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(54) Safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining

(57) Safety helmet (1), particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, comprising an outer cap (2) and an inner padding (3) internally associated with the outer cap (2) and wearable over the head of a user.

Moreover, there is a comfort lining (4) associated with the inner padding (3) by means of a supporting frame (5) fastened to the inner padding (3) and a secondary supporting frame (6) fastened to the comfort lining (4) and removably associated with the supporting frame (5).

The peculiarity of the invention consists in that it comprises fastening elements (7) that are integral with the supporting frame (5), and are provided with portions that are undercut and embedded in the inner padding (3).

More precisely, the inner padding (3) is made by means of a process of co-molding together with the supporting frame (5).

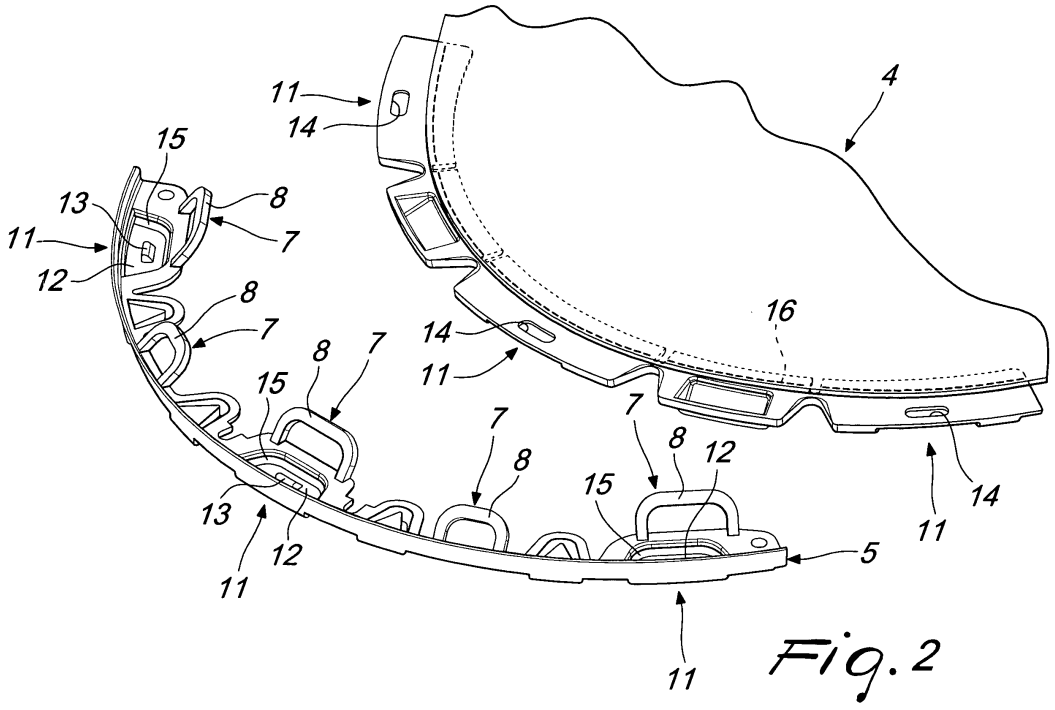

Fig. 2

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Description

[0001] The present invention relates to a safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining.

[0002] Nowadays, in the field of safety devices and more specifically in the field of sports equipment for sports that can be practiced in the open air, such as for example motorcycle racing, motor racing and the like, safety helmets are known that are constituted substantially by an outer cap of rigid material which defines the structurally resistant part of the helmet and by an inner padding made of a material such as, for example, expanded polystyrene, which is adapted to absorb the energy developed following the impact of the safety helmet against another body.

[0003] In order to ensure adequate comfort during their use, safety helmets are generally provided with a comfort lining fastened to the inner padding of the helmet itself.

[0004] Currently the fastening of this comfort lining is achieved by using glues which are deposited on the fabric used to make the comfort lining, which is subsequently placed on the inner padding which lines the parts thereof that are designed to come into contact with the user's head.

[0005] For safety reasons, all manufacturers also use adhesive tape to further anchor the comfort lining to the inner padding of the helmet.

[0006] This system for fastening the comfort lining is not devoid of drawbacks, among which is the fact that, when using the helmet at operating temperatures that are often fairly high, the comfort lining can easily peel away from the inner padding.

