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(71) Applicant *(for all designated States except US)*: **FEDERAL-MOGUL S.A.** [BE/BE]; Avenue Champion, B-6790 Aubange (BE).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **BOULANGER, Olivier** [BE/BE]; 3, AU Poteau, B-6740 Etalle (BE).

(74) Agent: **HOOIVELD, Arjen, Jan, Winfried**; Sweelinckplein 1, NL-2517 GK Den Haag (NL).

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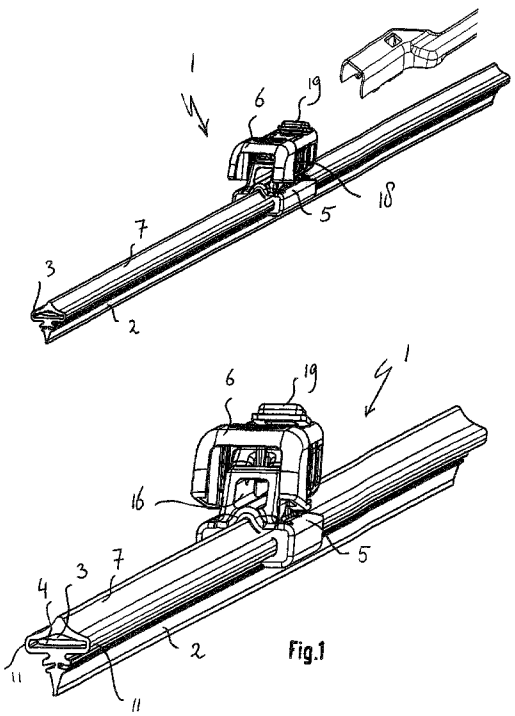


Fig.1

(57) Abstract: Windscreen wiper device (1) of the flat blade type, comprising a carrier element, as well as a wiper blade (2) of a flexible material, wherein said wiper blade (2) includes at least one longitudinal groove (3), in which groove (3) at least one longitudinal strip (4) of the carrier element is disposed, which windscreen wiper device comprises a connecting device (5) for an oscillating arm, wherein said oscillating arm can be pivotally connected to said connecting device (5) about a pivot axis near one end thereof, wherein said connecting device (5) is connected to the flexible material of said wiper blade (2) by at least one pin (14) of a first type and/or at least one pin (15) of a second type, and wherein at least one of said pins is movable from a first position, wherein said pin (14, 15) in a premounted position is fixed to said connecting device (5), into a second position, wherein said pin (14, 15) in a mounted position as a single constructional element is interconnecting said connecting device (5) and the flexible material of said wiper blade (2).

WINDSCREEN WIPER DEVICE

The present invention relates to a windscreen wiper device of the flat blade type, particularly for automobiles, comprising an elastic, elongated carrier element, as well as an elongated wiper blade of a flexible material, which can be placed in abutment with a windscreen to be wiped, which wiper blade includes at least one longitudinal groove, in which groove at least one longitudinal strip of the carrier element is disposed, which windscreen wiper device comprises a connecting device for an oscillating arm, wherein said oscillating arm can be pivotally connected to said connecting device about a pivot axis near one end thereof. Particularly, said oscillating arm can be pivotally connected to said connecting device with the interposition of a joint part. More in particular, said wiper blade comprises a spoiler at a side thereof facing away from the windscreen to be wiped. Said longitudinal groove is preferably a central longitudinal groove accommodating said longitudinal strip. Said longitudinal strip is also called a “flexor”, while said connecting device is also indicated as a “connector”. In the framework of the present invention said connector is preferably made in one piece, also called a "one piece connector".

Such a windscreen wiper device is generally known. This prior art windscreen wiper device is designed as a so-called “flat blade” or “yokeless blade”, wherein no use is made of several yokes pivotally connected to each other, but wherein the wiper blade is biassed by the carrier element, as a

result of which it exhibits a specific curvature. The spoiler is also called an "air deflector".

The object of the invention is to provide an improved windscreen wiper device.

In order to accomplish that objective, a windscreen wiper device of the type referred to in the introduction is characterized according to the invention in that said connecting device is connected to the flexible material of said wiper blade by at least one pin of a first type and/or at least one pin of a second type, wherein

- said pin of the first type cooperates with a recess provided along an exterior edge of said longitudinal strip in order to block any movement of said wiper blade in longitudinal direction thereof relative to said longitudinal strip at the location of the interconnection of said connecting device and said wiper blade; and
- said pin of the second type is mounted through the flexible material of said wiper blade at the location of the interconnection of said connecting device and said wiper blade in order to block any lateral movement of longitudinal strip at the location of the interconnection of said connecting device and said wiper blade,

and wherein at least one of said pins is movable from a first position, wherein said pin in a pre-mounted position is fixed to said connecting device, into a second position, wherein said pin in a mounted position as a single constructional element is interconnecting said connecting device and the flexible material of said wiper blade. Advantageously, at least two pins of the first type are

provided on opposite sides of said longitudinal strip, wherein said pins of the first type are preferably located opposite one another. In other words, said pin of the first type ensures that the wiper blade and the longitudinal strip are not allowed to mutually move under the connecting device, but particularly in all other areas along the wiper blade a slight movement thereof is made possible in order to allow said wiper blade to follow any curvature of the windscreen to be wiped. It is this interaction between the pin of the first type and the wiper blade that elastomeric material (i.e. usually rubber) of said wiper blade and material of the longitudinal strip (i.e. usually steel) are forced to engage with each other in a locking manner when the connecting device is finally mounted onto the wiper blade, all at the location under the connecting device. Said pin of the first type is mounted inside said recess by stamping said pin of the first type through the flexible material of the wiper blade and inside said recess. Said pin of the second type ensures that the so-called "fishtailing phenomenon" is avoided at all times. Said wiper blade at the location outside said connecting device would normally suffer from this "fishtailing phenomenon", wherein said wiper blade on opposite sides of said connecting device vibrates in an uncontrollable manner parallel to the windscreen to be wiped. Obviously, the "fishtailing phenomenon" results in deteriorated wiping properties, with all negative consequences involved, particularly at high speeds. Said deformation by the pin of the second type is realized at the time of mounting the connecting device onto the wiper blade during assembly of all relevant parts of the wiper blade, wherein said deformation is particularly effected in a side region of the wiper blade, without having any influence on a bottom region thereof (i.e. containing a

wiping lip of the wiper blade). Consequently, wiping properties of said wiper blade are not adversely affected.

It is noted that the present invention is not restricted to the use of only one longitudinal strip forming the elastic carrier element that is particularly located in a central longitudinal groove of the wiper blade. Instead, said carrier element may also comprise two longitudinal strips, wherein said strips are disposed in opposite longitudinal grooves of the wiper blade. Said groove(s) may be closed at one outer end.

In a preferred embodiment of a windscreen wiper device in accordance with the invention said pin can be pressed from said first position into said second position.

In another preferred embodiment of a windscreen wiper device according to the invention in said first position said pin and said connecting device are made in one piece.

In another preferred embodiment of a windscreen wiper device in accordance with the invention said connecting device comprises a guiding channel for guiding said pin from said first position into said second position. Preferably, said guiding channel extends in a direction at least substantially perpendicular to the windscreen to be wiped.

In another preferred embodiment of a windscreen wiper device according to the invention said pin in a pre-mounted position is fixed to said connecting device near a free end of said guiding channel.

