus, according to the Arai et al teaching the pressure distribution must be uniform so that a high pressure or a low pressure in some regions should be avoided.

Contrary to the Arai et al teaching of a uniform pressure distribution, applicant teaches and claims a decreasing pressure distribution at at least one end section of the wiper blade.

Contrary to the Examiner's statement at page 3, last paragraph of the Office Action, that Fig. 7 of Arai et al shows that at least when applying high pressure, the end sections have a lower contact force compared to that in the middle section, Arai fails to suggest such an idea as one skilled in the art would understand the Arai et al disclosure.

It is respectfully submitted that Arai et al neither shows nor suggests the structure of the wiper blade with the wiper element and wiper strip which distributes a contact force on the wiper strip against the vehicle's window to provide a contact force which is greater in the center section o the wiper strip than in at least one of the two end sections of the wiper strip.

In short, it is respectfully submitted that claims 5 - 14 are allowable over the art.

Reconsideration and allowance are most respectfully solicited.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant
Reg. No.: 27233
103 East Neck Road
Huntington, New York 11743

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Paragraph beginning at page 1, line 4 has been amended as follows:

In wiper blades of the type under consideration ~~described in the preamble to claim 1~~, the carrying element is intended to assure a predetermined distribution of the wiper arm-induced wiper blade pressing force - often also called pressure - against the window over the entire wiping field swept across by the wiper blade. Through a corresponding curvature of the unstressed carrying element - i.e. when the wiper blade is not resting against the window - the ends of the wiper strip, which is placed completely against the window during the operation of the wiper blade, are loaded toward the window by the carrying element which is then stressed, even when the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be slightly sharper than the sharpest curvature measured in the wiping field on the window to be wiped. The carrying element consequently replaces the expensive support bracket construction with two spring rails disposed in the wiper strip, as is the practice in conventional wiper blades (published, non-examined German patent application 15 05 357).

Paragraph beginning at page 1, line 23 has been amended as follows:

~~The invention is based on a wiper blade according to the preamble to claim 1.~~

In a known wiper blade of this type (German patent 12 47 161), in order to produce as

uniform as possible a pressure loading of the wiper blade against a flat window over its entire length, a number of embodiments of the carrying element are provided ~~as attainments of this object.~~

The subheading "Advantages of the Invention" at page 2 has been replaced with the following subheading:

- SUMMARY OF THE INVENTION. -

Paragraph beginning at page 2, line 21 and ending at page 3, line 8 has been replaced with the following paragraph:

--According to the present invention, a wiper blade which can be moved back and forth across the window comprises an elongated wiper strip, and a spring-elastic carrying element wherein a contact force of the wiper strip against the window is greater in its center section then in at least one of two end sections thereof. In the wiper blade according to the present invention ~~with the features of claim 1~~, in the vicinity of the reduced contact force, a steeper drag position of the wiper lip is produced in comparison to the region with the greater contact force. This steeper position of the wiper lip encourages its tilting-over process in the wiping direction reversal positions of the wiper blade, which is initiated there and then continued in the region that has the greater contact force. This prevents the abrupt snapping over of the entire wiper lip and the unpleasant knocking noise connected with it. This also eliminates the problems in the design of the carrying element

with regard to the contact pressure distribution in spherically curved windows. Namely, it has turned out that the reduction of the contact pressure at the end section of the wiper blade does not inevitably also attend a reduction in the wiping quality. -

IN THE CLAIMS

Original claims 1 - 4 have been canceled.

New claims 5 - 14 have been added as follows:

- 5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper blade, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections. -

- 6. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section. -

– 7. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at said end sections. –

– 8. The wiper device according to claim 5, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof. –

– 9. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections. –

– 10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section. –

- 11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at the said end sections. -

- 12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof. -

- 13. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said contact force being greater in a center section of said wiper strip than in at least one of two end sections thereof, said wiper strip having a wiper lip which contacts the window and is constructed such that it tilts over in reversal positions in a wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window. -

- 14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof-

IN THE ABSTRACT

The original Abstract has been canceled and a new Abstract has been added as follows:

A wiper device with a wiper blade for cleaning windows of motor vehicles, in which the wiper blade can be moved back and forth laterally to its longitudinal span by a driven wipe arm which can be connected to the wiper blade and loads the same against the window. The wiper blade has an elongated wiper strip that can be placed against the window and an elongated spring-elastic carrying element, which has a connecting unit for the wiper arm and is disposed parallel to the longitudinal axis of the wiper strip to distribute a contact force over the entire wiper strip length. A particularly effective and low-noise operation of the wiper system is achieved because the contact force of the wiper strip against the window is greater in its center section than in at least one of two end sections of the wiper strip.

gp 1744

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) (Large Entity)

Docket No.
989

#11

In Re Application Of: KOTLARSKI

OIPE JUN 1 1 2001 PATENT & TRADEMARK OFFICE

Serial No.	Filing Date	Examiner	Group Art Unit
09/445,046	02/18/2000	GRAHAM, G.	1744

Invention: WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

RECEIVED JUN 1 4 2001 TC 1700

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response to the Office Action of 02/23/2001 (Date) above-identified application.

The requested extension is as follows (check time period desired):

☒ One month ☐ Two months ☐ Three months ☐ Four months ☐ Five months

from: MAY 23, 2001 (Date) until: JUNE 23, 2001 (Date)

The fee for the extension of time is $110 and is to be paid as follows:

☐ A check in the amount of the fee is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 19-4675
A duplicate copy of this sheet is enclosed.

☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. 19-4675
A duplicate copy of this sheet is enclosed.

Signature

Dated: JUNE 7, 2001

06/13/2001 SZEWDIE1 00000026 194675 09445046
01 FC:115 110.00 CH

I certify that this document and fee is being deposited on JUNE 7, 2001 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Signature of Person Mailing Correspondence

MICHAEL J. STRIKER

Typed or Printed Name of Person Mailing Correspondence

cc:

UNITED STATES PATENT AND TRADEMARK OFFICE

#10

Examiner: Graham, G. Art Unit: 1744 Attorney Doc. # 989

In re:

Applicant : KOTLARSKI, T.

Serial No. : 09/445,046

Filed : 02/18/00

LETTER

June 7, 2001

Honorable Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Sir:

It is requested that the name of the inventor of the subject application be corrected.

The correct last name of the sole inventor is **KOTLARSKI**, not GUSTAFSSON.

It is respectfully requested that the correct name of the inventor (**KOTLARSKI**) be entered in the file.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant
Reg. No. 27233
Tel.: (631) 549 4700

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.
On 6/7/01

[redacted]

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SM

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/445,046	02/18/00	KOTLARSKI T	989

IM22/0727

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

EXAMINER	
GRAHAM, G	
ART UNIT	PAPER NUMBER
1744	13

DATE MAILED: 07/27/01

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

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/445,046	KOTLARSKI ET AL.	
	Examiner	Art Unit	
	Gary K Graham	1744	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 9 and 13, it appears improper to attempt to define a contact force since applicant has not positively claimed a window or wiper arm. Absent the wiper arm pushing the wiper strip against the window, no force exists on the wiper strip. It appears applicant must claim the wiper strip, wiper arm and window to enable development of a contact force. The wiper blade cannot develop force by itself.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-7, 9-11 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai et al '326.

The patent to Arai discloses the invention as is claimed, including a spring elastic carrying element or backing member (3) supporting a wiper blade strip (1) for movement over a windshield. Note figures 7 and 8 which show, at least under high pressure, the end sections of the wiper blade having a lower contact force compared with a center section thereof. Also, note figure 8 which shows the prior art backing member and wiper blade. Such prior art backing member is loaded centrally and provides high pressure centrally which drops off towards the ends of the backing member, at least under high loading. The figure 8 backing member/blade and graph clearly suggest the limitations of claim 5, specifically under high pressure. Figure 8 also shows an "almost uniform magnitude" in the center.

With respect to claim 14 note figure 6 which shows the center section having a greater curvature than at least the right end section.

Claims 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Appel '770 as evidenced by Arai et al '326.

As applicant has claimed no structure to develop contact pressure, the patent to Appel discloses the invention as is claimed. Appel shows a conventional backing member/blade as is claimed, wherein in a free form state, prior to windshield application, such is prestressed or curved (figs. 1 and 2). The curvature is such that the center section of the backing member has a greater curvature than the ends thereof. Such curvature is provided such that upon application of the backing member/blade to the windshield, a substantially uniform pressure is achieved in the wiper blade. Appel discloses all the structure set forth by applicant. Applicant has only claimed a wiper blade. Thus, the device of Appel will inherently function as is claimed. Indeed, if sufficient pressure is applied to the conventional backing member of Appel, as discussed by Arai figure 8, the contact pressure in the center of the blade would be greater than end sections thereof, just as applicant's. Applicant has set forth no structure for his wiper blade that is not disclosed by Appel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al '326 in view of Appel '770.

The patent to Arai discloses all of the above recited subject matter with the exception of the conventional backing member/blade of figure 8 being curved sharper than the windshield to be wiped and having a curvature in a center section sharper than in end sections.

The patent to Appel discloses all of the above recited subject matter.

While Arai does not disclose the conventional backing member/blade being curved, it clearly must be pre-stressed. Without such pre-stressing, the backing member of Arai could not achieve the pressure profiles as shown in the figure 8 graph. A method of such pre-stressing is known and taught by Appel.

It would have been obvious to one of skill in the art to pre-stress the backing member by curving, as clearly suggested by Appel, to achieve the pressure profiles as is shown. Such curving is a well known and expedient manner of pre-stressing.

Response to Arguments

Applicant's arguments filed June 11, 2001 have been fully considered but they are not persuasive.

As stated above, the prior art backing member of Arai and his own backing member do teach a decreasing pressure profile towards the end of the backing member, see figures 7 and 8 "high pressure". Applicant's statement that Arai fails to suggest such an idea as one skilled in the art would understand the Arai disclosure is not understood. Backing members are curved to help achieve uniform wiping pressure. However, such backing members will not provide uniform wiping pressure for every and all wiper arm pressures. As discussed above, the Appel backing member is disclosed as shaped to provide uniform wiping pressure. However, upon application of sufficient pressure, the backing member of Appel will provide a high pressure in the center of the

blade with reduced pressure at the ends. Such is clearly suggested by Arai in his figure 8 for conventional backing members/blades. Thus, in those claims where only the wiper blade is claimed, it appears Appel will meet such. Additionally, as set forth above, Arai teaches application of varying forces to conventional backing members/blades such that a pressure profile as claimed is achieved.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Gary K. Graham at 703-308-1270. The Examiner's fax number is 703-872-9546. The fax phone number for this Group is (703) 305-7719. The Examiner can normally be reached Tuesday through Friday.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0651.

GARY K. GRAHAM
PRIMARY EXAMINER
GROUP 1700

July 26, 2001
GKG

2

Notice of References Cited

Application No.	Applicant(s)
09/445,046	Kotlarski et al.

