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(54) Title: MOUNTING HEAD

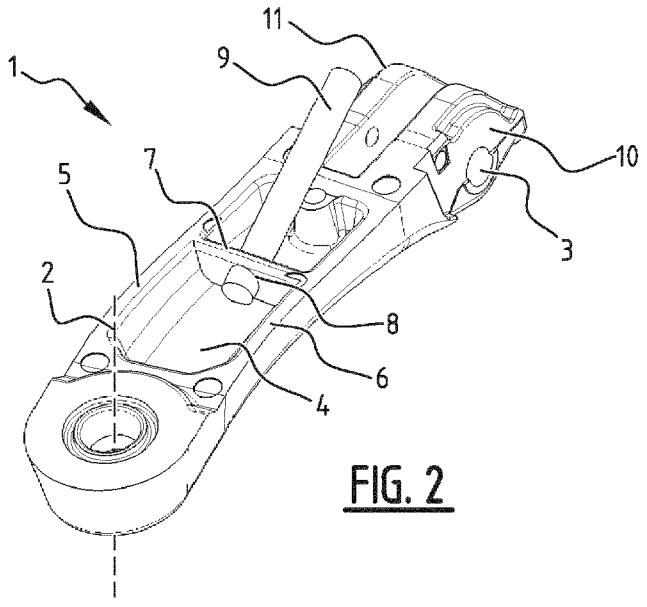

FIG. 2

(57) **Abstract:** Mounting head, particularly for automobiles, mountable on a drive shaft rotatable alternately in a clockwise and in a counter-clockwise sense carrying the mounting head into rotation also, wherein said mounting head is arranged to be pivotally connected by means of a pivot pin to a wiper arm connectable to a wiper blade placed in abutment with a windscreen to be wiped, wherein said mounting head comprises a flexible conduit for guiding a washing liquid therethrough from a washing liquid source towards a nozzle for spraying the guided washing liquid onto a windscreen to be wiped, with the special feature that said mounting head comprises an inner transverse rib having a hole for guiding said flexible conduit therethrough and holding said flexible conduit in place.

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MOUNTING HEAD

The present invention relates to a mounting head, particularly for automobiles, mountable on a drive shaft rotatable alternately in a clockwise and in a counter-clockwise sense carrying the mounting head into rotation also, wherein said mounting head is arranged to be pivotally connected by means of a pivot pin to a wiper arm connectable to a wiper blade placed in abutment with a windscreen to be wiped, wherein said mounting head comprises a flexible conduit for guiding a washing liquid therethrough from a washing liquid source towards a nozzle for spraying the guided washing liquid onto a windscreen to be wiped.

Such a mounting head is generally known. In use the wiper arm is pivotally connected to the known mounting head by means of a rivet. The wiper arm has a substantially U-shaped cross-section near said rivet comprising two side walls, wherein a part of the mounting head extends between the side walls and beyond said rivet, wherein said part is provided with opposite surfaces each facing towards a respective side wall of the wiper arm. The mounting head and the wiper arm may be equipped with complementary stop surfaces cooperating together in order to limit a pivot angle of the wiper arm.

A disadvantage of the known mounting head is that in practice a metal clip is used for holding said flexible conduit onto said mounting head. In practice it has become apparent that said metal clip is sensitive to corrosion leading to a flow of corrosion to the outside. Further, manufacturing and mounting said metal clip requires additional labour and intricate equipment.

It is an object of the invention to obviate this disadvantage, in the sense that at minimum costs - without using complex machinery and additional tools – the flexible conduit is hold in place onto the mounting head in a safe and reliable (controllable) manner, without extra components and complex tooling.

It is noted that the present invention is not restricted to cars, but also refers to rail coaches and other (fast) vehicles.

Thereto, according to the invention a mounting head mentioned in the preamble is characterized in that said mounting head comprises an inner transverse rib having a hole for guiding said flexible conduit therethrough and holding said flexible conduit in place. Particularly, said transverse rib extends between side walls of said mounting head. More in particular, said side walls form legs of

a U-shaped cross-section of said mounting head. Preferably, said internal rib is made in one piece with said mounting head, preferably through moulding.

Preferably, a part of said mounting head provided with opposite surfaces is arranged to extend beyond said pivot pin and between two side walls of a U-shaped cross-section of said wiper arm, and wherein each opposite surface of said part is arranged to face towards a respective side wall of said wiper arm, optionally with a space between them.

In another preferred embodiment of a mounting head in accordance with the invention said hole has a closed circumference. Preferably, said hole is drilled. In the alternative, said hole has a non-closed circumference, i.e. said circumference is partially open.