In another preferred embodiment of a windscreen wiper device in accordance with the invention said connecting device has a substantially U-shaped cross-section, wherein free ends of legs of said U-shaped cross-section extend inwardly so as to form grooves for receiving longitudinal sides of said wiper blade, and wherein said free ends are provided with said guiding channels for guiding said pin.

In another preferred embodiment of a windscreen wiper device according to the invention said connecting device is connected to the flexible material of said wiper blade by one pin of the first type interconnecting said connecting device and said wiper blade near the middle longitudinal plane of said connecting device perpendicular to the windscreen to be wiped and by two pairs of opposite pins of the second type interconnecting said connecting device and said wiper blade near the outer ends of said connecting device.

In another preferred embodiment of a windscreen wiper device in accordance with the invention said connecting device is connected to the flexible material of said wiper blade by one pair of opposite pins of the first type interconnecting said connecting device and said wiper blade near the middle longitudinal plane of said connecting device perpendicular to the windscreen to be wiped and by two pairs of opposite pins of the second type interconnecting said connecting device and said wiper blade near the outer ends of said connecting device.

In another preferred embodiment of a windscreen wiper device according to the invention said connecting device is connected to the flexible material of said wiper blade by

one pair of opposite pins of the first type and by one pair of opposite pins of the second type interconnecting said connecting device and said wiper blade near the outer ends of said connecting device.

In another preferred embodiment of a windscreen wiper device in accordance with the invention said connecting device is connected to the flexible material of said wiper blade by two pairs of opposite pins of the first type interconnecting said connecting device and said wiper blade near the outer ends of said connecting device.

Preferably, said connecting device is pivotally connected to said oscillating arm with the interposition of a joint part, wherein said joint part is detachably connected to said connecting device by engaging protrusions of said connecting device, at the location of said pivot axis, in recesses provided in said joint part. This is preferably realized through a snapping or clipping operation. Particularly, said joint part has an at least substantially U-shaped cross-section at the location of its connection to said connecting device, wherein said joint part is provided with a recess provided coaxially with said pivot axis. In particular, the protrusions extend outwards on either side of said connecting device and are preferably cylindrical in shape. In the alternative, said protrusions are spherical or frusto-conical in shape. Said protrusions that function as bearing surfaces are thus paced far apart, so that forces exerted thereon will be relatively low. In yet another preferred variant said joint part is provided with co-axial through holes in legs of said U-shaped cross-section thereof, wherein a pivot pin is inserted in said through holes.

The above-mentioned protrusions are preferably provided with co-axial through holes. Accordingly, the wiper blade may then be connected to the oscillating arm on the basis of a so-called "sidelock system". The oscillating arm is provided with a joint pin or a pivot pin to be inserted in said co-axial through holes. Said pivot pin protrudes in a direction towards the wiper blade and has a pivot axis extending in a direction of the oscillating movement of the oscillating arm. In the alternative, said joint part comprises at least one resilient tongue engaging in a correspondingly shaped hole provided in a base of a U-shaped cross-section of said oscillating arm, and wherein said resilient tongue is rotatable along a hinge axis between an outward position retaining said wiper blade onto said oscillating arm and an inward position releasing said wiper blade from said oscillating arm. Accordingly, the wiper blade may then be connected to the oscillating arm on the basis of a so-called "toplock system" on the basis of a bayonet connection. In order to connect the wiper blade onto the oscillating arm, the resilient tongue is initially pushed in against a spring force - as if it were a push button - and then allowed to spring back into the hole provided in the oscillating arm, thus snapping, that is clipping the resilient tongue into the hole. By subsequently pushing in again the resilient tongue against the spring force, the wiper blade may be released from the oscillating arm.

It is noted that in the invention use is made of a mounting head fixed for rotation to a shaft, wherein said shaft is rotatable alternately in a clockwise and in a counter-clockwise sense carrying said mounting head into rotation. Thus, in turn said mounting head draws said connecting

device into rotation and thereby moves said wiper blade. In the alternative, said mounting head is fixed for translation to a carriage, wherein said carriage can be translated alternately in a one linear direction and in another counter linear direction carrying said mounting head into translation. The present invention can therefore be used for circular or linear movement of said mounting head.

The invention will now be explained more in detail with reference to figures illustrated in a drawing, wherein

- figure 1 is a perspective, schematic view of a preferred embodiment of a windscreen wiper device according to the invention, with a joint part;
- figures 2 through 4 are several perspective, schematic views of a connecting device according to a first embodiment, as used in a windscreen wiper device of figure 1;
- figure 5 shows in detail a schematic view from below of the connecting device of figure 2, further elucidating the working principle of the mutual fixation of the wiper blade and the longitudinal strip at the location of the connecting device of figure 2 according the invention;
- figure 6 is a cross-sectional view of the windscreen wiper device of figure 1 along the line A-A in figure 1;
- figure 7 is a schematic, perspective view of a pin, as used in fixating the wiper blade and the longitudinal strip at the location of the connecting device of figure 3;
- figure 8 shows in detail a schematic side view of a dissembled wiper blade, as used in figure 1; and

- figure 9 shows in detail a schematic view from below of the connecting device according to a second embodiment, as used in a windscreen wiper device of figure 1; and
- figures 10 and 11 show a cross-section of the windscreen wiper device of figure 1 along the line A-A in figure 1, using the connecting device of figure 9, wherein pins are in an outward or inward position, respectively.

Figures 1 shows a preferred variant of a windscreen wiper device 1 according to the invention. Said windscreen wiper device 1 is built up of an elastomeric wiper blade 2 comprising a central longitudinal groove 3, wherein a longitudinal strip 4 made of spring band steel is fitted in said longitudinal groove 3 (see figures 5, 6 and 7). Said strip 4 forms a flexible carrier element for the rubber wiper blade 2, as it were, which is thus biassed in a curved position (the curvature in operative position being that of a windscreen to be wiped). The windscreen wiper device 1 is furthermore built up of a connecting device 5 of metal for connecting an oscillating wiper arm thereto (not shown), with the interposition of a joint part 6. The oscillating wiper arm is pivotally connected to the connecting device 5 about a pivot axis near one end. The preferred embodiment of figure 1 according to the invention comprises a spoiler or "air deflector" 7 which is made in one piece with the rubber wiper blade 2 and which extends along the entire length thereof.

Although not shown in figure 1, but fully understood by a skilled person, said oscillating arm is connected to a mounting head fixed for rotation to a shaft driven by a small motor. In use, the shaft rotates alternately in a

clockwise and in a counter-clockwise sense carrying the mounting head into rotation also, which in turn draws said oscillating arm into rotation and by means of said connecting device 5 moves said wiper blade 2.

Figures 2 through 4 show in perspective several views of a connecting device 5 used in the windscreen wiper device 1 of figure 1. As mentioned earlier, this connecting device 5 has a more or less U-shaped cross-section with legs 8. Free ends 9 of said legs 8 of said U-shaped cross-section extend inwardly so as to form grooves or slits 10 for receiving longitudinal sides 11 of said wiper blade 2. Said free ends 9 and parallel walls 12 of said connecting device 5 are provided with holes 13 for receiving one pin 14 of the first type and two pairs of opposite pins 15 of the second type, as will be further explained hereunder. Said connecting device 5 further comprises an interior space 16 functioning as a water channel extending in longitudinal direction of said connecting device 5. During use said water channel 16 transports rain water therethrough. In other words, in use rain water is carried away from a first side of said connecting device 5 facing away from said free end of said oscillating arm to a second side of said connecting device 5 facing towards said free end of said oscillating arm. As a result of the oscillatory movement of said oscillating arm, in practice an over pressure relative to the environment exists at the location of said first side of said connecting device 5, while an under pressure relative to the environment is present at the location of said second side of said connecting device 5. Due to said over pressure and said under pressure rain water is “automatically” pressed through said water channel.