Examiner	Group Art Unit	Page
G. Graham	1744	1 of 1

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
	A	4,028,770	6-1977	Appel	15	250.43
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
	N						
	O						
	P						
	Q						
	R						
	S						
	T						

NON-PATENT DOCUMENTS

*		DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
	U		
	V		
	W		
	X		

* A copy of this reference is not being funished with this Office action.
(See Manual of Patent Examining Procedure, Section 707.05(a).)

*U.S. GPO: 1998-433-211/97502

AF
GP1744

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

14/c
1.8.
10/3/01

Enter for purposes of Appeal only
GHG
9.4.01

In re:

Applicant: KOTLARSKI

Serial No.: 09/445,046

Filed: February 12, 2000

DO NOT ENTER
OK TO ENTER

REQUEST FOR RECONSIDERATION

September 26, 2001

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Responsive to the Final Action of July 27, 2001, please amend the application as follows:

BOX AF

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231. On 9/27/01

In the claims:

Amend the claims as attached.

REMARKS

The last Office Action has been carefully considered.

It is noted that claims 5-7, 9-11 and 13-14 are rejected under 35 U.S.C. 102 over the patent to Arai.

Claims 9-14 are rejected under 35 U.S.C. 103 over the patent to Appel in view of the patent to Arai under 35 U.S.C. 103. This rejection is not completely understood since most probably this rejection is based on a combination of the references and should be considered as 35 U.S.C. 103 rejection.

Claim 8 is rejected under 35 U.S.C. 103 over the patent to Arai in view of the patent to Appel.

Also, the claims are rejected under 35 U.S.C. 112.

With the present Amendment applicant has amended claim 5 by introducing into it some features from claim 13, while the corresponding

features introduced in claim 5 have been removed from claim 13. Also, claim 14, the second independent claim, has been amended as well.

Turning now to the references and particularly to the new features of present invention which are defined in claim 5, it is respectfully submitted that in addition to other features, it is stated now that the wiper strip has a wiper lip which contacts the window, the wiper blade is constructed such that the wiper strip starts to tilt over in reversal positions in wiping direction of the wiper blade in a region of the reduced contact force and continues to tilt while moving to a region of a greater contact force against the window.

It is therefore believed to be clear that the inventive wiper device has a wiper lip which is pressed against the window and in reversal positions or near the reversal positions tilts over from one side to the other side. Due to the specific design of the carrying element as well as the thusly produced contact force distribution which is different than in the prior art, the abrupt snapping over of the entire wiper lip and the unpleasant noise is eliminated. The wiper lip starts in one or both outer points to tilt over and draws during movement of the wiper blade over the window to the regions of the wiper blade which have a greater contact force. The knocking noise

is reduced to a small central region, in which a part of the wiper lip as a whole can be tilted over and cause a softer knocking noise. Such a wiper device is not disclosed in the prior art and can not be derived from it as a matter of obviousness. It is not disclosed either in the patent to Arai or in the patent to Appel. Therefore it is believed that claim 5 as amended should be considered as patentably distinguishing over the art and should be allowed.

As for claim 14, this claim has been amended by applicant. It should be mentioned that in the applicant's opinion the Examiner's analysis of claim 14 is not accurate. The patent to Arai does not disclose any wiper blade whose curvature is greater in a central region than in the outer regions. Contrary to this, Figures 5 and 6 show the curvatures in the outer regions which are significantly greater than in the central region. It is possible that the Examiner meant to use the term "radius". The greater the radius (the flatter is an arc), the smaller the curvature. A greater curvature requires a smaller radius. Figures 5 and 6 in the patent to Arai do not disclose that the curvature in the central region is greater than or the radius of the central region is smaller than in the regions 3a.

Claim 14 has been particularly amended to define that the carrying element has the first and second sides, wherein the wiper strip is

arranged at the first side, while a connecting element is placed at the second side which is opposite to the first side. The carrying element in the region of the wiper strip has a concave curvature which in the central region is greater than in the end regions.

These features of the present invention are not disclosed either in the patent to Arai or in the patent to Appel. It is therefore believed that claim 14 should also be considered as patentably distinguishing over the art and should also be allowed.

As for the dependent claims, these claims depend on claim 5, they share its presumably allowable features, and therefore it is respectfully submitted that these claims should be allowed as well.

Reconsideration and allowance of present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be

carried out by Examiner's Amendment, and the case be passed to issue. Any costs involved should be charged to the deposit account of the undersigned (No. 19-4675). Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,

Michael J. Striker
Attorney for Applicants
Reg. No. 27233

CLAIMS

Amend the following claims:

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper blade, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper trip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections , said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

13. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said contact force being greater in a center section of said wiper strip than in at least one of two end sections thereof[, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window].

14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire

length of said wiper strip, said spring elastic carrying element having a first side and a second side such that the wiper strip is placed at the first side, while at the second side which is opposite to the first side a connecting element is placed, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof.

Amended claims:

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper blade, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper trip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

13. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said contact force being greater in a center section of said wiper strip than in at least one of two end sections thereof.

14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said spring elastic carrying element having a first side and a second side such that the wiper strip is placed at the first side, while at the second side which is opposite to the first side a connecting element is placed, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof.

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

TN

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/445,046	02/18/00	KOTLARSKI	T 989

IM22/1004

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

EXAMINER	
GRAHAM, G	
ART UNIT	**PAPER NUMBER**
1744	15

DATE MAILED: 10/04/01

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

Commissioner of Patents and Trademarks

Advisory Action	Application No. 09/445,046	Applicant(s) KOTLARSKI ET AL.	
	Examiner Gary K Graham	Art Unit 1744	

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

THE REPLY FILED 01 October 2001 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____.

3. ☒ Applicant's reply has overcome the following rejection(s): *112 second paragraph rejection of claim 13*.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☐ The a)☐ affidavit, b)☐ exhibit, or c)☐ request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: *5-14. Claims 5-14 will be rejected the same as in the final, with the exception that claim 13 will not be rejected under 35 USC 112 second parapraph*.

   Claim(s) withdrawn from consideration: _____.

8. ☐ The proposed drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

GARY K. GRAHAM
PRIMARY EXAMINER
GROUP 1700

JT

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

MK

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/445,046	02/18/00	KOTLARSKI	T 989

EXAMINER
GRAHAM, G

ART UNIT	PAPER NUMBER
1744	16

IM52/1016

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

DATE MAILED: 10/16/01

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

Commissioner of Patents and Trademarks

Interview Summary	Application No.	Applicant(s)	
	09/445,046	KOTLARSKI ET AL.	
	Examiner	Art Unit	
	Gary K Graham	1744	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Gary K Graham*. (3)_____.

(2) *Ilya Zborovsky*. (4)_____.

Date of Interview: *15 October 2001* .

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____ .

Claim(s) discussed: *5-14* .

Identification of prior art discussed: *Appel and Arai* .

Agreement with respect to the claims f)☐ was reached. g)☒ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *Applicant inquired as to what the Examiner thought would be allowable in the application. Upon review, the Examiner, at this time, could not make a suggestion to place the application in condition for allowance* .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

i)☒ It is not necessary for applicant to provide a separate record of the substance of the interview(if box is checked).

Unless the paragraph above has been checked, THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

GARY K GRAHAM
PRIMARY EXAMINER
GROUP 1700

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner should check the appropriate box at the bottom of the Form which informs the applicant that the submission of a separate record of the substance of the interview as a supplement to the Form is not required.

It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

AF / 1744

NOTICE OF APPEAL FROM THE PRIMARY EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES (Large Entity)	Docket No. 989

In Re Application Of: **KOTLARSKI, T.**

Serial No.	Filing Date	Examiner	Group Art Unit
09/445,046	02/18/00	GRAHAM, G.	1744

Invention: **WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES**

#17 of 18 1/11/01

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Applicant(s) hereby appeal(s) to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated **07/27/2001** finally rejecting Claim(s) **8-14**

The fee for this Notice of Appeal is: **$310.00**

☐ A check in the amount of the fee is enclosed.

☒ The Commissioner has already been authorized to charge fees in this application to a Deposit Account. A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4675**
A duplicate copy of this sheet is enclosed.

Signature Dated: **OCTOBER 25, 2001**

I certify that this document and fee is being deposited on **OCT. 25, 2001** with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Signature of Person Mailing Correspondence

MICHAEL J. STRIKER

Typed or Printed Name of Person Mailing Correspondence

01/02/2002 CV0111 00000042 194675 09445046
01 FC:119 320.00 CH

cc:

AF/1700

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. 989

In Re Application Of: KOTLARSKI, T.

Serial No.	Filing Date	Examiner	Group Art Unit
09/445,046	02/18/00	GRAHAM, G.	1744

OIPE JC152 JAN 09 2002 PATENT & TRADEMARK OFFICE

Invention:

WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

RECEIVED JAN 11 2002 TC 1700

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on 10/25/2001

The fee for filing this Appeal Brief is: $310.00

☐ A check in the amount of the fee is enclosed.

☒ The Commissioner has already been authorized to charge fees in this application to a Deposit Account. A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 19-4675
A duplicate copy of this sheet is enclosed.

Signature

Dated: DECEMBER 26, 2001

I certify that this document and fee is being deposited on DEC. 26, 2001 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Signature of Person Mailing Correspondence

MICHAEL J. STRIKER

Typed or Printed Name of Person Mailing Correspondence

CC:

P30LARGE/REV03

UNITED STATES PATENT AND TRADEMARK OFFICE

#18
1/15/02
G.G.

Examiner: G. Graham *Art Unit:* 1744

In re:

Applicant: KOTLARSKI

Serial No.: 09/445,046

Filed: February 12, 2000

BRIEF ON APPEAL

December 26, 2001

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

This is a Brief on Appeal from the final rejection of claims 5-14 by the Primary Examiner.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.
On 12/26/01

01/10/2002 GTEFFERA 00000090 194675 09445046
01 FC:120 320.00 CH

1. Real Party of Interest

The real party of interest in this application is Robert Bosch GmbH, Postfach 30 02 20, D-70442 Stuttgart, Germany.

2. Related Appeals and Interferences

There are no related appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's Decision in the pending appeal.

3. Status of Claims

In the present application all claims were rejected by the Examiner in the Final Action.

4. Status of Amendments

Subsequently to the Final Office Action on July 27, 2001, appellant has submitted a Request for Reconsideration of September 26, 2001. The Request for Reconsideration was entered by the Examiner.

