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[Continued on next page]

(54) Title: **FIXING CLIP**

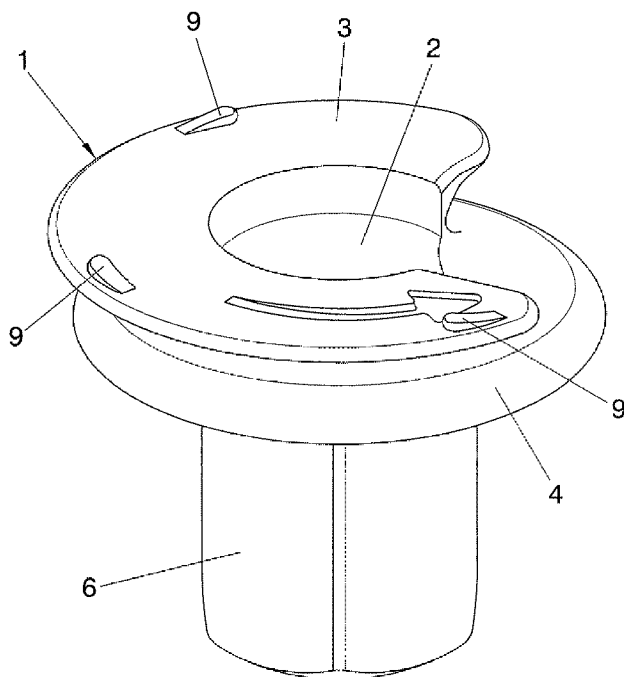


FIG. 1

(57) Abstract: A clip for fixing a panel to the body (8) of a vehicle, which is embodied as a body comprising at the top portion a centrally open double head (1) open by a hole (2) and is formed by an elastic top platform (3) and a bottom platform (4) apart from each other so as to act as a gripper on the plastic part (5) which must be fixed to the body (8) and where the elastic top platform (3) has on its outer side at least one boss (9) intended to transmit the pressure of the joint of the clip and the body (8) to said plastic part (5).



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

— *of inventorship (Rule 4.17(iv))*

Declarations under Rule 4.17:

Published:

— *as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii))*

— *with international search report (Art. 21(3))*

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FIXING CLIP

SUBJECT OF THE INVENTION

The invention, as described in the title of the present
5 specification, relates to a fixing element or clip for
fixing a panel to the body of a vehicle.

More specifically, the fixing clip of the present
invention is intended for joining plastic parts to the
10 parts below the body of vehicles. These plastic parts
have the function of protecting said parts below the
body against the impact of stones or the like which may
be propelled against the vehicle when in motion.

15 BACKGROUND OF THE INVENTION

In the technical field of the invention many elements
intended to join panels to different parts of the
vehicle body, such as joining systems by way of welding
or rivets or other similar fixing elements are known.

20

Generally each of these systems offers a series of
functions which may not always be useful. Thus, in the
case of welding, it is evident that such a system is
suitable when the panels or parts to be joined together
25 are made of aluminum or rolled metal. These systems,
moreover, have a number of drawbacks inherent to their
own philosophies, such as the high cost of operating
and maintaining a welding production line with
sufficient reliability for these types of joints.

30

As regards the other joining systems, which are based
on different fixing elements such as rivets or the like
which fix the panels to different parts of the vehicle,
these usually have drawbacks associated with the
35 difficulty of preassembling them on the panel,
resulting in a longer assembly time which obviously
directly and negatively affects the final price.
Furthermore, in addition to the above there is the fact
that some of these elements, during transportation,

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fall from the part on which they are preassembled, with the obvious disadvantages involved.

5 In other cases the main drawback consists in the high cost and/or complexity of the actual element, since it consist of various parts, which also increase the final price of the assembly.

10 Finally, there are fixing elements which, although they are simple and made as a single piece, require the presence of lugs or engaging means in the part or panel on which they are preassembled, with the result that said parts or panels must be injected together with said engaging means, as in the case of ES 2237535.

15 However, owing to the present-day cost-reduction policies adopted by manufacturers, with increasing frequency the plastic parts must be made by means of forming instead of injection-molding operations, said forming operations not allowing the presence of engaging or retaining lugs or parts, but only holes.

