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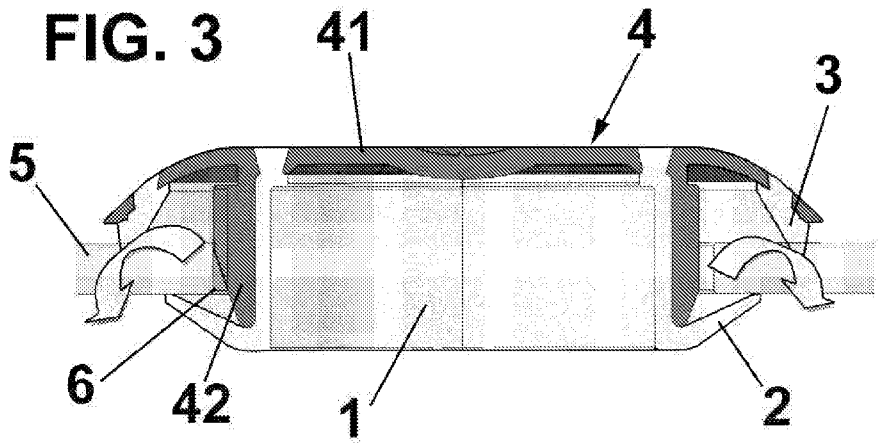
(54) Title: SEALING ELEMENT FOR ORIFICES

FIG. 3



(57) Abstract: A sealing element for orifices includes a body (1) provided with sealing means, wherein said sealing means comprise a first sealing lip (2) and also may comprise a second sealing lip (3). It makes it possible to provide a sealing element for orifices, in particular for orifices in vehicle bodywork panels, thereby avoiding the use of meltable or heat-fusible material, which requires the application of heat in order to provide an adequate seal.

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SEALING ELEMENT FOR ORIFICES

TECHNICAL FIELD

[0001] The present invention relates to a sealing element for orifices, for example for application thereof to vehicle bodywork panels.

BACKGROUND

[0002] A variety of ways in which to close off orifices made in vehicle bodywork panels or in other components are known, and to that end mention may be made, first, of document ES2006404.

[0003] This document describes a plastics closure cover for closing an opening in vehicle bodywork, and is based on the fact that the cover includes a closing-off perimeter lip in an inclined arrangement and an elastic interlock ring opposite said lip, such that the latter rests on the periphery of the element or panel comprising the orifices in which the cover is actually accommodated, while the interlock ring rests on the lower face of said panel or element in question.

[0004] This document also describes the fact that, beneath the interlock ring, provision has been made for a support that can be configured as another elastic lip, which presses against the interlock ring in order to hold same in permanent contact on the surface corresponding to the element or panel comprising the orifice closed off by the cover, in order to achieve a hermetic seal.

[0005] Although this type of closure is simple, it is obvious that leaktightness is, on occasion, deficient or non-optimum owing to deformation or even possible breakage not only of the support element but also of the interlock ring.

[0006] In order to improve leaktightness, document ES2097565 describes another elastic closure cover, which includes a heat-deformable gasket and tabs for anchoring the cover,

although, logically, the gasket needs to be heated up in order that it can offer optimum leaktightness.

[0007] This document also describes a closing-off device for sealing orifices in panels, which is designed, in particular, to seal orifices made in panels such as those in motor-vehicle bodywork, which comprises a body in the form of a cup with a divergent peripheral exterior flange, deriving from a neck, formed by the cup shape of the body and diverging outward from said neck, and a divergent peripheral interior flange at the end of said neck opposite said exterior flange.

[0008] In all cases, the problem posed by the aforesaid sealing elements is that none insulates either thermally or acoustically and, also, the interlock is complex since the deformable flanges, tabs or arrowhead fittings that they incorporate in the various cases do not offer optimum reliability in terms of the function therefore, irrespective of the fact that they are complex.