With reference to figures 1 through 4 said joint part 6 is detachably connected to said connecting device 5 by engaging protrusions 17 of said connecting device 5, at the location of said pivot axis, in co-axial recesses 18 provided in said joint part 6. As shown, said protrusions 17 extend outwards on either side of said connecting device 5. The joint part 6 comprises a resilient tongue 19 extending outwardly, while the oscillating arm has a U-shaped cross-section at the location of its connection to said joint part 6, so that the tongue 19 engages in an identically shaped hole provided in a base of said U-shaped cross-section. The connecting device 5 with the wiper blade 2 is mounted onto the oscillating arm as follows. The joint part 6 being already clipped onto the connecting device 5 is pivoted relative to the connecting device 5, so that said joint part 6 can be easily slided on a free end of the oscillating arm. During this sliding movement the resilient tongue 19 is initially pushed in against a spring force and then allowed to spring back into said hole in said oscillating arm, thus snapping, that is clipping the resilient tongue 19 into the hole of the oscillating arm. This is a so-called bayonet-connection. The oscillating arm together with the joint part 6 may then be pivoted back in a position parallel to the wiper blade 2 in order to be ready for use. By subsequently pushing in again said resilient tongue 19 against the spring force (as if it were a push button), the connecting device 5 and the joint part 6 together with the wiper blade 2 may be released from the oscillating arm. Dismounting the connecting device 5 with the wiper blade 2 from the oscillating arm is thus realized by sliding the connecting device 5 and the joint part 6 together with the wiper blade 2 in a direction away from the oscillating arm.

Said longitudinal strip 4, as shown in figure 5, is provided along an exterior edge 20 thereof with a recess 21 cooperating with said corresponding pin 14 of the first type. Said recess 21 is made through a stamping operation in order to accurately control the shape of said recess 21. In mounted position said wiper blade 2 is allowed to move in longitudinal direction relative to said longitudinal strip 4 outside the location of the interconnection of said connecting device 6 and said wiper blade 2, whereas the pin 14 of the first type ensures that any such longitudinal movement of said wiper blade 2 inside said connecting device 5 is blocked. The pin 14 of the first type locally deforms the rubber. The retention of the wiper blade 2 additionally may also be the result of friction between legs 8 or the connecting device 5 and the rubber of the wiper blade 2.

Referring to figures 5 and 6, in assembled position, the four pins 15 of the second type exert a controllable, predetermined pressure on the rubber material of the wiper blade 2. Thus, any lateral movement between said longitudinal strip 4 and said wiper blade 2 at the location of their interconnection and between said connecting device 5 and said wiper blade 2 at the location of their interconnection is blocked. In use, during each oscillatory movement of the oscillatory arm, said wiper blade 2 at the location outside said connection device 5 would normally suffer from the so-called “fishtailing phenomenon”, wherein said wiper blade 2 on opposite sides of said connecting device 5 vibrates in an uncontrollable manner parallel to a windscreen to be wiped. Obviously, this “fishtailing phenomenon” results in deteriorated wiping properties, with all negative consequences involved, particularly at high speeds. Hence, said longitudinal strip 4 is allowed to

exhibit a curvature at the location of the interconnection of said connecting device 5 and said wiper blade 2. Experimental results have shown that the "fishtailing phenomenon" is now avoided according to the invention at least to a large extend.

Said pins 15 of the second type are preferably chamfered in order not to damage the flexible material of said wiper blade 2. In the alternative or in addition thereto, said pins 15 of the second type are of a softer material than the flexible material of said wiper blade 2 in order not to damage the flexible material of said wiper blade, wherein reference is made to figure 7. In the alternative or in addition thereto, said pins 15 of the second type are mounted in a tube 22 of a softer material than the flexible material of said wiper blade 2 in order not to damage the flexible material of said wiper blade.

Figure 8 shows a perspective side view of a longitudinal side 11 of the wiper blade 2, without said pins 14,15 of the first type and of the second type, but with holes 13 showing the longitudinal strip 4 and its recess 21 for the one pin of the first type.

As shown in figures 9, 10 and 11, said pins 15 are movable from a first position (figures 9 and 10), wherein said pins 15 in a pre-mounted position are fixed to said connecting device 5, into a second position (figure 11), wherein said pins 15 in a mounted position as single constructional elements are interconnecting said connecting device 5 and the flexible material of said wiper blade 2. Said pins 15 can be pressed manually from said first position (figures 9 and 10) into said second position (figure 11).In said first

position shown in figures 9 and 10 said pins 15 and said connecting device 5 are made in one piece. With reference to figures 10 and 11 said connecting device 5 comprises a guiding channel 23 for guiding each pin 15 from said first position into said second position. As depicted, said guiding channel 23 extends in a direction perpendicular to the windscreen to be wiped. In the pre-mounted position said pins 15 are fixed to said connecting device 5 near a free end of said guiding channel 23.

It is noted that figures 10 and 11 are mutually differing in the sense that in figure 10 said pins 15 are in said first position, whereas in figure 11 said pins 15 are in said second position.

The invention is not restricted to the variants shown in the drawing, but it also extends to other preferred embodiments that fall within the scope of the appended claims.

CLAIMS

1. A windscreen wiper device (1) of the flat blade type, particularly for automobiles, comprising an elastic, elongated carrier element, as well as an elongated wiper blade (2) of a flexible material, which can be placed in abutment with a windscreen to be wiped, which wiper blade (2) includes at least one longitudinal groove (3), in which groove (3) at least one longitudinal strip (4) of the carrier element is disposed, which windscreen wiper device (1) comprises a connecting device (5) for an oscillating arm, wherein said oscillating arm can be pivotally connected to said connecting device (5) about a pivot axis near one end thereof, **characterized in that** said connecting device (5) is connected to the flexible material of said wiper blade (2) by at least one pin (14) of a first type and/or at least one pin (15) of a second type, wherein
   - said pin (14) of the first type cooperates with a recess (21) provided along an exterior edge (20) of said longitudinal strip (4) in order to block any movement of said wiper blade (2) in longitudinal direction thereof relative to said longitudinal strip (4) at the location of the interconnection of said connecting device (5) and said wiper blade (2); and
   - said pin (15) of the second type is mounted through the flexible material of said wiper blade (2) at the location of the interconnection of said connecting device (5) and said wiper blade (2) in order to block any lateral movement of longitudinal strip (4) at the location of the

interconnection of said connecting device (5) and said wiper blade (2),

and wherein at least one of said pins (14,15) is movable from a first position, wherein said pin (14,15) in a pre-mounted position is fixed to said connecting device (5), into a second position, wherein said pin (14,15) in a mounted position as a single constructional element is interconnecting said connecting device (5) and the flexible material of said wiper blade (2).