5. Summary of the Invention

A wiper blade 10 shown in Fig. 1 has an elongated, spring-elastic carrying element 12 for a wiper strip 14, and this carrying element 12 is shown separately in Fig. 8. The carrying element 12 and the wiper strip 14 are connected to each other so that their longitudinal axes are parallel. A connecting device 16 is disposed on the top side of the carrying element 12 remote from the window 15 to be wiped - indicated with dot-and-dash lines in Fig. 1 - and with the aid of this connecting device 16, the wiper blade 10 can be detachably connected to a driven wiper arm 18 that is supported on the body of a motor vehicle. The elongated, rubber-elastic wiper strip 14 is disposed on the underside of the carrying element 12 oriented toward the window 15. A hook, which is used as a reciprocal connecting means, is formed onto the free end 20 of the wiper arm 18 and encompasses a pivot bolt 22 belonging to the connecting device 16 of the wiper blade 10. The retention between the wiper arm 18 and the wiper blade 10 is performed by known securing means. The wiper arm 18 and therefore also its hook end 20 are loaded in the direction of the arrow 24 in relation to the window 15 to be wiped, whose surface to be wiped is indicated in Figs. 1 and 2 by means of a line 26. The force (arrow 24) places the wiper blade 10 over its entire length against the surface 26 of the window 15 to be wiped. Since the dot-and-dash line 26 Fig. 2 is intended to represent the sharpest curvature of the window surface in the region of the wiping field, it is clearly evident that the

curvature of the as yet unloaded wiper blade 10 resting with both of its ends against the window is sharper than the maximal curvature of the spherically curved window 15. Due to the pressure (arrow 24), the wiper blade 10 rests over its entire length against the window surface 26 with its wiper lip 28 that belongs to the wiper strip 14. This produces a stress in the band-like spring-elastic carrying element 12, which assures a proper contact of the wiper strip 14 or the wiper lip 28 over its entire length against the motor vehicle window 15. During wiper operation, the wiper arm 18 moves the wiper blade 10 lateral to its longitudinal span, across the window 15. This wiping or working motion is indicated in Fig. 1 with the double arrow 29.

As shown by Figs. 3 and 4, the wiper strip 14 is disposed on the lower band surface of the carrying element 12 oriented toward the window 15. Spaced apart from the carrying element 12, the wiper strip 14 is constricted from its two long sides in such a way that a tilting piece 30 remains in its longitudinal center region and extends over the entire length of the wiper strip 14. The tilting piece 30 transitions into the wiper lip 28, which has an essentially wedge-shaped cross section. Because of the contact force (arrow 24), the wiper blade or the wiper lip 28 is pressed against the surface 26 of the window 15 to be wiped, wherein due to the influence of the wiping movement - one of the two opposing wiping motions

(double arrow 29) in particular is considered in Figs. 3 and 4 and is indicated by the direction arrow 32 -, this wiper lip 28 tilts into a so-called drag position in which the wiper lip is supported over its entire length against the part of the wiper strip 14 that is secured to the carrying element 12. This support, which is indicated in Figs. 3 and 4 with the arrow 34, is always produced - depending on the respective wiping direction (double arrow 29 or arrow 32) - against the upper edge of the wiper lip 28 disposed toward the rear in the respective wiping direction so that it is always guided across the window in a so-called drag position. This drag position is required for an effective and low-noise operation of the wiper apparatus. The reversal of the drag position takes place in the so-called reversal position of the wiper blade 10- when this reverses its wiping motion (double arrow 29). The wiper blade executes a back and forth motion, which is induced by the tilting over of the wiper lip 28. The upward motion occurs counter to the direction 24 and consequently also counter to the contact force. In the other wiping direction directed counter to the arrow 32, a mirror image of the Figs. 3 and 4 is consequently produced.

In order to produce as low-noise as possible a tilting over of the wiper lip 28 from its one drag position into its other drag position, the carrying element 12 used for distributing the contact force (arrow 24) is designed so

that the contact force of the wiper strip 24 or the wiper lip 28 against the window surface 26 is greater in its center section 36 (Fig. 8) than in at least one of the two end sections 38. This concept, for example, can be incorporated, as shown in a graphic representation according \to Figs. 5 to 7. According to Fig. 5, the carrying element 12 is designed so that viewed in terms of the length 40 of the wiper blade, its center region 36 has a virtually uniform contact force (line 44) and that this contact force 44 sharply decreases at both end sections 38 of the wiper blade. The line 42 indicates a possible position of the pivot bolt 22, i.e. the engagement point of the wiper arm-induced contact force.

In another embodiment (Fig. 6), the carrying element 12 is designed so that viewed in terms of the length 140 of the wiper blade, starting from the one and 138 of the wiper blade until well beyond its linkage point (line 142), the contact force 24 is of a uniform magnitude (line 144) until it decreases sharply in the region of the other and 139 of the wiper blade. The possible linkage point of the wiper blade to the wiper arm has been labeled 142 in Fig. 6.

Another position design of the wiper blade according to the invention, which is shown in Fig. 7, provides that the contact pressure or

contact force (244) of the wiper lip 28 against the window surface 26 is essentially uniform in the center region 242 of the wiper blade - where the linkage point of the wiper arm 18 is disposed - and that it decreases slightly toward one and 238 of the wiper blade whereas it decreases considerably in the vicinity of the other and 239 of the wiper blade. With this design of the wiper blade, the engagement point 243 of the wiper arm 18, is disposed on the wiper blade outside the center of the wiper blade length 240, as in the design according to Fig. 6. Naturally, it is possible to use such a positioning of the linkage point even in wiper blades that are designed in accordance with Fig. 5. The different designs of the wiper blade can be required by particular window types, which differ from one another, for example due to the type of spherical curvatures of the windows.

Fig. 8 shows a possible curvature course of the carrying element 12, which can produce a pressure distribution of the wiper lip 38 against the window 15, as is graphically depicted in Fig. 5. With this spring-elastic carrying element 12, which when unloaded has a sharper concave curvature than the window in the region of the wiping field being swept across by the wiper blade, the curvature course is embodied so that it is sharper in the center section 36 of the carrying element than at its end sections 38. In order to achieve the desired contact force distribution,

however, it is also conceivable to reduce the end sections 38 of the carrying element 12 cross sectionally so that a comparable effect is achieved.

The reduction of the contact force of the wiper lip 28 against the window surface 26 in the region of one or both wiper blade ends, prevents an abrupt flipping over or snapping over of the wiper lip 28 from its one drag position into its other drag position. In contrast, with the wiper blade according to the invention, a comparatively gentle tilting over of the wiper lip is produced, starting from the wiper blade end and continuing to the wiper lip center or to the other wiper lip end. Figs. 3 and 4, in connection with Fig. 1, show that even with spherically curved windows, the less-loaded end sections of the wiper lip 28 still rest effectively against the window surface. A comparison of Figs. 3 and 4 shows this, from which it is clear that in the less-loaded end region (Fig. 4), the wiper lip 28 is disposed more steeply in relation to the window surface 26 than in its center section (Fig. 3), where the greater contact force is in effect. This steeper disposition of the wiper lip 28 encourages the beginning of the tilting over the wiper lip when the reverse motion of the wiping motion begins (double arrow 29).

It is common to all of the exemplary embodiments that the contact pressure (arrow 24) of the wiper strip 14 against the window 15 is

greater in its center section 36 than in at least one of its two end sections 38. This is true even if in contrast to the currently shown wiper blade 10 with a one-piece carrying element 12 depicted as a spring rail, the carrying element is embodied as having a number of parts. The only crucial issue is the distribution of the contact pressure according to the invention.

This is disclosed on pages 1-10 of the specification and shown in the drawings.

6. Issues

In the Final Office Action claims 5-7, 9-11 and 13-14 were rejected under 35 U.S.C. 102 over the patent to Arai. Thus, the first issue under appeal is whether these claims are patentable over this reference in the sense of 35 U.S.C. 102.

Claims 9-14 were rejected under 35 U.S.C. 103 over the patent to Appel in view of the patent to Arai. Thus, the second issue under appeal is whether claims 9-14 are rejectable over the combination of these references.

Claim 8 was rejected under 35 U.S.C. 103 over the patent to Arai in view of the patent to Appel. Thus, the third issue on appeal is whether claim 8 is rejectable as obvious under 35 U.S.C. 103 over the combination of these references.

The claims were also rejected under 35 U.S.C. 112. This constitutes the fourth issue under appeal.

7. Grouping of claims

Claims 5 and 14 are separately patentable. As for the other claims, they stand and fall together with the corresponding independent claims.

8. Argument

In the Request for Reconsideration claim 13 has been amended. It is therefore believed that the grounds for the rejection under 35 U.S.C. 112 are no longer applicable, and this is how the fourth issue on appeal has to be taken care of.

Turning now to the references and particularly to the new features of present invention which are defined in claim 5, it is respectfully submitted that in addition to other features, it is stated now that the wiper strip has a wiper lip which contacts the window, the wiper blade is constructed such that the wiper strip starts to tilt over in reversal positions in wiping direction of the wiper blade in a region of the reduced contact force and continues to tilt while moving to a region of a greater contact force against the window.

It is therefore believed to be clear that the inventive wiper device has a wiper lip which is pressed against the window and in reversal positions or near the reversal positions tilts over from one side to the other side. Due to the specific design of the carrying element as well as the thusly produced contact force distribution which is different than in the prior art, the abrupt snapping over of the entire wiper lip and the unpleasant noise is eliminated. The wiper lip starts in one or both outer points to tilt over and draws during movement of the wiper blade over the window to the regions of the wiper blade which have a greater contact force. The knocking noise is reduced to a small central region, in which a part of the wiper lip as a whole can be tilted over and cause a softer knocking noise. Such a wiper device is not disclosed in the prior art and can not be derived from it as a

matter of obviousness. It is not disclosed either in the patent to Arai or in the patent to Appel. Therefore it is believed that claim 5 as amended should be considered as patentably distinguishing over the art and should be allowed.

It is therefore believed that the first issue on appeal has to be decided by reversing the Examiner's rejection of claim 5.

As for claim 14, this claim has been amended by appellant. It should be mentioned that in the appellant's opinion the Examiner's analysis of claim 14 is not accurate. The patent to Arai does not disclose any wiper blade whose curvature is greater in a central region than in the outer regions. Contrary to this, Figures 5 and 6 show the curvatures in the outer regions which are significantly greater than in the central region. It is possible that the Examiner meant to use the term "radius". The greater the radius (the flatter is an arc), the smaller the curvature. A greater curvature requires a smaller radius. Figures 5 and 6 in the patent to Arai do not disclose that the curvature in the central region is greater or the radius of the central region is smaller than in the regions 3a.

Claim 14 has been particularly amended to define that the carrying element has the first and second sides, wherein the wiper strip is

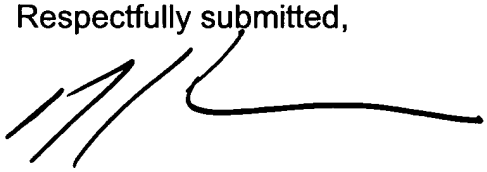
arranged at the first side, while a connecting element is placed at the second side which is opposite to the first side. The carrying element in the region of the wiper strip has a concave curvature which in the central region is greater than in the end regions.

These features of the present invention are not disclosed either in the patent to Arai or in the patent to Appel. It is therefore believed that claim 14 should also be considered as patentably distinguishing over the art and should also be allowed. It is believed that this is how the second issue under appeal has to be taken care of, and the rejection of claim 14 should be reversed as well.

As for the third issue and the dependent claims, the dependent claims depend on the independent claims, and they should be allowed as well due to their dependency.

Reconsideration and allowance of present application is most respectfully requested.