[0009] In an attempt to solve these problems, documents EP0631923A1 and EP0779203A1 describe respective closing-off/sealing devices provided with two sealing zones or bands based on a meltable material or glue, with the aim that when applying the closing-off/sealing device to the orifice in the corresponding panel a first sealing zone is produced, corresponding with the support of the external perimeter lip of the body of the closing-off device on the upper surface of the panel, with the interposition of the glue or meltable, sealing material.

[0010] Furthermore, a second closing-off or sealing band is constituted by a concentric ring provided in the neck of the actual closing-off/sealing device, such that in this case sealing is established between the contour of the orifice and this meltable bead or band in the form of a ring located on the neck of the closing-off/sealing device, thereby establishing two sealing bands and achieving therewith an enhanced hermetic seal and optimum insulation between the two parts defined on either side of the orifice closed off by means of the aforesaid device.

[0011] However, the drawback of the solutions described in these documents lies in the fact that the glue or heat-fusible product is arranged outside the body or component constituting the closing-off/sealing device, which gives rise to problems when mounting on the corresponding orifice since the cutting operation of obtaining the orifice gives rise to the corresponding burr that will establish a first zone of contact when it is attempted to apply or to insert the closing-off/sealing device onto an orifice of this type, such that, the heat-fusible glue or product being a soft material, upon abutting against the burr the closing-off/sealing device will be anchored by said burr, with the result that it is necessary to effect mounting in a determined, concrete manner, which is not always possible to implement.

[0012] In an attempt to resolve this drawback, document EP1375308A1 describes a closing-off/sealing device that comprises a second sealing ring made from meltable material inside the internal flange in order to afford a corresponding sealing area on the surface of the panel to which it is applied, with the aim of allowing mounting of the closing-off device inside the corresponding orifice of the panel without initial contact between the soft material of the rings composed of meltable material and a burr that is formed when the orifice is drilled.

[0013] Therefore, an object of the present invention is to provide a sealing element for orifices, in particular for orifices in vehicle bodywork panels, thereby avoiding the use of meltable or heat-fusible material, which requires the application of heat in order to provide an adequate seal.

SUMMARY

[0014] The aforesaid drawbacks are resolved by means of the sealing element of invention, which offers further advantages as described below.

[0015] The sealing element for orifices comprises a body provided with sealing means, wherein said sealing means comprise a first sealing lip.

[0016] According to a preferred embodiment, said sealing means also comprise a second sealing lip.

[0017] Advantageously, said first sealing lip is in a single piece with said body and said second sealing lip likewise is in a single piece with said body.

[0018] Furthermore, said first sealing lip is elastic and moves toward said body upon insertion of the sealing element in an orifice.

[0019] Preferably, said body is made from a thermoplastic elastomeric material.

[0020] According to a preferred embodiment, said body is of tubular form, provided with said first sealing lip on one of its ends, and said second sealing lip is arranged at the other end of said body of tubular form.

[0021] Advantageously, the sealing element for orifices in accordance with the present invention also comprises an additional body connected to said body, said additional body being made from a material that is harder than said body.

[0022] Furthermore, said additional body comprises a cover that closes one of the ends of the body of tubular form and a tubular section connected on said body of tubular form, said cover extending over said second sealing lip.

[0023] With the sealing element in accordance with the present invention, the orifice is sealed without the need to use a heat-fusible material such that there is no need to apply heat in order to seal the orifice.

[0024] Furthermore, when two sealing lips are used a double seal is obtained, both in the top part of the orifice and also in the bottom part thereof.

[0025] By using an additional body made from a material that is harder than the rest of the sealing element, said additional body may be made from a less expensive material, with the consequent saving in terms of the cost of the sealing element.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Drawings are attached to enhance understanding of that which has been set forth and, schematically and purely by way of non-limiting example said drawings represent one practical embodiment.

[0027] Figure 1 is a perspective view of the sealing element in accordance with the present invention prior to the insertion thereof in an orifice;

[0028] Figure 2 is a sectional elevation of the sealing element in accordance with the present invention during the insertion thereof into an orifice; and

[0029] Figure 3 is a sectional elevation of the sealing element in accordance with the present invention inserted into an orifice.