DESCRIPTION OF THE INVENTION

25 The fixing clip described in the present invention solves the aforementioned drawbacks, providing an effective, low-cost and reliable means for fixing panels to the body of vehicles. Specifically the fixing clip according to the invention consists of a simple single part which, being reliable and easy to assemble, 30 does not require the cooperation of any engaging or fixing element on the plastic part onto which it is to be assembled other than its reception hole.

35 In order to facilitate final assembly on the vehicle of the protective plastic parts, these may include, already preassembled, the fixing clips according to the invention so that during a final operation these parts may be quickly and easily fixed.

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To this end, the fixing clip according to the present invention consists of a body which at the top portion comprises a centrally open double head formed by an elastic top platform and a bottom platform which are
5 separated from each other by such a distance as to receive between them the edge of the plastic part to be fixed to the platforms.

Lastly, the double head of the fixing clip according to
10 the invention extends underneath by means of a hollow bolt which is intended to receive the joining elements present in the body.

In this way, joining together of the vehicle body and
15 the protective plastic parts is performed by means of the clip of the invention, which on the one hand is fixed to said body by means of conventional joining elements and on the other hand retains the plastic parts between the two platforms present in its double
20 head and which act as a gripper.

Furthermore, in order to achieve correct fixing of the plastic parts to the body, the plastic part/fixing clip preassembled set must have a sufficient amount of play
25 or tolerance in the three spatial directions so that joining is possible even if the joining elements present on the body and the fixing clip of the invention are not perfectly aligned.

30 However, in order for this joint to be effective once said assembly has been joined together, i.e. in order to prevent relative displacement of the three parts: body, plastic part and fixing clip, said clip comprises along the peripheral part of the outer side of the top
35 platform of its double head at least one boss intended to transmit the pressure exerted to the elastic top platform during joining together of the body and clip so that the gripper formed by the two platforms closes on the plastic part, getting rid of the play and

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forming a stable joint.

DESCRIPTION OF THE DRAWINGS

In order to complement the description which is provided and with the aim to help the understanding of the features of the invention, the present description is accompanied by a set of drawings which form an integral part thereof and show, in an illustrative and non-limiting manner, the following:

10

Figure 1 shows a perspective view of the fixing clip of the present invention;

Figure 2 shows a perspective view of a plastic on which are preassembled various fixing clips such as the one shown in Figure 1;

Figure 3 shows a sectional view of the assembly consisting of the vehicle body, fixing clip and plastic part for protecting the vehicle parts below the body.

PREFERRED EMBODIMENT OF THE INVENTION

In the light of the abovementioned figures and according to the numbering system adopted, said figures show a preferred exemplary embodiment of the invention comprising the parts and elements which are mentioned and described in detail below.

Thus, as can be seen in said figures, the fixing clip of the present invention consists of a body at the top of which comprises a double head (1) which may be circular, polygonal or of any other suitable shape.

Said double head (1) is centrally open, defining a hole (2), and is formed by an elastic top platform (3) and a bottom platform (4), separated from each other by such a distance as to receive between them the edge of the plastic part (5) to be fixed to the body (8) of the vehicle.

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Moreover, as can be seen in Figures 1 and 3, the double head (1) of the fixing clip is extended underneath by means of a hollow bolt (6) intended to receive the joining elements (7) present on the body (8).

According to a preferred embodiment of the invention, said joining elements (7) comprise a threaded element which cooperates with a threaded zone present inside the hollow bolt (6) of the fixing clip. Nevertheless, said joining elements (7) may also consist of a threadless shank intended to engage by pressure inside said hollow bolt (6). In this latter case, joining together of both threadless elements will be performed by applying the appropriate pressure.

Said hollow bolt (6) of the fixing clip of the invention comprises an hexagonal outer surface according to a preferred embodiment of the invention which can be seen in Figure 1 and which allows tightening thereof using a machine tool, such as a pneumatic or electric gun. Nevertheless, said outer surface could be circular or of any other suitable shape.

As explained above and as can be appreciated in Figures 1 and 3, in order to compensate for the play present between the fixing clip and the plastic part (5) and transmit the pressure exerted during joining together of the clip and the body (8) to said plastic part (5), said clip comprises on the periphery of the outer side of the elastic top platform (3) at least one boss (9).

Said boss (9) may also be continuous along the entire perimeter or else may consist of small discontinuous sections, in which case they will be arranged in such a way that the stresses are uniformly transmitted.