Respectfully submitted,



Michael J. Striker
Attorney for Applicants
Reg. No. 27233

APPENDIX

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper blade, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper trip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

6. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section.

7. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at said end sections.

8. The wiper device according to claim 5, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof.

9. A wiper blade for a wiping device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire

length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections.

10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section.

11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window is at least almost a uniform magnitude in said center section and decreases at the said end sections.

12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said sections thereof.

13. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip

placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said contact force being greater in a center section of said wiper strip than in at least one of two end sections thereof.

14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said spring elastic carrying element having a first side and a second side such that the wiper strip is placed at the first side, while at the second side which is opposite to the first side a connecting element is placed, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof.

Interview Summary	Application No. 09/445,046	Applicant(s) KOTLARSKI ET AL.	
	Examiner Gary K Graham	Art Unit 1744	#19

All participants (applicant, applicant's representative, PTO personnel):

(1) *Gary K Graham*. (3)_____.

(2) *Ilya Zborovsky*. (4)_____.

Date of Interview: *27 February 2002* .

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____ .

Claim(s) discussed: *5 and 9-13* .

Identification of prior art discussed: *None* .

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *The Examiner suggested Appellant file an amendment to correct 112 second paragraph deficiencies in the claims to thus reduce the issues on appeal. The Examiner also suggested the cancellation of claim 13 since it was now a substantial duplicate of claim 9. Such an amendment making such changes will be entered. The Examiner further suggested Appellant file a supplemental Brief addressing claim 9 in the arguments* .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

i)☒ It is not necessary for applicant to provide a separate record of the substance of the interview(if box is checked).

Unless the paragraph above has been checked, THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

_____
Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner should check the appropriate box at the bottom of the Form which informs the applicant that the submission of a separate record of the substance of the interview as a supplement to the Form is not required.

It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8) Applicant(s): KOTLARSKI, T.			Docket No. 989
Serial No. 09/445,046	Filing Date 08/09/99	Examiner GRAHAM, G.	Group Art Unit 1744

Invention:

WIPER BLADE FOR WINDOWS OF MOTOR VEHICLES

I hereby certify that this **SUPPLEMENTAL RFR AND SUPPLEMENTAL BRIEF ON APPEAL**
(Identify type of correspondence)
is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No. (703) 872 9546)

on **FEBRUARY 28, 2002**
(Date)

MICHAEL J. STRIKER
(Typed or Printed Name of Person Signing Certificate)

(Signature)

Note: Each paper must have its own certificate of mailing.

1 of 3

#21

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

In re:

Applicant: KOTLARSKI

Serial No.: 09/445,046

Filed: February 12, 2000

SUPPLEMENTAL BRIEF ON APPEAL

February 28, 2002

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

This is a Brief on Appeal from the final rejection of claims 5-14 by the Primary Examiner.

1. Real Party of Interest

The real party of interest in this application is Robert Bosch GmbH, Postfach 30 02 20, D-70442 Stuttgart, Germany.

2. Related Appeals and Interferences

There are no related appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's Decision in the pending appeal.

3. Status of Claims

In the present application all claims were rejected by the Examiner in the Final Action.

4. Status of Amendments

Subsequently to the Final Office Action on July 27, 2001, appellant has submitted a Request for Reconsideration of September 26, 2001. The Request for Reconsideration was entered by the Examiner.

5. Summary of the Invention

A wiper blade 10 shown in Fig. 1 has an elongated, spring-elastic carrying element 12 for a wiper strip 14, and this carrying element 12 is shown separately in Fig. 8. The carrying element 12 and the wiper strip 14 are connected to each other so that their longitudinal axes are parallel. A connecting device 16 is disposed on the top side of the carrying element 12 remote from the window 15 to be wiped - indicated with dot-and-dash lines in Fig. 1 - and with the aid of this connecting device 16, the wiper blade 10 can be detachably connected to a driven wiper arm 18 that is supported on the body of a motor vehicle. The elongated, rubber-elastic wiper strip 14 is disposed on the underside of the carrying element 12 oriented toward the window 15. A hook, which is used as a reciprocal connecting means, is formed onto the free end 20 of the wiper arm 18 and encompasses a pivot bolt 22 belonging to the connecting device 16 of the wiper blade 10. The retention between the wiper arm 18 and the wiper blade 10 is performed by known securing means. The wiper arm 18 and therefore also its hook end 20 are loaded in the direction of the arrow 24 in relation to the window 15 to be wiped, whose surface to be wiped is indicated in Figs. 1 and 2 by means of a line 26. The force (arrow 24) places the wiper blade 10 over its entire length against the surface 26 of the window 15 to be wiped. Since the dot-and-dash line 26 Fig. 2 is intended to represent the sharpest curvature of the window surface in the region of the wiping field, it is clearly evident that the

curvature of the as yet unloaded wiper blade 10 resting with both of its ends against the window is sharper than the maximal curvature of the spherically curved window 15. Due to the pressure (arrow 24), the wiper blade 10 rests over its entire length against the window surface 26 with its wiper lip 28 that belongs to the wiper strip 14. This produces a stress in the band-like spring-elastic carrying element 12, which assures a proper contact of the wiper strip 14 or the wiper lip 28 over its entire length against the motor vehicle window 15. During wiper operation, the wiper arm 18 moves the wiper blade 10 lateral to its longitudinal span, across the window 15. This wiping or working motion is indicated in Fig. 1 with the double arrow 29.

As shown by Figs. 3 and 4, the wiper strip 14 is disposed on the lower band surface of the carrying element 12 oriented toward the window 15. Spaced apart from the carrying element 12, the wiper strip 14 is constricted from its two long sides in such a way that a tilting piece 30 remains in its longitudinal center region and extends over the entire length of the wiper strip 14. The tilting piece 30 transitions into the wiper lip 28, which has an essentially wedge-shaped cross section. Because of the contact force (arrow 24), the wiper blade or the wiper lip 28 is pressed against the surface 26 of the window 15 to be wiped, wherein due to the influence of the wiping movement - one of the two opposing wiping motions

(double arrow 29) in particular is considered in Figs. 3 and 4 and is indicated by the direction arrow 32 -, this wiper lip 28 tilts into a so-called drag position in which the wiper lip is supported over its entire length against the part of the wiper strip 14 that is secured to the carrying element 12. This support, which is indicated in Figs. 3 and 4 with the arrow 34, is always produced - depending on the respective wiping direction (double arrow 29 or arrow 32) - against the upper edge of the wiper lip 28 disposed toward the rear in the respective wiping direction so that it is always guided across the window in a so-called drag position. This drag position is required for an effective and low-noise operation of the wiper apparatus. The reversal of the drag position takes place in the so-called reversal position of the wiper blade 10- when this reverses its wiping motion (double arrow 29). The wiper blade executes a back and forth motion, which is induced by the tilting over of the wiper lip 28. The upward motion occurs counter to the direction 24 and consequently also counter to the contact force. In the other wiping direction directed counter to the arrow 32, a mirror image of the Figs. 3 and 4 is consequently produced.

In order to produce as low-noise as possible a tilting over of the wiper lip 28 from its one drag position into its other drag position, the carrying element 12 used for distributing the contact force (arrow 24) is designed so

that the contact force of the wiper strip 24 or the wiper lip 28 against the window surface 26 is greater in its center section 36 (Fig. 8) than in at least one of the two end sections 38. This concept, for example, can be incorporated, as shown in a graphic representation according \to Figs. 5 to 7. According to Fig. 5, the carrying element 12 is designed so that viewed in terms of the length 40 of the wiper blade, its center region 36 has a virtually uniform contact force (line 44) and that this contact force 44 sharply decreases at both end sections 38 of the wiper blade. The line 42 indicates a possible position of the pivot bolt 22, i.e. the engagement point of the wiper arm-induced contact force.

In another embodiment (Fig. 6), the carrying element 12 is designed so that viewed in terms of the length 140 of the wiper blade, starting from the one and 138 of the wiper blade until well beyond its linkage point (line 142), the contact force 24 is of a uniform magnitude (line 144) until it decreases sharply in the region of the other and 139 of the wiper blade. The possible linkage point of the wiper blade to the wiper arm has been labeled 142 in Fig. 6.

Another position design of the wiper blade according to the invention, which is shown in Fig. 7, provides that the contact pressure or

contact force (244) of the wiper lip 28 against the window surface 26 is essentially uniform in the center region 242 of the wiper blade - where the linkage point of the wiper arm 18 is disposed - and that it decreases slightly toward one and 238 of the wiper blade whereas it decreases considerably in the vicinity of the other and 239 of the wiper blade. With this design of the wiper blade, the engagement point 243 of the wiper arm 18, is disposed on the wiper blade outside the center of the wiper blade length 240, as in the design according to Fig. 6. Naturally, it is possible to use such a positioning of the linkage point even in wiper blades that are designed in accordance with Fig. 5. The different designs of the wiper blade can be required by particular window types, which differ from one another, for example due to the type of spherical curvatures of the windows.

Fig. 8 shows a possible curvature course of the carrying element 12, which can produce a pressure distribution of the wiper lip 38 against the window 15, as is graphically depicted in Fig. 5. With this spring-elastic carrying element 12, which when unloaded has a sharper concave curvature than the window in the region of the wiping field being swept across by the wiper blade, the curvature course is embodied so that it is sharper in the center section 36 of the carrying element than at its end sections 38. In order to achieve the desired contact force distribution,

however, it is also conceivable to reduce the end sections 38 of the carrying element 12 cross sectionally so that a comparable effect is achieved.

The reduction of the contact force of the wiper lip 28 against the window surface 26 in the region of one or both wiper blade ends, prevents an abrupt flipping over or snapping over of the wiper lip 28 from its one drag position into its other drag position. In contrast, with the wiper blade according to the invention, a comparatively gentle tilting over of the wiper lip is produced, starting from the wiper blade end and continuing to the wiper lip center or to the other wiper lip end. Figs. 3 and 4, in connection with Fig. 1, show that even with spherically curved windows, the less-loaded end sections of the wiper lip 28 still rest effectively against the window surface. A comparison of Figs. 3 and 4 shows this, from which it is clear that in the less-loaded end region (Fig. 4), the wiper lip 28 is disposed more steeply in relation to the window surface 26 than in its center section (Fig. 3), where the greater contact force is in effect. This steeper disposition of the wiper lip 28 encourages the beginning of the tilting over the wiper lip when the reverse motion of the wiping motion begins (double arrow 29).

It is common to all of the exemplary embodiments that the contact pressure (arrow 24) of the wiper strip 14 against the window 15 is

greater in its center section 36 than in at least one of its two end sections 38. This is true even if in contrast to the currently shown wiper blade 10 with a one-piece carrying element 12 depicted as a spring rail, the carrying element is embodied as having a number of parts. The only crucial issue is the distribution of the contact pressure according to the invention.

This is disclosed on pages 1-10 of the specification and shown in the drawings.