DETAILED DESCRIPTION

[0030] As shown in the figures, in accordance with the embodiment shown, the sealing element in accordance with the present invention is formed by two bodies connected together, a body 1 provided with sealing means, which are described below, and an additional body 4.

[0031] Said body 1, or sealing body, comprises a first sealing lip 2 and a second sealing lip 3. Said body 1 is of tubular form and said first and second sealing lips 2, 3 are arranged at the ends of said body 1 of tubular form.

[0032] The body 1 is made from a thermoplastic elastomeric material that allows sealing without the application of heat and the additional body 4 is made from a material that is harder and less expensive, which lowers the cost of the sealing element.

[0033] The additional body 4, meanwhile, comprises a cover 41 that closes one of the ends of the body 1 of tubular form and covers the second sealing lip 3, and a tubular section 42 that is connected to the exterior part of the body 1 of tubular form.

[0034] As shown in figure 1, in order to seal an orifice 6 made in a panel 5, for example a metal vehicle bodywork panel, the sealing element is inserted in the direction shown by the arrow in figure 1.

[0035] At the start of insertion into the orifice 6, the first sealing lip 2 folds by virtue of its elastic nature, as shown in figure 2.

[0036] Upon passing completely through the orifice 6, the first sealing lip 2 opens up by virtue of its elastic nature, as shown in figure 3, sealing the orifice 6 in the lower part thereof. Furthermore, said second sealing lip 3 seals the orifice 6 in the upper part thereof.

[0037] Thus, double sealing of the orifice 6 is achieved without the need to apply heat as in the case of conventional sealing elements.

[0038] Despite the fact that reference has been made to a specific embodiment of the invention, it is obvious to a person skilled in the art that the sealing element described may be varied and modified in numerous ways and that all the details mentioned may be replaced by other, technically equivalent details without departing from the scope of protection defined by the attached claims.

CLAIMS

1. A sealing element for orifices, which comprises a body (1) provided with sealing means, wherein said sealing means comprise a first sealing lip (2).

2. The sealing element for orifices as claimed in claim 1, wherein said sealing means also comprise a second sealing lip (3).

3. The sealing element for orifices as claimed in claim 1, wherein said first sealing lip (2) is in a single piece with said body (1).

4. The sealing element for orifices as claimed in claim 2, wherein said second sealing lip (3) is in a single piece with said body (1).

5. The sealing element for orifices as claimed in claim 1, wherein said first sealing lip (2) is elastic and moves toward said body (1) upon insertion of the sealing element in an orifice.

6. The sealing element for orifices as claimed in any one of the preceding claims, wherein said body (1) is made from a thermoplastic elastomeric material.

7. The sealing element for orifices as claimed in claim 1, wherein said body (1) is of tubular form, provided with said first sealing lip (2) on one of its ends.

8. The sealing element for orifices as claimed in claims 2 and 7, wherein said second sealing lip (3) is arranged at the other end of said body (1) of tubular form.

9. The sealing element for orifices as claimed in any one of the preceding claims, which also comprises an additional body (4) connected to said body (1).

10. The sealing element for orifices as claimed in claim 9, wherein said additional body (4) is made from a material that is harder than said body (1).

11. The sealing element for orifices as claimed in claims 7 and 9, wherein said additional body (4) comprises a cover (41) that closes one of the ends of the body of tubular form.

12. The sealing element for orifices as claimed in claim 11, wherein said additional body (4) comprises a tubular section (42) connected on said body (1) of tubular form.

13. The sealing element for orifices as claimed in claims 2 and 12, wherein said cover (41) extends over said second sealing lip (3).