Furthermore, according to other possible embodiments of

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the invention, not shown, with a view to improving the gripping effect exerted by the elastic top platform (3) and bottom platform (4) on the plastic part (5), the fixing clip may incorporate additional bosses both on
5 the inner side of the elastic top platform (3) and on the inner side of the bottom platform (4).

Said additional bosses may also have different configurations such as radial, longitudinal,
10 transverse, etc.

Lastly, according to a preferred embodiment of the invention and as can be appreciated in the figures, especially in Figure 1, the fixing clip of the present
15 invention has such a configuration that the elastic top platform (3) is not completely circular but has an opening which allows the easy insertion of said clip in the plastic part (5), by introducing firstly one of the ends of the clip and then introducing the rest thereof
20 by means of rotation.

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CLAIMS

1. A fixing clip, characterized in that it comprises at the top portion a double head (1) which is centrally open by a hole (2) and is formed by an elastic top platform (3) and a bottom platform (4) separated from each other by such a distance as to recieve between them the edge of the plastic part (5) to the body (8) of the vehicle, where the elastic top platform (3) has on the periphery of its outer side at least one boss (9) intended to transmit the pressure during joining together of the clip and the body (8) to said plastic part (5).

2. The fixing clip according to claim 1, characterized in that the double head (1) is extended underneath by means of a hollow bolt (6) intended to house joining elements (7) present on the body (8).

3. The fixing clip according to any of the preceding claims, characterized in that the boss (9) is continuous along the entire perimeter.

4. The fixing clip according to any of claims 1 and 2, characterized in that the boss (9) has small discontinuous sections arranged so that the stresses are uniformly transmitted.

5. The fixing clip according to any of the preceding claims, characterized in that the inner side of the elastic top platform (3) has additional bosses.

6. The fixing clip according to any of the preceding claims, characterized in that the inner side of the bottom platform (4) has additional bosses.

7. The fixing clip according to any of the preceding claims, characterized in that the elastic top platform (3) has an opening for facilitating the

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insertion of the clip in the plastic part (5).

8. The fixing clip according to any of the preceding claims, characterized in that the double head
5 (1) has a circular shape.

9. The fixing clip according to any of claims 1 and 2, characterized in that the hollow bolt (6) comprises a hexagonal outer surface.

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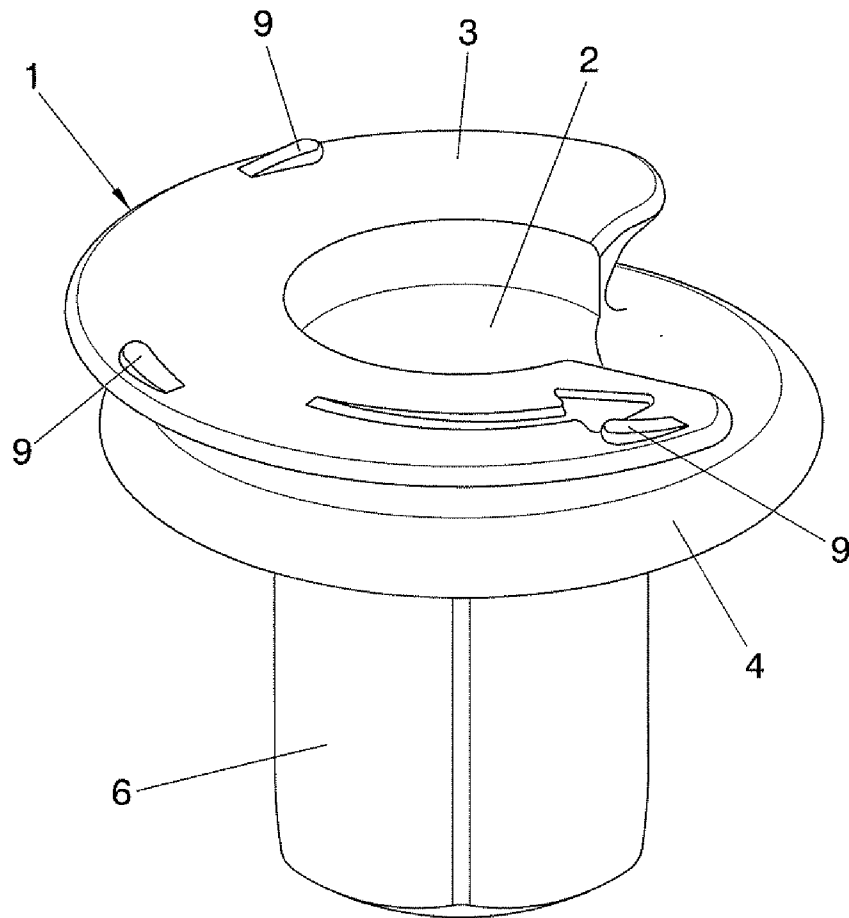