6. Issues

In the Final Office Action claims 5-7, 9-11 and 13-14 were rejected under 35 U.S.C. 102 over the patent to Arai. Thus, the first issue under appeal is whether these claims are patentable over this reference in the sense of 35 U.S.C. 102.

Claims 9-14 were rejected under 35 U.S.C. 103 over the patent to Appel in view of the patent to Arai. Thus, the second issue under appeal is whether claims 9-14 are rejectable over the combination of these references.

Claim 8 was rejected under 35 U.S.C. 103 over the patent to Arai in view of the patent to Appel. Thus, the third issue on appeal is whether claim 8 is rejectable as obvious under 35 U.S.C. 103 over the combination of these references.

The claims were also rejected under 35 U.S.C. 112. This constitutes the fourth issue under appeal.

7. Grouping of claims

Claims 5, 9 and 14 are separately patentable. As for the other claims, they stand and fall together with the corresponding independent claims.

8. Argument

Claim 13 has been cancelled. It is therefore believed that the grounds for the rejection under 35 U.S.C. 112 are no longer applicable.

Turning now to the references and particularly to the new features of present invention which are defined in claim 5, it is respectfully submitted that in addition to other features, it is stated now that the wiper

strip has a wiper lip which contacts the window, the wiper blade is constructed such that the wiper strip starts to tilt over in reversal positions in wiping direction of the wiper blade in a region of the reduced contact force and continues to tilt while moving to a region of a greater contact force against the window.

It is therefore believed to be clear that the inventive wiper device has a wiper lip which is pressed against the window and in reversal positions or near the reversal positions tilts over from one side to the other side. Due to the specific design of the carrying element as well as the thusly produced contact force distribution which is different than in the prior art, the abrupt snapping over of the entire wiper lip and the unpleasant noise is eliminated. The wiper lip starts in one or both outer points to tilt over and draws during movement of the wiper blade over the window to the regions of the wiper blade which have a greater contact force. The knocking noise is reduced to a small central region, in which a part of the wiper lip as a whole can be tilted over and cause a softer knocking noise. Such a wiper device is not disclosed in the prior art and can not be derived from it as a matter of obviousness. It is not disclosed either in the patent to Arai or in the patent to Appel. Therefore it is believed that claim 5 as amended should be considered as patentably distinguishing over the art and should be allowed.

It is therefore believed that the first issue on appeal has to be decided by reversing the Examiner's rejection of claim 5.

Claim 9 specifically defines that the wiper strip has a center section and two end sections such that a contact force of the wiper strip would be greater in the center section than in at least one of the two end sections. These features of the present invention are also not disclosed in the references.

As for claim 14, this claim has been amended by appellant. It should be mentioned that in the appellant's opinion the Examiner's analysis of claim 14 is not accurate. The patent to Arai does not disclose any wiper blade whose curvature is greater in a central region than in the outer regions. Contrary to this, Figures 5 and 6 show the curvatures in the outer regions which are significantly greater than in the central region. It is possible that the Examiner meant to use the term "radius". The greater the radius (the flatter is an arc), the smaller the curvature. A greater curvature requires a smaller radius. Figures 5 and 6 in the patent to Arai do not disclose that the curvature in the central region is greater or the radius of the central region is smaller than in the regions 3a.

Claim 14 has been particularly amended to define that the carrying element has the first and second sides, wherein the wiper strip is arranged at the first side, while a connecting element is placed at the second side which is opposite to the first side. The carrying element in the region of the wiper strip has a concave curvature which in the central region is greater than in the end regions.

These features of the present invention are not disclosed either in the patent to Aral or in the patent to Appel. It is therefore believed that claim 14 should also be considered as patentably distinguishing over the art and should also be allowed. It is believed that this is how the second issue under appeal has to be taken care of, and the rejection of claim 14 should be reversed as well.

Reconsideration and allowance of present application is most respectfully requested.

Respectfully submitted,

Michael J. Striker
Attorney for Applicants
Reg. No. 27233

APPENDIX

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper arm, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

6. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is lower at said two end sections than in said center section.

7. The wiper device according to claim 5, wherein said contact force of said wiper strip against the window is at least almost of a uniform magnitude in said center section and decreases at said end sections.

8. The wiper device according to claim 5, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof.

9. A wiper blade for a wiping device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire

length of said wiper strip, said wiper strip having a center section and two end sections, such that a contact force of said wiper strip would be greater in said center section than in at least one of said two end sections.

10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window would be lower at said two end sections than in said center section.

11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window would be at least almost a uniform magnitude in said center section and decreases at the said end sections.

12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof.

14. A wiper blade for a wiper device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said spring elastic carrying element having a first side and a second side such that the wiper strip is placed at the first side, while at the second side which is opposite to the first side a connecting element is placed, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof.

#20 / D

Approved for Entry GHG 3.7.02

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

In re:

Applicant: KOTLARSKI

Serial No.: 09/445,046

Filed: February 12, 2000

SUPPLEMENTAL REQUEST FOR RECONSIDERATION

March 4, 2002

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Please amend the application as follows:

In the claims:

Cancel claim 13 without prejudice

Amend the claims as attached.

REMARKS

This Request for Reconsideration is submitted supplementary to the previous Request for Reconsideration.

With the present document applicant has made corrections in some claims, to eliminate the grounds for the rejection under 35 U.S.C. 112 made by the Examiner in the Final Office Action, and to make minor corrections.

Reconsideration and allowance of present application is most respectfully requested.

Respectfully submitted,

Michael J. Striker
Reg. No. 27233
103 East Neck Road
Huntington, NY 11743
(631)549-4700

CLAIMS

Amend the following claims:

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper [blade] arm, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper [trip] strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

9. A wiper blade for a wiping device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, [said] such that a contact force of said wiper strip [being] would be greater in said center section than in at least one of said two end sections.

10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window [is] would be lower at said two end sections than in said center section.

11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window [is] would be at least almost a uniform magnitude in said center section and decreases at the said end sections.

12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof.

Amended claims:

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper arm, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a greater contact force against the window.

9. A wiper blade for a wiping device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, such that a contact force of said wiper strip would be greater in said center section than in at least one of said two end sections.

D2

10. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window would be lower at said two end sections than in said center section.

11. The wiper blade according to claim 9, wherein said contact force of said wiper strip against the window would be at least almost a uniform magnitude in said center section and decreases at the said end sections.

12. The wiper blade according to claim 9, wherein said spring-elastic carrying element has on a side thereof oriented toward the window a

concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said end sections thereof.

D2 cont.

UNITED STATES PATENT AND TRADEMARK OFFICE

AS

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	TORE KOTLARSKI	989	9398

7590 03/08/2002

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

EXAMINER
GRAHAM, GARY K

ART UNIT	PAPER NUMBER
1744	22

DATE MAILED: 03/08/2002

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

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 22

Application Number: 09/445,046
Filing Date: February 18, 2000
Appellant(s): KOTLARSKI ET AL.

Michael J. Striker
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 28 February 2002.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 5-12 and 14.

Claims 1-4 and 13 have been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 01 October 2001 has been entered.

The amendment after appeal filed 04 March 2002 has been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is incorrect. The changes are as follows:

Claims 5-7, 9-11 and 14 are rejected under 35 U.S.C. 102 over the patent to Arai.

Claims 9-12 and 14 are rejected under 35 U.S.C. 102 over the patent to Appel '770 as evidenced by Arai et al '326 not under 35 U.S.C. 103.

Claim 8 is rejected under 35 U.S.C. 103 over the patents to Arai and Appel. However, applicant presents no arguments with respect to this rejection and states under "Grouping of claims" that the dependent claims stand or fall with the corresponding independent claims. Thus, while claim 8 is rejected under 103 over Arai and Appel, the rejection of claim 8 does not appear to be at issue.

No claims stand rejected under 35 U.S.C. 112 in view of entry of the 01 October 2001 and 04 March 2002 amendments.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 5, 9 and 14 are separately patentable and do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

Claim 8 is considered to stand or fall with claim 5 in view of the statement under "Grouping of claims" and lack of arguments in support thereof.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,028,770	Appel	14 June 1977
4,807,326	Arai et al	28 February 1989

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-7, 9-11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai et al '326.

The patent to Arai discloses the invention as is claimed, including a spring elastic carrying element or backing member (3) supporting a wiper blade strip (1) for movement over a windshield. Note figures 7 and 8 which show, at least under high pressure, the end sections of the wiper blade having a lower contact force compared with a center section thereof. Also, note figure 8 which shows the prior art backing member and wiper blade. Such prior art backing member is loaded centrally and provides high pressure centrally which drops off towards the ends of the backing member, at least under high loading. The figure 8 backing member/blade and graph clearly suggest the limitations of claim 5, specifically under high pressure. Figure 8 also shows an "almost uniform magnitude" in the center.

With respect to claim 5 and the limitation that the wiper lip is constructed such that it tilts over in reversal positions in a region of a reduced contact force and continues to tilt in a region of greater contact force, such does not define over Arai. Firstly, such defines no structure not shown or suggested by Arai. Such is merely desired intended functioning. Second, tilting of the wiper lip during wiping direction reversal is conventional. Note figure 2 of Arai which shows conventional structure of a wiper strip (1), including head (1C) supporting wiping lip (1A) via a thin neck (1B). Neck (1B) allows the lip to tilt from side to side, depending on the direction of wiping. Such is the same structure shown by Appellant. Since Arai suggests a contact force that is reduced at the ends of the strip (fig.8, high pressure line) in like manner as appellants, tilting as is claimed will inherently occur. Why would Arai not tilt as is claimed?

With respect to claim 14 note figure 6 which shows the center section having a greater curvature than at least the right end section. Note that any "section" or portion of the carrying element may be selected to meet the claim. The section (3B) does appear to have a sharper curvature than the section (3A). A portion of section (3B) can be selected that has visible curvature while a portion of section (3A) can be selected that has no visible curvature. Such would appear to meet the claim.

Claims 9-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Appel '770 as evidenced by Arai et al '326.

As applicant has claimed no structure to develop contact pressure, the patent to Appel discloses the invention as is claimed. Appel shows a conventional backing member/blade as is claimed, wherein in a free form state, prior to windshield application, such is prestressed or curved (figs. 1 and 2). The curvature is such that a center section of the backing member has a greater curvature than the end sections thereof. While not pronounced, such different curvatures does appear to be shown. Such curvature is provided such that upon application of the backing member/blade to the windshield, a substantially uniform pressure is achieved in the wiper blade. Appel discloses all the structure set forth by applicant. Applicant has only claimed a wiper blade. Thus, the device of Appel will inherently function as is claimed. Indeed, if sufficient pressure is applied to the conventional backing member of Appel, as discussed by Arai figure 8, the contact pressure in the center of the blade would be greater than end sections thereof, just as applicant's. Applicant has set forth no structure for his wiper blade that is not disclosed by Appel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al '326 in view of Appel '770.

The patent to Arai discloses all of the above recited subject matter with the exception of the conventional backing member/blade of figure 8 being curved sharper than the windshield to be wiped and having a curvature in a center section sharper than in end sections.

The patent to Appel discloses all of the above recited subject matter.