FIG. 1

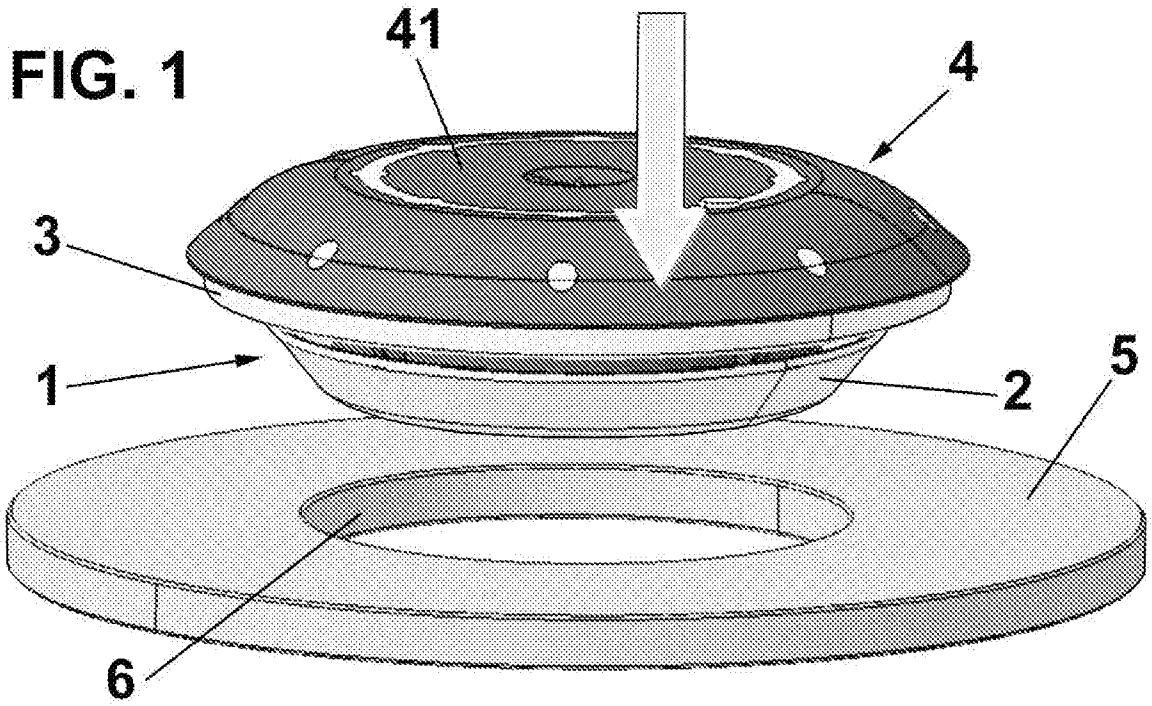


FIG. 2

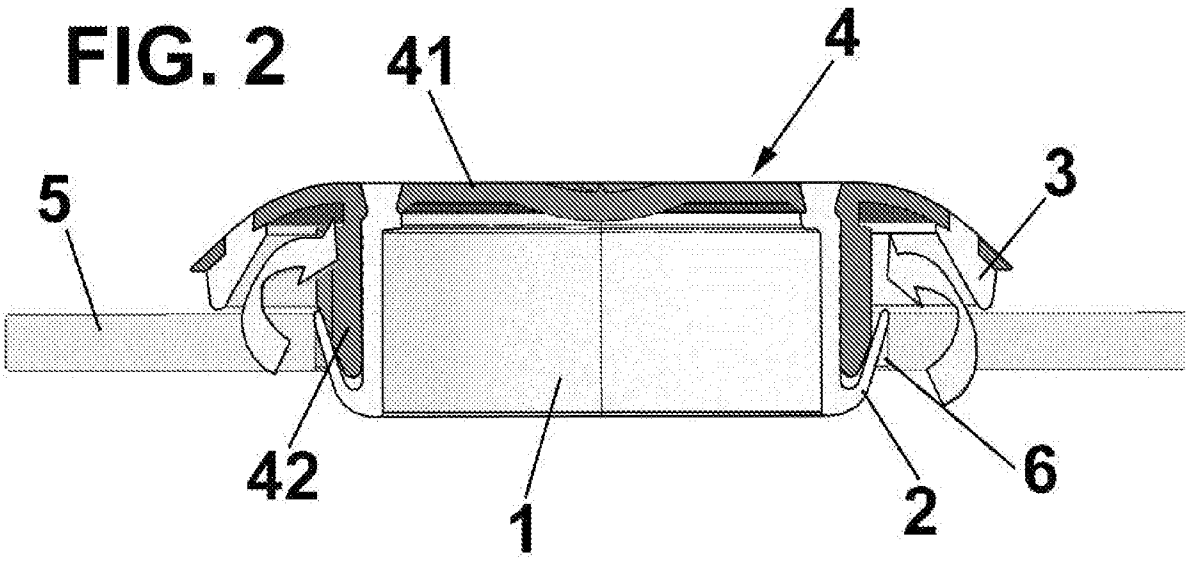
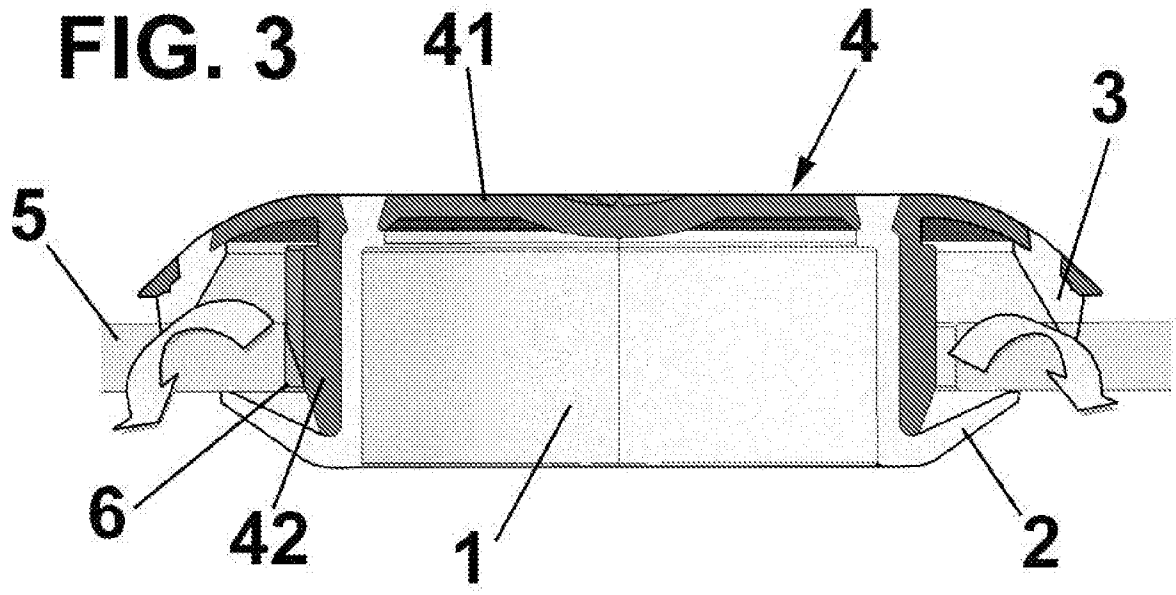


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/059626

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16J15/02 B62D25/24
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)
F16J B62D

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	DE 10 2009 018395 A1 (TRW AUTOMOTIVE ELECTRON & COMP [DE]; HOFMANN JUERGEN [DE] ET AL.) 4 November 2010 (2010-11-04) paragraphs [0013], [0036]; figures 2, 5-6	1-13
X	DE 10 2015 102169 A1 (TRW AUTOMOTIVE ELECT & COMPONENTS GMBH [DE]) 18 August 2016 (2016-08-18) paragraph [0012]; figures 1, 2, 12	1-13

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

☒ See patent family annex.

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"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
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2019/059626

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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