In another preferred embodiment of a mounting head according to the invention in use said transverse rib is invisible from the outside.

In another preferred embodiment of a mounting head in accordance with the invention said mounting head is made of a metallic material, preferably aluminium.

The mounting head in the present invention is particularly used in combination with a windscreen wiper device of the "flat blade" type connected to the wiper arm. Preferably, said windscreen wiper device comprises 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 a longitudinal strip of the carrier element is disposed, which windscreen wiper device comprises a connecting device for the wiper arm.

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

- figure 1 is a perspective, schematic view, seen from below, of a preferred embodiment of a mounting head according to the invention (without a flexible conduit for a washing liquid);

- figure 2 corresponds to figure 1, on the understanding that flexible conduit is mounted inside said mounting head from below; and

- figure 3 shows a side view of figure 2.

Figure 1 show a first preferred variant of a mounting head 1 made of aluminum according to the invention. As illustrated in figure 1, the mounting head 1 can be fixed for rotation to a shaft 2 driven, via a mechanism not illustrated, by a small motor. A wiper arm (not shown) is supported by the mounting head 1, wherein said wiper arm in turn supports a wiper blade (not shown) with the help of a connecting device (not shown). The wiper arm is pivotally connected to the mounting head 1 by means of a pivot pin 3 in the form of a rivet. A spring (not shown) is hooked with its first end on the mounting head 1 and with its second end on to the wiper arm in order to ensure that the wiper arm and thus the wiper blade connected thereto is pressed onto a windscreen to be wiped. In use, the shaft 2 rotates alternately in a clockwise and in a counter-clockwise sense carrying the mounting head 1 into rotation also, which in turn draws the wiper arm into rotation and by means of the connecting device moves the wiper blade.

As depicted in figures 1, 2 and 3, the mounting head 1 locally has a U-shaped cross-section with a base 4 and two legs acting as sidewalls 5,6 of the mounting head 1. An internal rib 7 extending between these sidewalls 5,6 in a transverse direction is made in one piece with said mounting head 1. The internal rib 7 is invisible from the outside in mounted position of said mounting head 1. As shown, the internal rib 7 has a drilled hole 8 with a closed circumference for guiding a flexible conduit 9 therethrough and holding said flexible conduit 9 in place relative to said mounting head 1. Said flexible conduit 9 serves to guide, i.e. transport a washing liquid therethrough from a washing liquid source towards a nozzle for spraying the guided washing liquid onto a windscreen to be wiped.

As depicted, a part of said mounting head provided with opposite surfaces 10,11 is arranged to extend beyond said pivot pin 3 and between two side walls of a U-shaped cross-section of said wiper arm. Each opposite surface 10,11 of said part is arranged to face towards a respective side wall of said wiper arm, optionally with a space between them.

CLAIMS

1. Mounting head (1), particularly for automobiles, mountable on a drive shaft (2) rotatable alternately in a clockwise and in a counter-clockwise sense carrying the mounting head (1) into rotation also, wherein said mounting head (1) is arranged to be pivotally connected by means of a pivot pin to a wiper arm connectable to a wiper blade placed in abutment with a windscreen to be wiped, wherein said mounting head (1) comprises a flexible conduit (9) for guiding a washing liquid therethrough from a washing liquid source towards a nozzle for spraying the guided washing liquid onto a windscreen to be wiped, **characterized in that** said mounting head (1) comprises an inner transverse rib (7) having a hole (8) for guiding said flexible conduit (9) therethrough and holding said flexible conduit (9) in place.

2. Mounting head (1) according to claim 1, wherein said transverse rib (7) extends between side walls (5,6) of said mounting head (1).

3. Mounting head (1) according to claim 2, wherein said side walls (5,6) form legs of a U-shaped cross-section of said mounting head (1).

4. Mounting head (1) according to claim 1, 2 or 3, wherein said hole (8) has a closed circumference.

5. Mounting head (1) according to claim 4, wherein said hole (8) is drilled.

6. Mounting head (1) according to any of the preceding claims 1 through 5, wherein in use said transverse rib (7) is invisible from the outside.

7. Mounting head (1) according to any of the preceding claims 1 through 6, wherein said mounting head (1) is made of a metallic material, preferably aluminum.

8. Mounting head (1) according to any of the preceding claims 1 through 7, wherein a part of said mounting head (1) provided with opposite surfaces (10,11) is arranged to extend beyond said pivot pin (3) and between two side walls of a U-shaped cross-section of said wiper arm, and wherein each opposite surface (10,11) of said part is arranged to face towards a respective side wall of said wiper arm.