While Arai does not disclose the conventional backing member/blade being curved, it clearly must be pre-stressed. Without such pre-stressing, the backing member of Arai could not achieve the pressure profiles as shown in the figure 8 graph. A method of such pre-stressing is known and taught by Appel.

It would have been obvious to one of skill in the art to pre-stress the backing member by curving, as clearly suggested by Appel, to achieve the pressure profiles as is shown. Such curving is a well known and expedient manner of pre-stressing.

(11) Response to Arguments

The thrust of appellant's argument in support of claim 5 is that the claimed contact force distribution is different than the prior art and that such distribution leads to a reduced noise wipe by providing a more gradual tilting of the strip during wiping motion reversal. However, as stated above, the contact force distribution is not different than disclosed by the prior art. Arai specifically discloses in figure 8 that, under high arm pressure, the contact pressure of the wiper strip on the windshield is reduced at the ends of the wiper strip as compared to the center section. Thus, the tilting of the end sections of the strip first, followed by the center section would inherently be achieved by both Arai and Appel as evidenced by Arai. Further, it should be noted that such tilting is the desired functioning of the wiper strip and imparts no structure to the claim that is not disclosed by Arai. It is not clear why either of the references would not perform as is

claimed. Since Arai discussed the contact force distribution as is claimed, why would the wiper strip not tilt as is claimed?

Appellant's arguments in support of claim 9 do not point out any structure that is not disclosed by either the patent to Arai or Appel as evidenced by Arai. As discussed above, the applied references both contain a center section and two end sections. Specifically, the patent to Arai clearly sets forth that the contact pressure at the end sections of conventional backing members (fig.8) is lower than at a central section where the pressure (P) is applied, at least during high pressure application. Such clearly meets the limitations of claim 9. Likewise, the backing member of Appel would have the same pressure profile as taught by figure 8 of Arai since the wiper arm is connected to a center section thereof.

Appellant's arguments in support of claim 14 that the end sections of the Arai carrying element are curved greater than the center section are not deemed persuasive. As discussed above, any portion of the center section and end section can be selected. Note that any "section" or portion of the carrying element may be selected to meet the claim. The section (3B) does appear to have a sharper curvature than the section (3A). A portion of section (3B) can be selected that has visible curvature while a portion of section (3A) can be selected that has no visible curvature. Such would appear to meet the claim. Appellant does not appear to specifically address the rejection of claim 14 by Appel. However, as stated above, a review of figure 2 of Appel will show that the center section has a greater curvature than the end sections. Use of a straight edge will demonstrate this.

For at least the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

GARY K. GRAHAM
PRIMARY EXAMINER
GROUP 1700

GKG
March 7, 2002

Conferees
Gabrielle Brouillette
Robert Warden

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

PLEASE DO NOT REMOVE

S.N. 09 445 046 Appeal No. 2002-2216

STAMP
RECEIVED
2002 AUG 15 AM 9:20
BOARD OF PATENT APPEALS AND INTERFERENCES

	Date	Initials
Incoming Clerk		
PALM-in Case/Stamp In	8-15-02	TAm
Ex Parte LIE Leslie		
OB/Heard Classification	8/17	Chase L
Assign Appeal No.	9/12/02	
Outlined		
Prepare - Mail - Enter Hearing Notice		
Prepped Hearing Case		
Administrator		
Assign Case		
Sign Order		
Review Case		
Paralegal Henderson		
Review	9/11/02	SH
Assign/ Enter Panel		
Docket Case To APJ		
Prepare Order		
Mail Order - Enter Data		
Ex parte Decision Preparation		
arte Legal Tech		
Decision Prepared -- Proofed		
Mail Decision - Entered Data		
Prepped Case - To APJ	9-16-02	K.S.
Remailed Case		
Return Remand		
Assign/Redocket Case		
Enter in ACTS		

Notes:

Notes for prepping:

Rehearing
Redocket case to APJ ______ ______
Enter in ACTS ______ ______

Designation of Panel

Pursuant to 35 U.S.C. § 6(b) , it is ORDERED that the panel of the Board of Patent Appeals and Interferences (BPAI) designated to decide this case shall consist of the following Administrative Patent Judges (APJs):

1. Judge ~~McQuade~~ Warren
2. Judge ~~Bahr~~ Pak
3. Judge ~~Nase~~ Lieberman

1M 2/21/03

☐ OB
☐ Heard Hrg date: ____________
☐ Redesignation
☐ Expanded Panel

Examiner Requests to Attend Hearing: ☐ Yes ☐ No

CIRCLE ONE: MIX BIO CHEM ELEC MECH

Bruce H. Stoner, Jr.
Bruce H. Stoner, Jr.
Chief Administrative Patent Judge

Rev. 08/01

UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, DC 20231
www.uspto.gov

STRIKER, STRIKER & STENBY,
103 EAST NECK ROAD
HUNTINGTON, NY 11743

Paper No: 23
Appeal No: 2002-2216
Appellant: KOTLARSKI, TORE
Application: 09/445,046

Board of Patent Appeals and Interferences
Docketing Notice

Application 09/445,046 was received from the Technology Center at the Board on August 15, 2002 and has been assigned Appeal No: 2002-2216.

A review of the file indicates that the following documents have been filed by appellant:

Appeal Brief filed on:	February 28, 2002
Reply Brief filed on:	None
Request for Hearing filed on:	None

In all future communications regarding this appeal, please include both the application number and the appeal number.

The mailing address for the Board is:

BOARD OF PATENT APPEALS AND INTERFERENCES
UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231

The facsimile number of the Board is 703-308-7952. Because of the heightened security in the Washington D.C. area, facsimile communications are recommended. Telephone inquiries can be made by calling 703-308-9797 and should be directed to a Program and Resource Administrator.

By order of the Board of Patent Appeals and Interferences

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TORE KOTLARSKI
and TURE MARKLUND

Appeal No. 2002-2216
Application 09/445,046

ON BRIEF

Before PAK, WARREN and LIEBERMAN, *Administrative Patent Judges.*

WARREN, *Administrative Patent Judge.*

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claim 14 and refusing to allow claims 5 through 12 as amended subsequent to the final rejection.[1] Claims 5, 9 and 14 are illustrative of the claims on appeal:

5. A wiper device for motor vehicles, comprising a driven wiper arm and a wiper blade connected to said wiper arm, said wiper arm moving said wiper blade back and forth across the window of a motor vehicle laterally to a longitudinal space of the window and loading said wiper blade in relation to the window, said wiper blade including an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window and having connecting means for connecting said wiper arm thereto, said spring-elastic carrying element extending parallel to an axis of elongation of said

[1] Appellants cancelled claim 13 subsequent to the final rejection.

wiper strip to distribute a contact force applied by said wiper strip under the action of said wiper arm against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said wiper strip having a wiper lip adapted to contact the window and is constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a grater contact force against the window.

9. A wiper blade for a wiper device for a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, such that a contact force of said wiper strip would be greater in said center section than in at least one of said two end sections.

14. A wiper blade for a wiper device for a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of said wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said spring elastic carrying element having a first side and a second side such that the wiper strip is placed at the first side, while at the second side which is opposite to the first side a connecting element is placed, said spring-elastic carrying element having a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof.

The appealed claims, as represented by claims 5, 9 and 14, are drawn to a wiper device for motor vehicles wherein the wiper blade comprises at least an elongated wiper strip connected to an elongated spring-elastic carrying element. The spring-elastic carrying element can have a curvature which is sharper in a center section of said spring-elastic carrying element than in an end section thereof, and distributes a contact force against the window over an entire length of said wiper strip such that a contact force of said wiper strip would be greater in said center section than in at least one of said two end sections. The wiper strip can have a wiper lip constructed such that it tilts over in reversal positions in wiping direction of said wiper blade in a region of a reduced contact force and continues to tilt in a region of a grater contact force against the window. According to appellants, the "tilting-over process . . . prevents the abrupt snapping over of the entire wiper lip and the unpleasant knocking noise connected with it" (specification, pages 2-3).

The references relied on by the examiner are:

Appel	4,028,770	Jun. 14, 1977
Arai et al. (Arai)	4,807,326	Feb. 28, 1989

The examiner has advanced the following grounds of rejection on appeal:

claims 5 through 7, 9 through 11 and 14 stand rejected under 35 U.S.C. § 102(b) as anticipated by Arai (answer, pages 5-6);

claims 9 through 12 and 14 stand rejected under 35 U.S.C. § 102(b) as anticipated by Appel as evidenced by Arai (answer, page 7);[2] and,

claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai in view of Appel (answer, pages 8-9).[3]

Appellants state in their brief (page 10) that the appealed "[c]laims 5, 9 and 14 are separately patentable" and that "the other claims . . . stand and fall together with the corresponding independent claims." Thus, we decide this appeal based on appealed claims 5, 9 and 14. 37 CFR § 1.192(c)(7) (2002).

We affirm the ground of rejection under § 102(b) over Arai and the ground of rejection under § 103(a) over Arai in view of Appel. We reverse the ground of rejection § 102(b) over Appel as evidenced by Arai.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' brief[4] for a complete exposition thereof.

Opinion

It is well settled that in making out a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677-78, 7 USPQ 1315, 1317 (Fed. Cir. 1988); *Lindemann*

---

[2] Appellants incorrectly stated this ground of rejection as being under 35 U.S.C. § 103 (brief, page 10) as noted by the examiner (answer, page 3). We observe that the ground of rejection as stated by the examiner (answer, pages 3 and 7) was of record as of the final rejection in the Office action of July 27, 2001 (Paper No. 13; page 4), and thus appellants were on notice thereof.

[3] The examiner withdrew the ground of rejection under 35 U.S.C. § 112, second paragraph (answer, page 3).

[4] We have considered the brief filed February 28, 2002 (Paper No. 21).

Maschinenfabrik GMBH v. American Hoist and Derrick, 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984). Whether the teachings and inferences that one skilled in this art would have found in the disclosure of an applied reference would have placed this person in possession of the claimed invention, taking into account this person's own knowledge of the particular art, is a question of fact. *See generally, In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), and cases cited therein (a reference anticipates the claimed method if the step that is not disclosed therein "is within the knowledge of the skilled artisan."); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968) ("[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one of ordinary skill in the art would reasonably be expected to draw therefrom.").

The examiner submits, and we agree, that as a matter of fact, *prima facie*, the wiper device and wiper blade taught by Arai anticipate the claimed wiper device encompassed by appealed claim 5 and the claimed wiper blade encompassed by appealed claim 9 and appealed claim 14, because each and every element arranged as required for the claimed articles encompassed by each of these appealed claims is shown in Arai either expressly or under the principles of inherency. The critical element of the claimed articles is the carrying element which has the curvature with respect to the center section and the ends thereof specified in appealed claim 14; distributes a contract force over the entire length of the contract strip in appealed claims 5 and 9, wherein the contact force is greater in a center section of the carrying element than at either or both of the two ends thereof in appealed claim 5; and because of the difference in contact force, causes the wiper lip to tilt over in reversal positions in wiping direction of the wiper blade beginning in the region of reduced contact force , that is, at the ends of the carrying element, and continuing to the region of greater contact force, that is, at a center section of the carrying element, in appealed claim 5.