FIG. 1

2/3

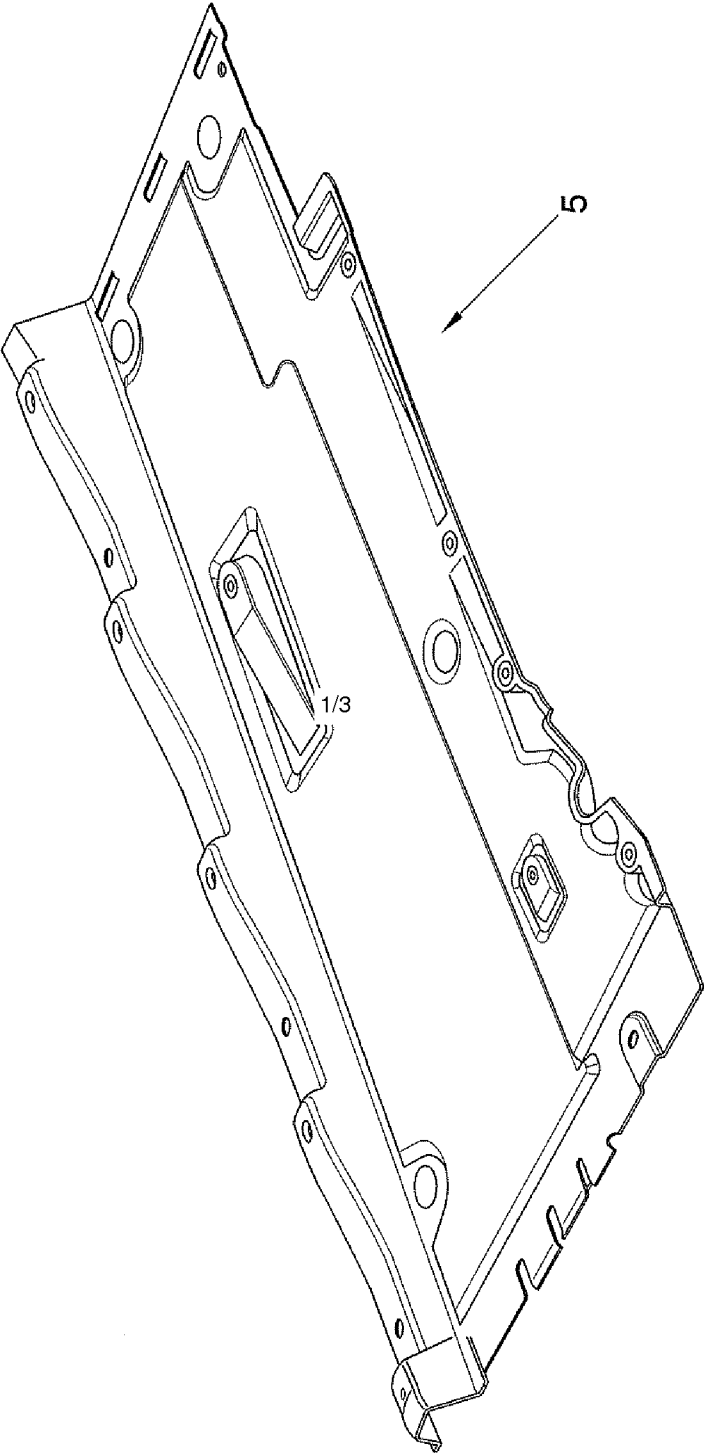


FIG. 2

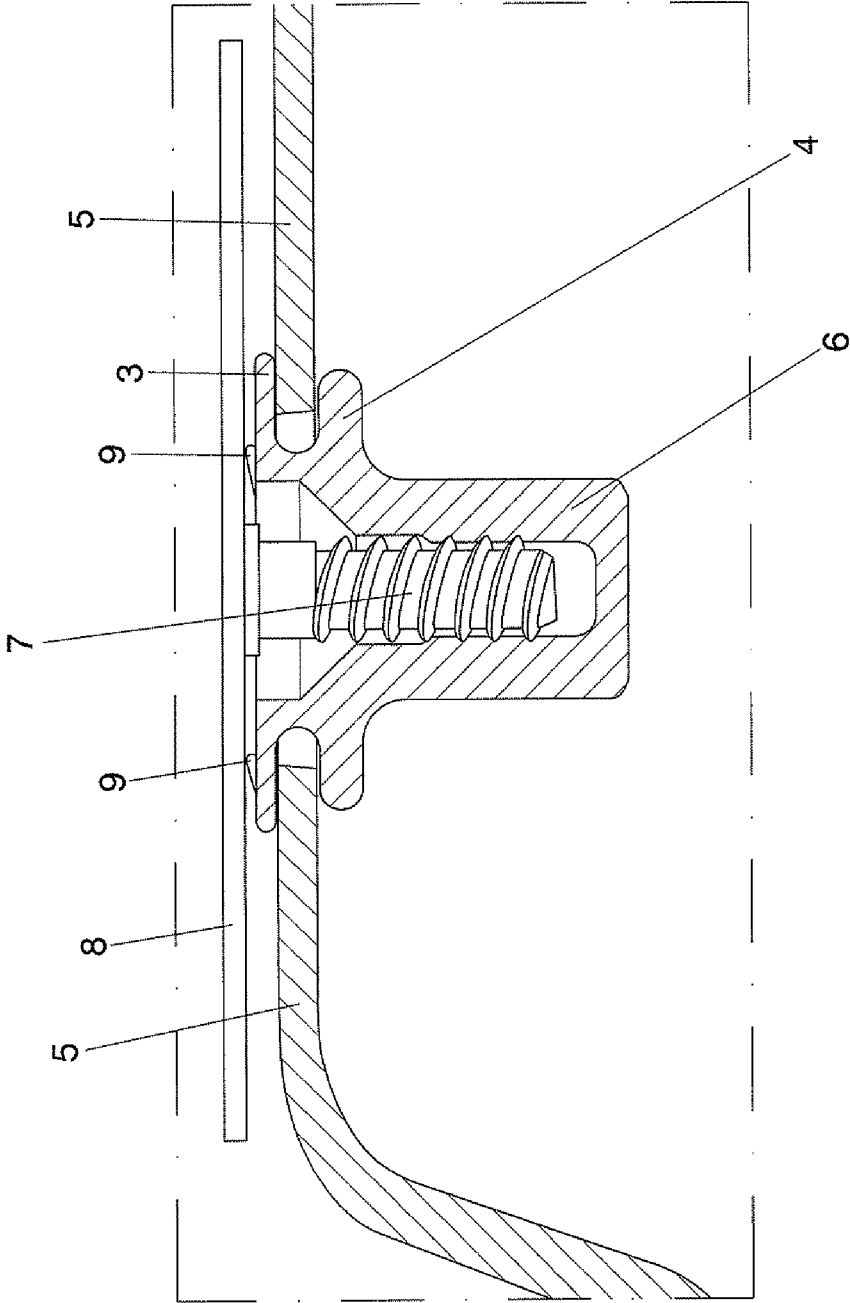


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/044322

A. CLASSIFICATION OF SUBJECT MATTER

INV. B60R13/02 F16B5/06
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)

F16B B60R

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)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 087 464 A (ITW LTD) 18 October 1967 (1967-10-18) the whole document -----	1-9
A	US 4 393 551 A (WOLLAR BURNELL J ET AL) 19 July 1983 (1983-07-19) the whole document -----	1-9
A	US 4 176 428 A (KIMURA SHIGERU [JP]) 4 December 1979 (1979-12-04) abstract figures 1-5 -----	1-9
A	US 5 173 026 A (CORDOLA JEAN-PIERRE [FR] ET AL) 22 December 1992 (1992-12-22) abstract figure 6 -----	1-9

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

☒ See patent family annex.

* Special categories of cited documents :

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

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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

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INTERNATIONAL SEARCH REPORT

International application No

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