2. A windscreen wiper device (1) according to claim 1, wherein said pin (14,15) can be pressed from said first position into said second position.

3. A windscreen wiper device (1) according to claim 1, wherein in said first position said pin (14,15) and said connecting device (5) are made in one piece.

4. A windscreen wiper device (1) according to claim 1, 2 or 3, wherein said connecting device (5) comprises a guiding channel for guiding said pin (14,15) from said first position into said second position.

5. A windscreen wiper device (1) according to claim 4, wherein said guiding channel extends in a direction at least substantially perpendicular to the windscreen to be wiped.

6. A windscreen wiper device (1) according to claim 4 or 5, wherein said pin (14,15) in a pre-mounted position is fixed to said connecting device (5) near a free end of said guiding channel.

7. A windscreen wiper (1) according to claim 4, 5 or 6, wherein said connecting device (5) has a substantially U-shaped cross-section, wherein free ends (9) of legs (8) of said U-shaped cross-section extend inwardly so as to form grooves (10) for receiving longitudinal sides (11) of said wiper blade (2), and wherein said free ends (9) are provided with said guiding channels for guiding said pin (14,15).

8. A windscreen wiper device (1) according to any of the preceding claims 1 through 7, wherein said connecting device (5) is connected to the flexible material of said wiper blade (2) by one pin (14) of the first type interconnecting said connecting device (5) and said wiper blade (2) near the middle longitudinal plane of said connecting device (5) perpendicular to the windscreen to be wiped and by two pairs of opposite pins (15) of the second type interconnecting said connecting device (5) and said wiper blade (2) near the outer ends of said connecting device (5).

9. A windscreen wiper device (1) according to any of the preceding claims 1 through 7, wherein said connecting device (5) is connected to the flexible material of said wiper blade (2) by one pair of opposite pins (14) of the first type interconnecting said connecting device (5) and said wiper blade (2) near the middle longitudinal plane of said connecting device (6) perpendicular to the windscreen to be wiped and by two pairs of opposite pins (15) of the second type interconnecting said connecting device (5) and said

wiper blade (2) near the outer ends of said connecting device (5).

10. A windscreen wiper device (1) according to any of the preceding claims 1 through 7, wherein said connecting device (5) is connected to the flexible material of said wiper blade (2) by one pair of opposite pins (14) of the first type and by one pair of opposite pins (15) of the second type interconnecting said connecting device (5) and said wiper blade (2) near the outer ends of said connecting device (5).

11. A windscreen wiper device (1) according to any of the preceding claims 1 through 7, wherein said connecting device (5) is connected to the flexible material of said wiper blade (2) by two pairs of opposite pins (14) of the first type interconnecting said connecting device (5) and said wiper blade (2) near the outer ends of said connecting device (5).