The examiner's observation that the curvature of the "backing member" shown in the Arai **FIGs.**, which is the carrying element of the Arai articles and which we herein refer to as the carrying element of Arai, is identical to the requirement for the carrying element in appealed claim 14 is borne out by the disclosure in the reference that with respect to **FIG. 5**, "[t]he

curvature is gradually decreased at longitudinally opposite end portions **3A** and **3A**" (col. 3, lines 29-30). We find that one skilled in the art would reasonably interpret this disclosure to describe a center section which has a greater curvature than either of the end portions **3A**. Indeed, the plain language of appealed claim 14 merely specifies "a center section" of the carrying element, which can be any section in the center of the carrying element as the examiner points out, particularly in view of the indefinite article "a," and the claim phrase "an end section" includes either of the two end sections of the carrying element.

While Arai is interested in applying a uniform pressure along the length of the wiper blade with the carrying element disclosed therein (col. 3, lines 30-36), we agree with the examiner that the high pressure distribution curve showing the pressure applied on the wiper blade by the article of Arai in FIG. 7[5] (*see* col. 3, lines 48-51) demonstrates that, at that pressure, the contact force of the wiper strip is greater in the center section than at both of the end sections (*see also* col. 4, lines 1-8), as required by appealed claims 5 and 9.

On this record, in view of the congruent structure between the carrying elements of the claimed wiper device and wiper blades encompassed by appealed claim 5 with the corresponding articles disclosed by Arai, we further agree with the examiner that the wiper blade of Arai would inherently react in the same manner to the distribution of contact force at high pressure as required by appealed claim 5, that is, the wiper blade tip would tilt over in reversal positions beginning at the wiper blade tip regions and continuing to the center region of the wiper blade, even though Arai is silent in this respect. Indeed, while we have focused on the correspondence in carrying elements, we further observe no difference between the wiper blade tip in Arai **FIGs. 2** and **4** and the wiper blade tip in specification **FIGs. 3** and **4**. Thus, on the basis of this substantial evidence, we are of the opinion that, *prima facie*, the wiper article and wiper blade of Arai would *necessarily* inherently function in the manner required of the claimed wiper article and wiper blade of appealed claim 5. *See Transclean Corp. v. Bridgewood Services, Inc.*,

[5] We cannot agree with the examiner's findings with respect to **FIG. 8** of Arai because the pressure distribution curves are merely disclosed to "shows prior art wiperblade" for which the reference provides no disclosure of the structure of the prior art article (col. 2, lines 30-31, and col. 3, lines 52-53). Thus, there is no factual basis for comparing the results reported in Arai **FIG. 8** with the articles claimed in the appealed claims.

290 F.3d 1364, 1372-73, 62 USPQ2d 1865, 1870-71 (Fed. Cir. 2002), citing *Cont'l Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268-69, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991) ("[A]nticipation by inherent disclosure is appropriate only when the reference discloses prior art that must *necessarily* include the unstated limitation.").

Accordingly, in view of the *prima facie* case of anticipation over Arai established by the examiner, the burden has shifted to appellants to present effective argument and/or objective evidence to patentably distinguish the claimed articles encompassed by appealed claims 5, 9 and 14 from the corresponding articles of Arai. In this respect, we again considered all of the evidence of anticipation found in the applied prior art with appellants' countervailing evidence of and argument for non-anticipation set forth in the brief. *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3. (Fed. Cir. 1990).

Appellants merely contend with respect to appealed claim 5, that Arai does not disclose a wiper device that provides the tilting action in reversal position that is required in the appealed claim. However, upon reconsidering the evidence in Arai, we remain of the view that there is sufficient correspondence between the claimed and reference wiper devices, particularly the carrying elements and the wiper blades, to constitute substantial evidence that such tilting action, described by the examiner as conventional in such devices, would necessarily inherently occur in the identical devices in the absence of effective argument or objective evidence to the contrary patentably distinguishing the claimed article submitted by appellants. We find that appellants' mere observation of silence in the reference with respect to tilting action of the wiper tip does not constitute such argument or evidence. *See generally, In re Best*, 562 F.2d 1252, 1254-56, 195 USPQ 430, 432-34 (CCPA 1977); *In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 83 (CCPA 1975). Indeed, appellants' elucidation of the mechanism of the function of an article does not render the old article again patentable simply because those using the article may not have appreciated the mechanism thereof or the results produced thereby. *Compare, e.g., W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983) ("[I]t is . . . irrelevant that those using the invention may not have appreciated the results. . . . Were that alone enough to prevent anticipation, it would be possible to obtain a patent for an old and unchanged process. [Citations omitted.]").

Appellants' argument with respect to areas of different contact force applied by the carrying element as required by appealed claim 9 does not dispute the evidence in Arai **FIG. 7** with respect to the high pressure curve as relied on by the examiner and thus, in the absence of a factual basis, is entitled to little, if any, weight. *See generally, In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) ("This court has said . . . that mere lawyers' arguments unsupported by factual evidence are insufficient to establish unexpected results. [Citations omitted.]"). Appellants' argument with respect to the curvature requirement in appealed claim 14 is based on their perception vs. the examiner's perception of the carrying element shown in Arai **FIGs. 5 and 6** in this respect. As we pointed out above, the disclosure at col. 3, lines 29-30, supports the examiner's perception.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of anticipation found in Arai with appellants' countervailing evidence of and argument for no anticipation in fact and find that the claimed invention encompassed by appealed claims 5 through 7, 9 through 11 and 14 are anticipated as a matter of fact under 35 U.S.C. § 102(b).

We cannot reach the same determination with respect to the ground of rejection of appealed claims 9 and 14 under § 102(b) as anticipated by Appel as evidenced by Arai because we find that the examiner has not made out a *prima facie* case of anticipation over the combination of references. While it is entirely appropriate to rely on another reference to clarify a fact in the anticipating reference, *see generally*, *In re Samour*, 571 F.2d 559, 562, 197 USPQ 1, 4 (CCPA 1978), the supporting reference must in fact accomplish that purpose. In this instance, the examiner relies on Arai **FIG. 8** to establish that "the contact pressure in the center of the blade would be greater than ends sections thereof" when using the wiper blade with the carrying element shown in Appel and disclosed therein to provide uniform pressure along the blade as the examiner acknowledges. We have the same difficulty here with Arai **FIG. 8** as we did before, that is, there is no disclosure of the structure of the "prior art wiperblade" represented in that figure (*see above* note 4). Accordingly, we reverse the ground of rejection of appealed claims 9 through 12 and 14 under § 102(b) as anticipated by Appel as evidenced by Arai.

Finally, we consider the ground of rejection of appealed claim 8 under 3(a) over Arai in view of Appel. As the examiner points out (answer, page 3), appellants have not disputed this ground of rejection in the brief even though they acknowledge its existence (brief, page 10),[6] stating instead that dependent claims "stand and fall together with the corresponding independent claims" (*id.*). Because we have affirmed the ground of rejection of appealed claim 1 on which appealed claim 8 depends, under § 102(b) over Arai, which reference is relied on as the primary reference in the ground of rejection here, we summarily affirm this ground of rejection.

The examiner's decision is affirmed with respect to appealed claims 5 through 11 and 14 and reversed with respect to appealed claim 12.[7]

[6] See also the final rejection in the Office action of July 27, 2001 (Paper No. 13; pages 5-6).
[7] We point out that we reverse the sole ground of rejection applying to appealed claim 12 and it is with respect to this ground of rejection that appealed claim 12 stands or falls with appealed claim 9 on which it is dependent. See 37 CFR § 1.192(c)(7) (2002).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

CHUNG K. PAK
Administrative Patent Judge

CHARLES F. WARREN
Administrative Patent Judge

PAUL LIEBERMAN
Administrative Patent Judge

BOARD OF PATENT APPEALS AND INTERFERENCES

Striker, Striker & Stenby
103 East Neck Road
Huntington, NY 11743

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	TORE KOTLARSKI	989	9398

25

7590 08/29/2003

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

EXAMINER
GRAHAM, GARY K

ART UNIT	PAPER NUMBER
1744	

DATE MAILED: 08/29/2003

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

PTO-90C (Rev. 07-01)

Notice of Abandonment	Application No.	Applicant(s)	
	09/445,046	KOTLARSKI ET AL.	
	Examiner	Art Unit	
	Gary K Graham	1744	

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

This application is abandoned in view of:

1. ☐ Applicant's failure to timely file a proper reply to the Office letter mailed on _____.
   (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
   (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
   (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
   (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
   (d) ☐ No reply has been received.

2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
   (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
   (b) ☐ The submitted fee of $_____ is insufficient. A balance of $_____ is due.
   The issue fee required by 37 CFR 1.18 is $_____. The publication fee, if required by 37 CFR 1.18(d), is $_____.
   (c) ☐ The issue fee and publication fee, if applicable, has not been received.

3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
   (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
   (b) ☐ No corrected drawings have been received.

4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.

5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.

6. ☒ The decision by the Board of Patent Appeals and Interference rendered on *28 May 2003* and because the period for seeking court review of the decision has expired and there are no allowed claims.

7. ☐ The reason(s) below:

Gary K Graham
Primary Examiner
Art Unit: 1744

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

27/E

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

In re:

Applicant: KOTLARSKI

Serial No.: 09/445,046

Filed: February 12, 2000

Amendment

~~**SUPPLEMENTAL BRIEF ON APPEAL**~~

October 14, 2003

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Supplementary to the previous Amendment and in connection with the Decision of the Board of Patent Appeals and Interferences, please amend the application as follows:

In the claims:

Cancel all claims without prejudice.

Add claim 15.

Claims 1-14 cancelled.

15. (New) A wiper blade for a wiping device of a motor vehicle for wiping a window of the motor vehicle, comprising an elongated wiper strip placeable against the window, and an elongated spring-elastic carrying element disposed on a side of the wiper strip remote from the window, said spring-elastic carrying element extending parallel to an axis of elongation of said wiper strip to distribute a contact force against the window over an entire length of said wiper strip, said wiper strip having a center section and two end sections, said contact force of said wiper strip being greater in said center section than in at least one of said two end sections, said spring-elastic carrying element has on a side thereof oriented toward the window a concave curvature that is sharper than the sharpest curvature of a spherically curved window in a region of a wiping field that can be swept

across by said wiper blade and a concave curvature in said center section of the carrying element is sharper than in said sections thereof.

E 1

REMARKS

This Amendment is submitted in response to the Decision of the Board of Appeals and Patent Interferences of the United States Patent and Trademark Office.

In the Decision the Examiner's rejection of claims 5-11 and 14 was affirmed, while the Examiner's rejection of claim 12 was reversed.

With the present Amendment applicant has cancelled all claims currently on file, and submitted a new claim 15.

Claim 15 combines the features of original claims 9 and 12, since claim 12 was indicated as allowable by the Board of Appeals and Patent Interferences it is believed that claim 15 should be allowed.