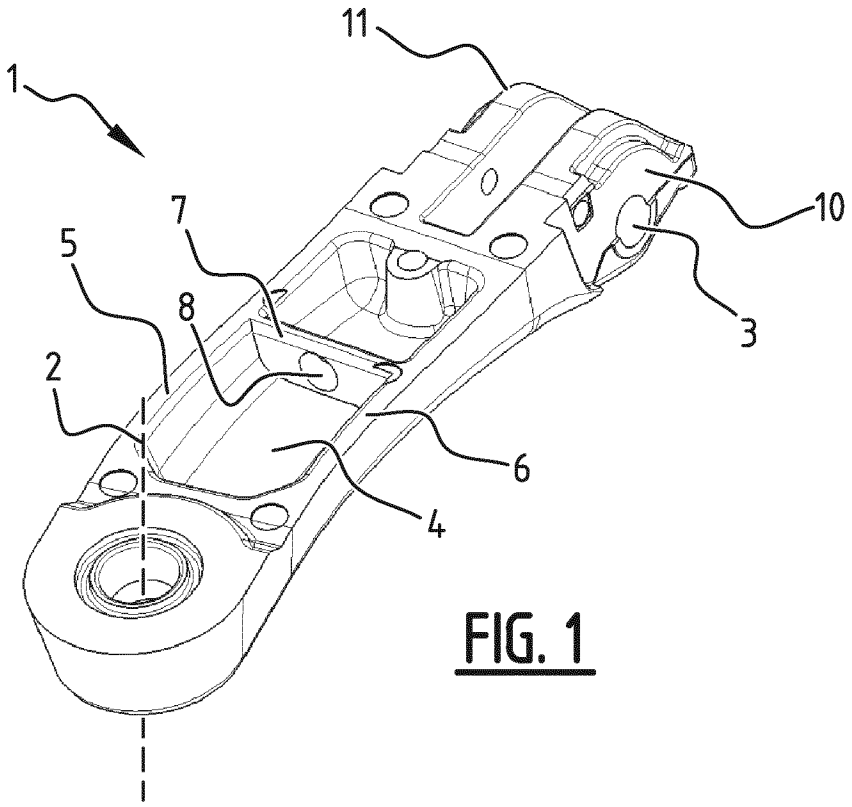

FIG. 1

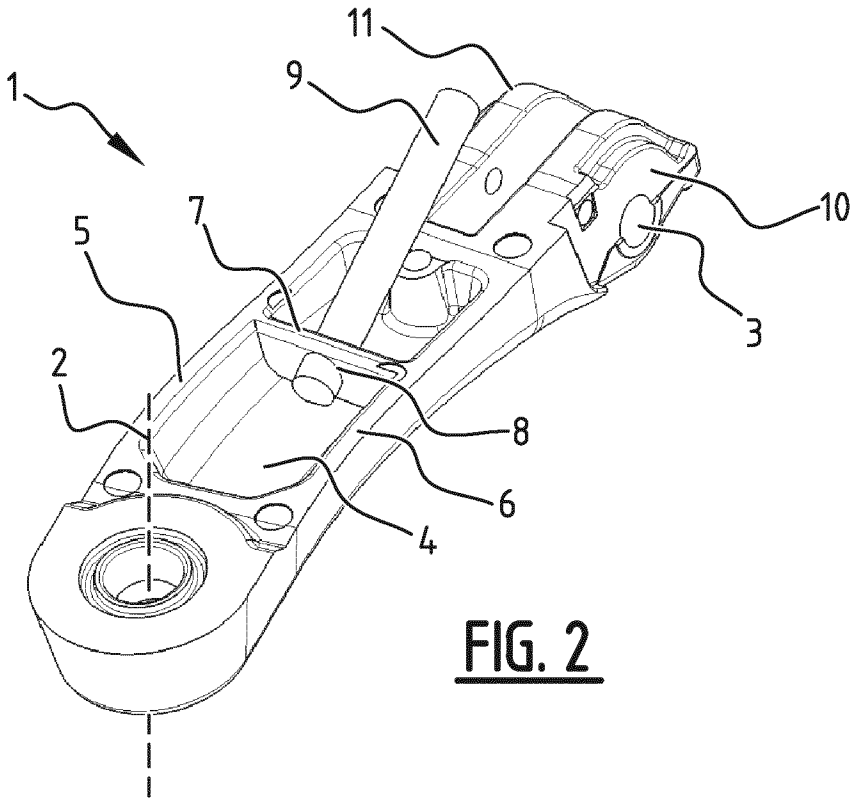

FIG. 2

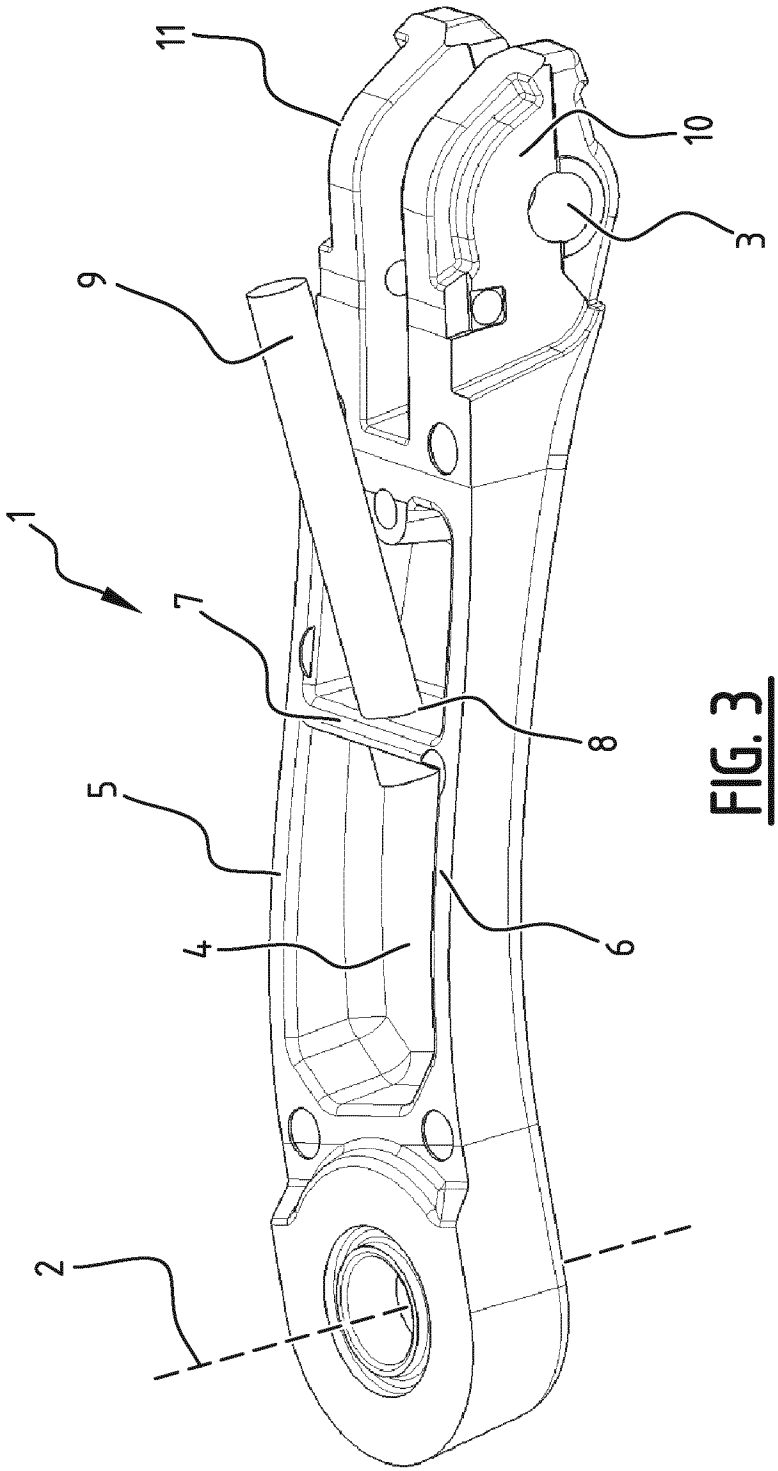

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2023/056473

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60S1/34 B60S1/48
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 practicable, 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	FR 3 099 902 A1 (BOSCH GMBH ROBERT [DE]) 19 February 2021 (2021-02-19)	1-6
A	paragraph [0029] - paragraph [0030]; figures 1-4	7,8
X	DE 10 2013 209959 A1 (BOSCH GMBH ROBERT [DE]) 4 December 2014 (2014-12-04)	1-3,6-8
A	paragraph [0021] - paragraph [0030]; figures 1-5	4,5
A	FR 3 037 021 A1 (PEUGEOT CITROEN AUTOMOBILES SA [FR]) 9 December 2016 (2016-12-09) figures 1,2	1-8
A	EP 3 138 746 A1 (VALEO SYSTEMES DESSUYAGE [FR]) 8 March 2017 (2017-03-08) figures 21,22	1-8

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"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
12 May 2023	24/05/2023

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2023/056473

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