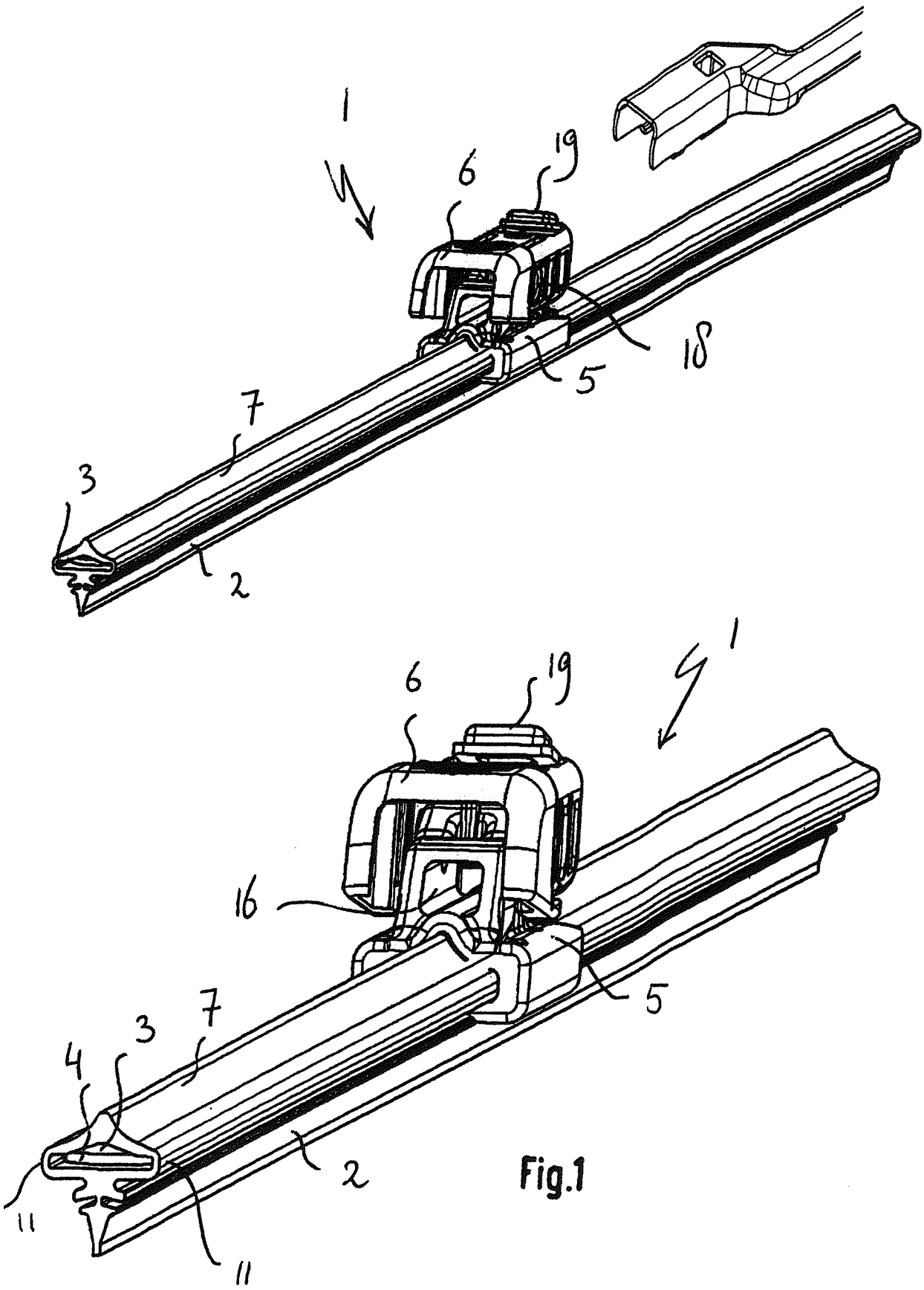


Fig.1

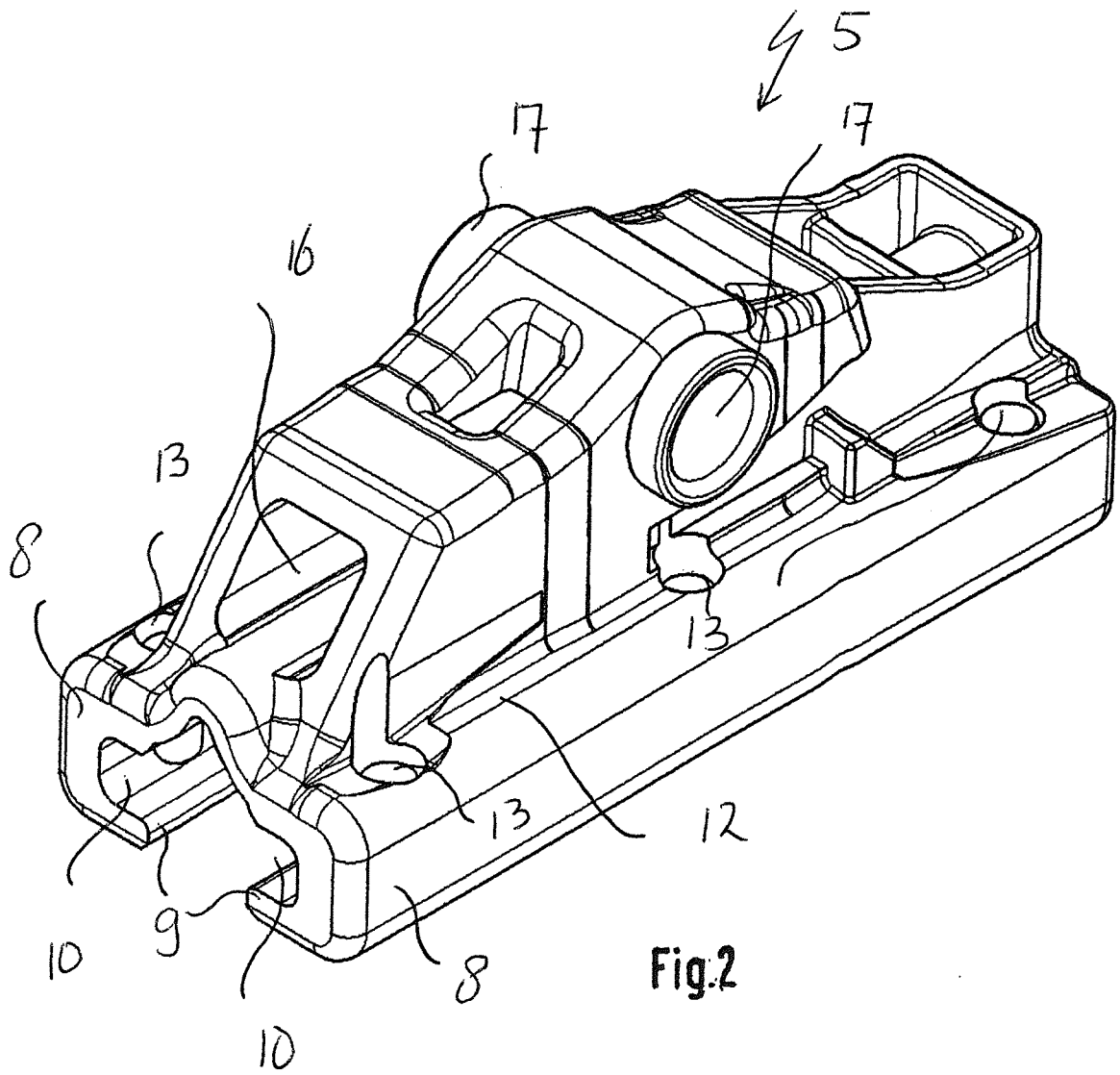


Fig.2