Reconsideration and allowance of the present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in

formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,

Michael J. Striker
Attorney for Applicants
Reg. No. 27233

Date: July 7, 2005

To: Examiner Gary Graham TC 1744

From: Karen Creasy

Subject: 09/445,046

Please review the amendment filed with the petition on February 24, 2005, and let me know if the amendment will be entered. If the amendment will not be considered, I will dismiss the petition filed February 24, 2005.

Please return the file ASAP to loca 4700 7D24 Madison Bldg. W, so that I can render a decision on the petition.

Thanks

571-272-3208

Amendment will be entered

G. Graham

#36 DAC

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Graham *Art Unit:* 1744

In re:

Applicant(s): KOTLARSKI, T.

Serial No.: 09/445,046

Filed:

PETITION TO REVIVE

January 27, 2005

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Applicant herewith petitions to revive the subject application.

Applicant herewith states that the abandonment of the application was unintentional and that the entire delay from the due date for reply to the date of filing of a grantable petition was unintentional.

Applicant intended to file a Petition to Revive in October 2003 and a copy of the Petition to Revive as prepared in October 2003 is attached hereto, together with a copy of a supplemental Brief on Appeal.

MAIL STOP DAC

As a result of an inquiry letter received from the applicant, counsel for applicant realized for the first time that the Petition to Revive inadvertently was not filed, but remained in the file of the application.

Accordingly, applicant now is filing the Petition to Revive in order to obtain allowance of Claim 12 combined with Claim 9 upon which it is dependent.

It is requested that the fee be debited to the account of the undersigned #19-4675.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant
Reg. No.: 27233
103 East Neck Road
Huntington, New York 11743

UNITED STATES PATENT AND TRADEMARK OFFICE

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

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON NY 11743

COPY MAILED

JUL 14 2005

OFFICE OF PETITIONS

In re Application of :
Tore Kotlarski et al :
Application No. 09/445,046 : DECISION GRANTING PETITION
Filed: February 18, 2000 : UNDER 37 CFR 1.137(b)
Attorney Docket No. 989 :

This is a decision on the petition under 37 CFR 1.137(b), filed February 24, 2005, to revive the above-identified application.

The petition is **GRANTED**.

37 CFR 1.137(b)(3) requires a statement that the entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition pursuant to 37 CFR 1.137(b) was unintentional. Since the statement contained in the instant petition varies from the language required by 37 CFR 1.137(b)(3), the statement contained in the instant petition is being construed as the statement required by 37 CFR 1.137(b)(3) and petitioner must notify the Office if this is **not** a correct interpretation of the statement contained in the instant petition.

The petition satisfies the conditions for revival pursuant to the provisions of 37 CFR 1.137(b) in that (1) the reply in the form of an amendment; (2) the petition fee; and (3) the required statement of unintentional delay have been received. Accordingly, the reply is accepted as having been unintentionally delayed.

Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272-3208.

This matter is being referred to Technology Center AU 1744.

Karen Creasy

Karen Creasy
Petitions Examiner
Office of Petitions
Office of the Deputy Commissioner
for Patent Examination Policy

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 08/11/2005

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

EXAMINER	
GRAHAM, GARY K	
ART UNIT	PAPER NUMBER
1744	

DATE MAILED: 08/11/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	Thomas Kotlarski	989	9398

TITLE OF INVENTION: WIPER BLADE FOR MOTOR VEHICLE WINDOWS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$1400	11/14/2005

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 07/05) Approved for use through 04/30/2007.

PART B - FEE(S) TRANSMITTAL

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

or Fax (571) 273-2885

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

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

7590 08/11/2005

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

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

Certificate of Mailing or Transmission

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

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	Thomas Kotlarski	989	9398

TITLE OF INVENTION: WIPER BLADE FOR MOTOR VEHICLE WINDOWS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$1400	11/14/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
GRAHAM, GARY K	1744	015-250430

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____ 3 _____

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

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

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

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

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	Thomas Kotlarski	989	9398

7590 08/11/2005

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

EXAMINER	
GRAHAM, GARY K	

ART UNIT	PAPER NUMBER
1744	

DATE MAILED: 08/11/2005

Determination of Patent Term Extension under 35 U.S.C. 154 (b)
(application filed after June 7, 1995 but prior to May 29, 2000)

The Patent Term Extension is 100 day(s). Any patent to issue from the above-identified application will include an indication of the 100 day extension on the front page.

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

PTOL-85 (Rev. 07/05) Approved for use through 04/30/2007.

Notice of Allowability	Application No.	Applicant(s)	
	09/445,046	KOTLARSKI	
	Examiner	Art Unit	
	Gary K. Graham	1744	

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

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

1. ☒ This communication is responsive to *petition and amendment of 24 February 2005*.

2. ☒ The allowed claim(s) is/are *15*.

3. ☒ The drawings filed on *18 February 2000* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Gary K Graham
Primary Examiner
Art Unit: 1744

PART B - FEE(S) TRANSMITTAL

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

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

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

7590 08/11/2005

STRIKER, STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

10/21/2005 EFLORES1 00000053 194675 09445046

01 FC:1501 1400.00 DA

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

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

Michael J. Striker	(Depositor's name)
	(Signature)
10/18/2005	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,046	02/18/2000	Thomas Kotlarski	989	9398

TITLE OF INVENTION: WIPER BLADE FOR MOTOR VEHICLE WINDOWS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$0	$1400	11/14/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
GRAHAM, GARY K	1744	015-250430

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

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

1 ~~MIchael J. Striker~~
2 _____
3 _____

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

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

(A) NAME OF ASSIGNEE: Robert Bosch GmbH

(B) RESIDENCE: (CITY and STATE OR COUNTRY): STuttgart, Germany

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

4a. The following fee(s) are enclosed:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):
- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 194675 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date 10/18/2005

Typed or printed name MIchael J. STriker Registration No. 27233

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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

AO 121 (6/90)

TO:	
COMMISSIONER OF PATENTS AND TRADEMARKS (USPTO) P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OF DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In compliance with 35 U.S.C. 290 and/or 15 U.S.C. 1116 you are hereby advised that a court action has been filed on the following patent(s)/trademark(s) in the U.S. District Court:

DOCKET NO.	DATE FILED:	UNITED STATES DISTRICT COURT, NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION
12cv437	1/20/2012	
Plaintiff(s): Robert Bosch LLC	**Defendant(s):** Trico Products Corporation	

TRADEMARK NUMBER	DATE OF TRADEMARK	HOLDER OF PATENT OR TRADEMARK
6530111	03/11/2003	Thomas Kotlarski
6553607	04/29/2003	Peter De Block
6611988	09/02/2003	Peter De Block
6675434	01/13/2004	Manfred Wilhelm
6836926	01/04/2005	Peter De Block
6973698	12/13/2005	Thomas Kotlarski

In the above-entitled case, the following trademarks(s) have been included:

DATE INCLUDED	INCLUDED BY [ ] Amendment [ ] Answer [ ] Cross Bill [ ] Other Pleading	
TRADEMARK NUMBER	DATE OF TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1.		
2.		
3.		

In the above-entitled case, the following decision has been rendered or judgment issued:

DECISION/JUDGMENT		
CLERK - MICHAEL W. DOBBINS	DEPUTY CLERK: /s/ Lorenzo Walker	DATE: 1/23/2012

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	5/4/2012	District of Delaware

PLAINTIFF	DEFENDANT
Robert Bosch LLC	Alberee Products, Inc. d/b/a Saver Automotive Products, Inc. and API Korea Co., Ltd.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 6,523,218 B1	2/25/2003	Robert Bosch LLC
2	US 6,530,111 B1	3/11/2003	Robert Bosch LLC
3	US 6,553,607 B1	4/29/2003	Robert Bosch LLC
4	US 6,611,988 B1	9/2/2003	Robert Bosch LLC
5	SEE ATTACHED		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

ADDITIONAL PATENTS

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
US 6,675,434 B1	1/13/2004	Robert Bosch LLC
US 6,836,926 B1	1/4/2005	Robert Bosch LLC
US 6,944,905 B2	9/20/2005	Robert Bosch LLC
US 6,973,698, B1	12/13/2005	Robert Bosch LLC
US 7,228,588 B2	6/12/2007	Robert Bosch LLC
US 7,293,321, B2	11/13/2007	Robert Bosch LLC
US 7,484,264 B2	2/3/2009	Robert Bosch LLC
US 7,523,520 B2	4/28/2009	Robert Bosch LLC

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Michigan on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
11-14019	9/14/2011	Eastern District of Michigan

PLAINTIFF	DEFENDANT
Robert Bosch LLC	Corea Autoparts Producing Corporation et al

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,553,607	4/29/2003	Robert Bosch LLC
2	6,675,434	1/13/2004	Robert Bosch LLC
3	6,836,926	1/4/2005	Robert Bosch LLC
4	6,944,905	9/20/2005	Robert Bosch LLC
5	6,973,698	12/13/2005	Robert Bosch LLC

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 7,293,321	11/13/2007	Robert Bosch LLC
2 7,523,520	4/28/2009	Robert Bosch LLC
3 6,523,218	2/25/2003	Robert Bosch LLC
4 6,611,988	9/2/2003	Robert Bosch LLC
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
STIPULATED ORDER DISMISSING CASE Signed by District Judge Julian Abele Cook. (Entered: 09/20/2013)

CLERK	(BY) DEPUTY CLERK	DATE
David J. Weaver	Peggy S. Miller	9/23/2013

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 121 (6/90)

TO:	
COMMISSIONER OF PATENTS AND TRADEMARKS (USPTO) P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OF DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In compliance with 35 U.S.C. 290 and/or 15 U.S.C. 1116 you are hereby advised that a court action has been filed on the following patent(s)/trademark(s) in the U.S. District Court:

DOCKET NO.	DATE FILED:	UNITED STATES DISTRICT COURT, NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION
12cv437	1/20/2012	
Plaintiff(s): Robert Bosch LLC	**Defendant(s):** Trico Products Corporation	

TRADEMARK NUMBER	DATE OF TRADEMARK	HOLDER OF PATENT OR TRADEMARK
6530111	03/11/2003	Thomas Kotlarski
6553607	04/29/2003	Peter De Block
6611988	09/02/2003	Peter De Block
6675434	01/13/2004	Manfred Wilhelm
6836926	01/04/2005	Peter De Block
6973698	12/13/2005	Thomas Kotlarski

In the above-entitled case, the following trademarks(s) have been included:

DATE INCLUDED	INCLUDED BY [ ] Amendment [ ] Answer [ ] Cross Bill [ ] Other Pleading	
TRADEMARK NUMBER	DATE OF TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1.		
2.		
3.		

In the above-entitled case, the following decision has been rendered or judgment issued:

DECISION/JUDGMENT	Case closed pursuant to Stipulation of Dismissal and Order entered on 8/6/14.	
CLERK - MICHAEL W. DOBBINS	DEPUTY CLERK: /s/ M. Rivera	DATE: 8/7/2014