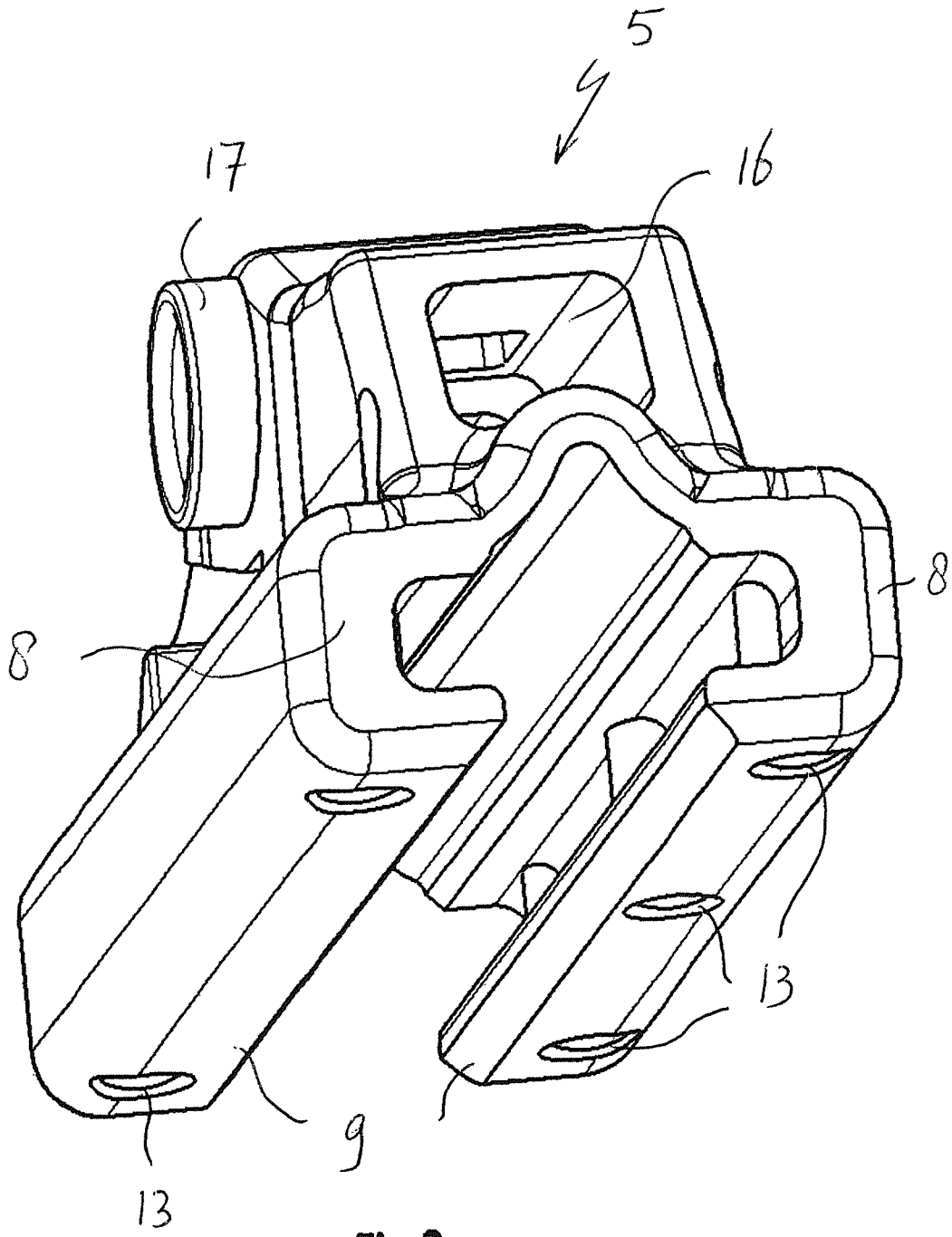


Fig.3

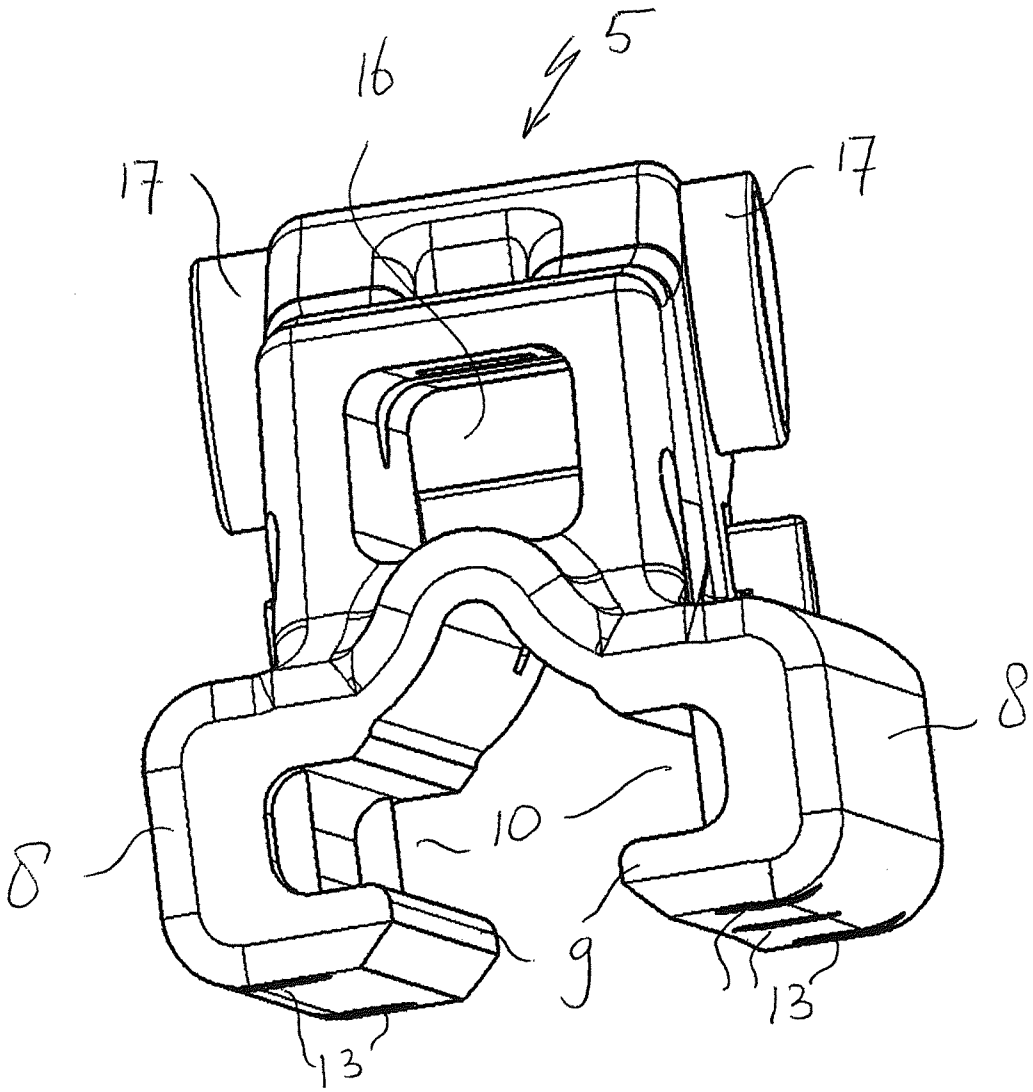
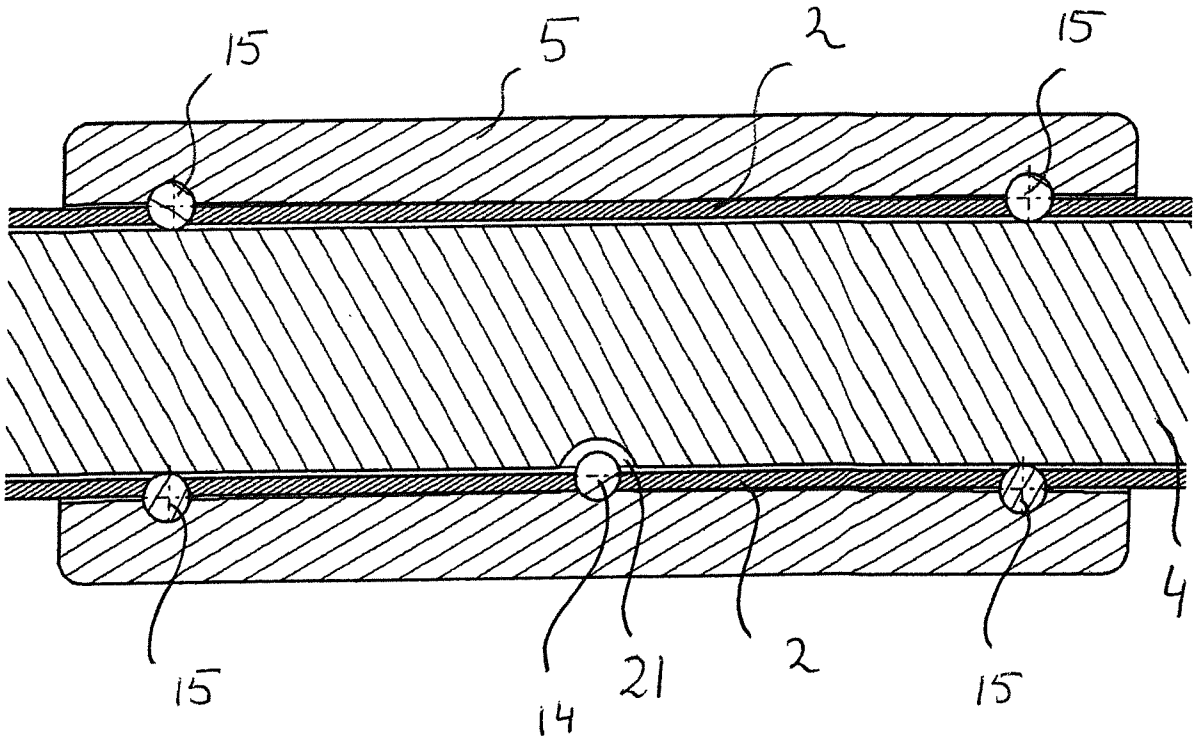


Fig.4



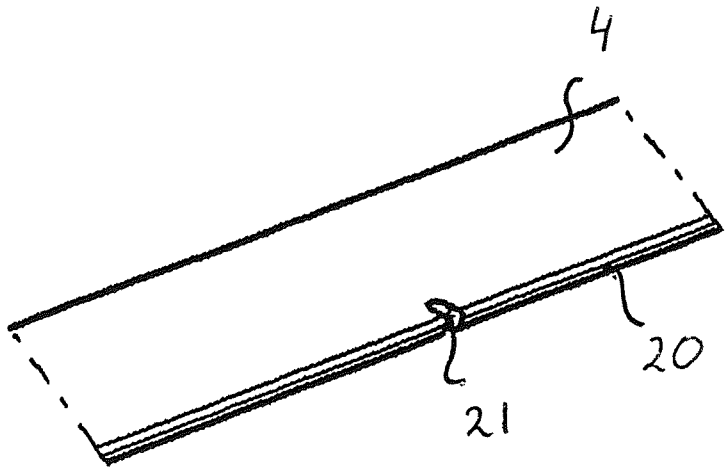


Fig.5

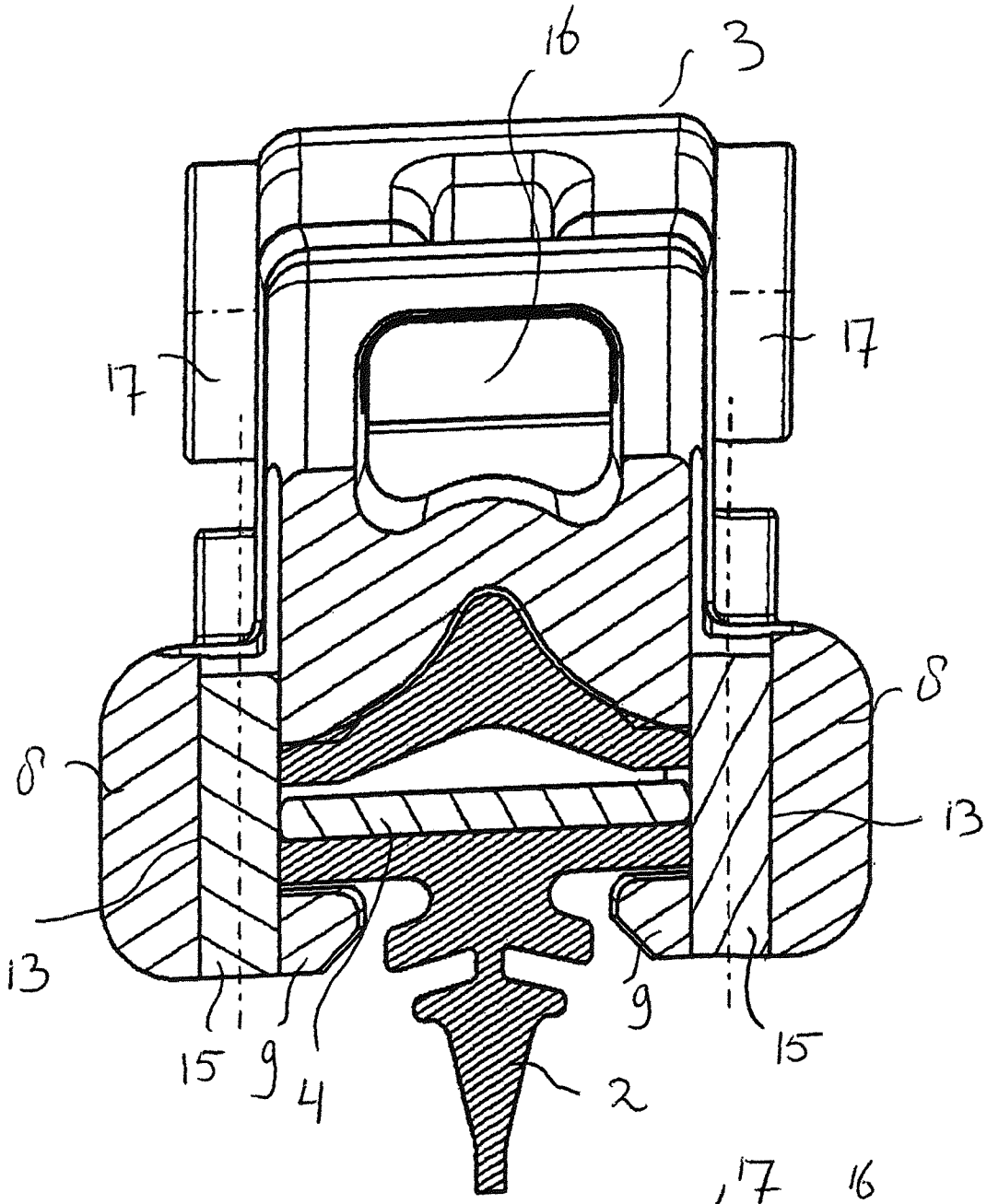
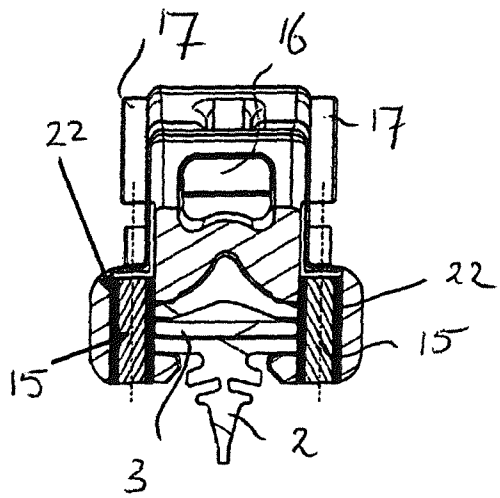


Fig.6



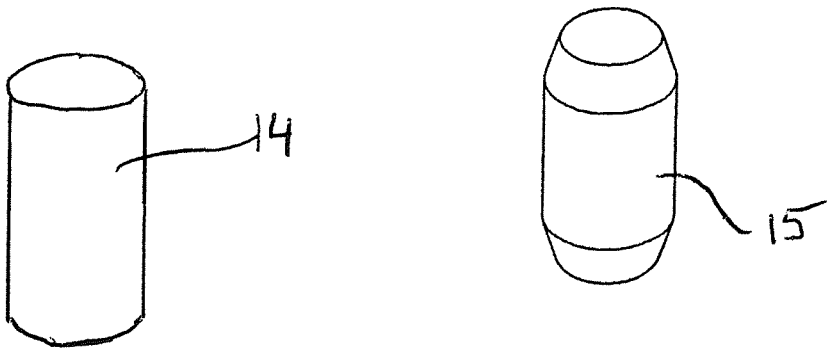


Fig.7

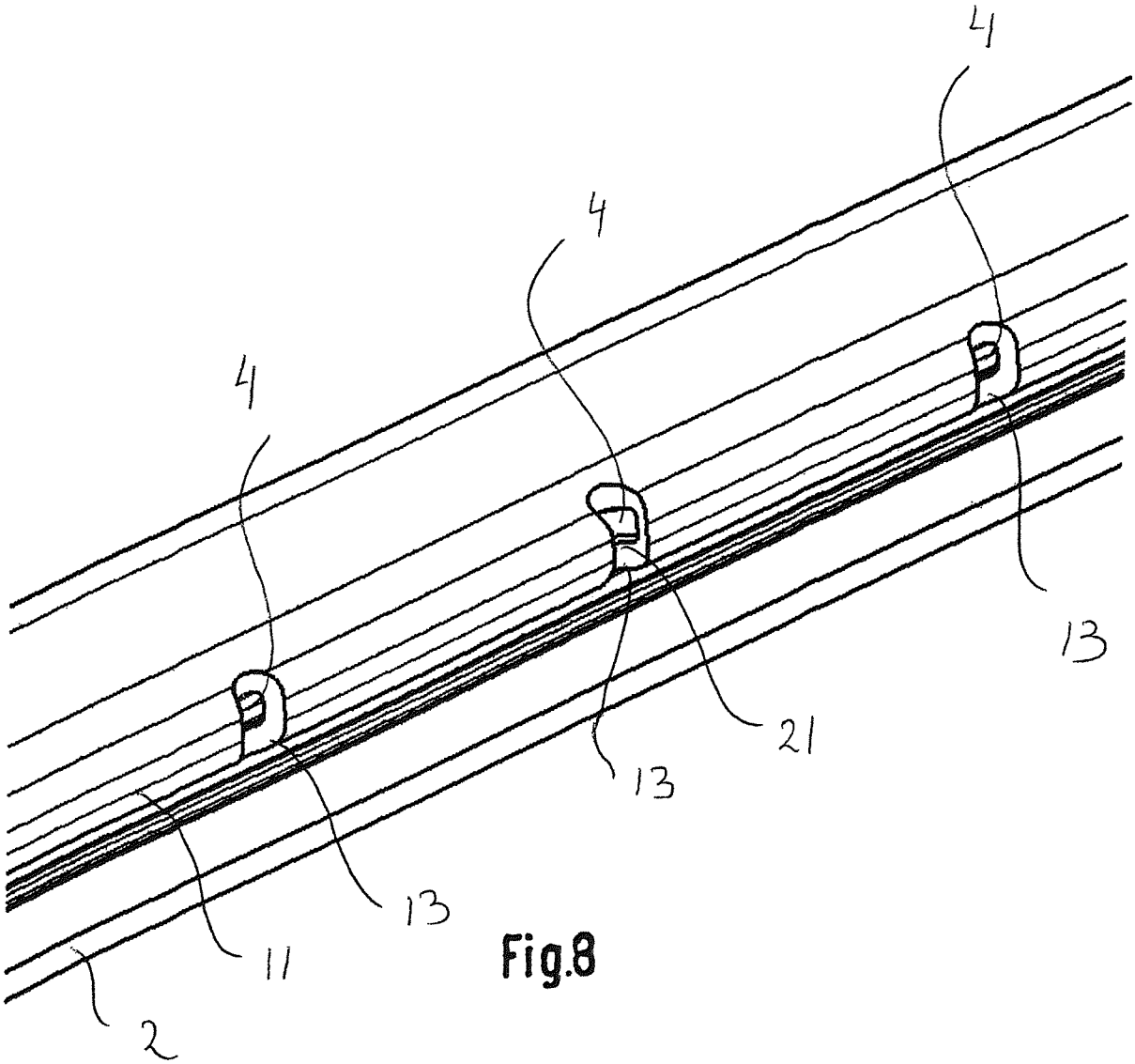


Fig.8

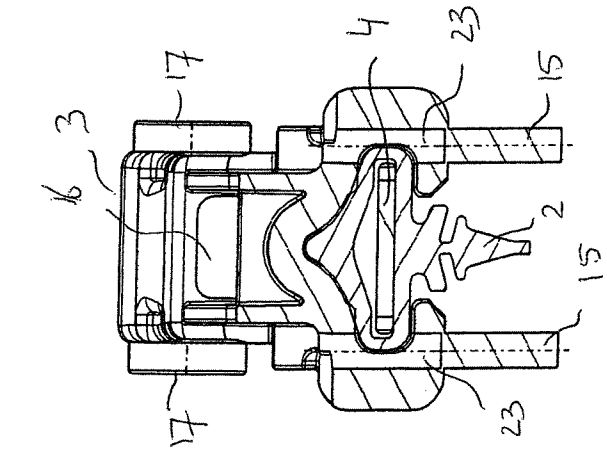


Fig.10

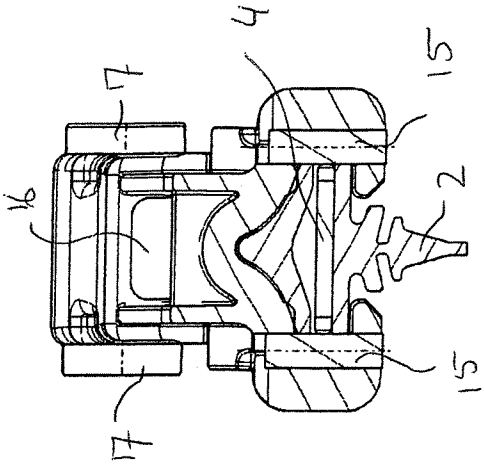


Fig.11

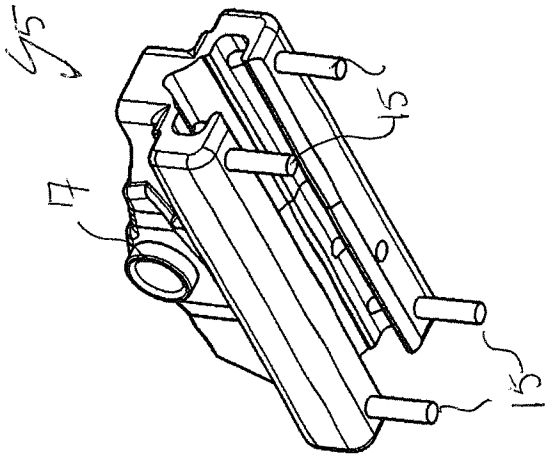
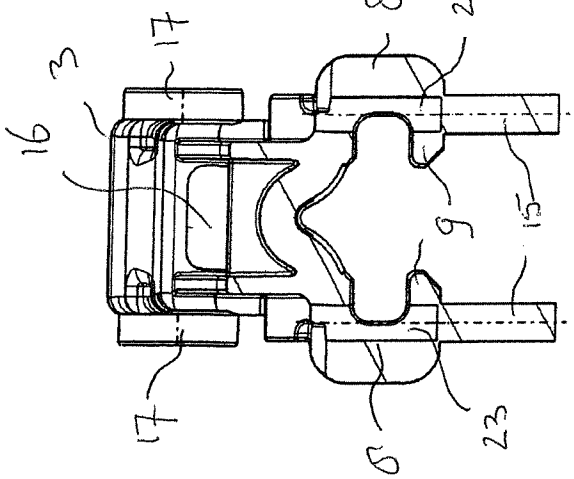
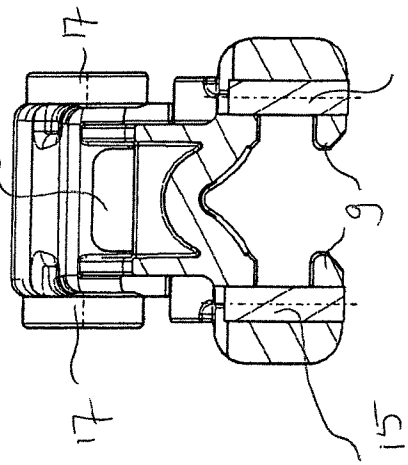


Fig.9

Before



After



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/060779

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60S1/38
ADD.

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)
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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 100 43 426 A1 (VALEO AUTO ELECTRIC GMBH [DE]) 14 March 2002 (2002-03-14) paragraph [0049] - paragraph [0056]; figures 8-10	1-6
A	DE 100 58 208 A1 (VALEO AUTO ELECTRIC GMBH [DE]) 11 July 2002 (2002-07-11) paragraph [0040] - paragraph [0066]; figures	1-11
A	WO 2010/016000 A1 (TEKLAS KAUCUK SANAYI VE TICARE [TR]; BICICI BANU [TR]; BOZKURTLU MURAT) 11 February 2010 (2010-02-11) paragraph [0037] - paragraph [0059]; figures	1-11

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
20 February 2012	29/02/2012

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, Fax: (+31-70) 340-3016	Sangiorgi, Massimo

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/060779

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

International application No
PCT/EP2011/060779

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