[0007] In fact, it is sufficient to think of the temperature reached inside the helmet, for example, during its use for more than a few hours on a sunny day in the hottest months of the year.

[0008] The synergic action of the heat inside the helmet and of the sweat produced by the user is more than enough to weaken the adhesive capacity of the glues and/or the adhesive tape used, resulting in unwanted peeling and detachment of the comfort lining.

[0009] It should be clarified that any peeling of the comfort lining from the inner padding of the helmet, besides causing considerable discomfort for the user who experiences the feeling of using a low quality product, can result in unwanted displacements of the lining proper which can intrude into spaces intended for the movement of the inner sun visor and/or of the outer visor, if they are provided, with consequent obstruction thereof, as well as leaving regions of the inner padding uncovered which, by coming into contact with the user's skin or scalp, can result in skin chafing and/or irritations that are quite unpleasant.

[0010] Another drawback of conventional safety helmets consists in that the presence of adhesive tape, which is used for fastening the comfort lining, also determines an increase in thickness in the regions where the tape is used, thus altering the inner comfort of the helmet.

[0011] In order to overcome these drawbacks, some manufacturers use a supporting frame which is coupled to the inner padding and with which a secondary supporting frame is engaged, which subsequently carries the comfort lining.

[0012] This fastening system is not devoid of drawbacks either, among which is the fact that it only partly solves the problem of the fabric being directly fastened to the inner padding by means of gluing.

[0013] In fact, the supporting frame and the secondary supporting frame are still usually glued to the inner padding and to the comfort lining respectively, thus entailing the same drawbacks described previously.

[0014] Moreover, another drawback of conventional safety helmets, which have a supporting frame and a secondary supporting frame for fastening the comfort lining, consists in that, since usually these frames and secondary frames have particularly thin profiles, the gluing operation is particularly delicate and is not immune to possible incorrect positionings thereof with respect to the inner padding and to the comfort lining.

[0015] The aim of the present invention is to provide a safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, that offers the widest guarantees of the positioning of the comfort lining with respect to the inner padding being fixed over time and under any condition of use, in such a manner as to overcome the above mentioned drawbacks.

[0016] Within this aim, an object of the present invention is to provide a safety helmet that enables an easy positioning of the comfort lining with respect to the inner padding during the operations to manufacture the helmet.

[0017] Another object of the present invention is to provide a safety helmet that offers the widest guarantees of reliability and safety during normal use thereof.

[0018] Another object of the present invention is to provide a safety helmet that can be made at low cost when compared with the necessary costs of making conventional helmets.

[0019] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, comprising an outer cap and an inner padding internally associated with said outer cap and wearable over the head of a user, a comfort lining being further provided which is associated with said inner padding by means of a supporting frame fastened to said inner padding and a secondary supporting frame fastened to said comfort lining and removably associated with said supporting frame, characterized in that it comprises fastening elements that are integral with said supporting frame and are provided with portions that are undercut and embedded in said inner padding, said inner padding being made by means of a process of co-molding together with said supporting frame.

[0020] Further characteristics and advantages of the

present invention will become better apparent from the description of a preferred, but not exclusive, embodiment of a safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a partially cutaway perspective view of an embodiment of a safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, according to the invention;

Figure 2 is an exploded perspective view of the safety helmet shown in Figure 1;

Figure 3 is a cross-sectional view of the safety helmet shown in the previous figures, taken at the interface region between the inner padding and the comfort lining of the safety helmet, according to the invention.

[0021] With reference to the figures, the safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, generally designated with the reference numeral 1, comprises an outer cap 2, commonly made of a rigid and resistant material, and an inner padding 3 associated internally with the outer cap 2 and wearable over the head of a user.

[0022] Conveniently, the inner padding 3 is made at least partially of a deformable material like expanded polystyrene, for absorbing the energy developed as a result of the impact of the safety helmet 1 against another body.

[0023] Moreover, a comfort lining 4 is provided which is associated with the inner padding 3 by means of a supporting frame 5 fastened to the inner padding 3 and a secondary supporting frame 6 fastened to the comfort lining 4 and removably associated with the supporting frame 5.

[0024] Moreover, in the specific embodiment proposed, the safety helmet 1 is a safety helmet for use in motorcycle racing and, in particular, is a safety helmet of the open-face type. However, what is described below can also be applied to other types of helmet like full-face helmets or modular/flip-up helmets and/or helmets that are designed to be used in sectors other than motorcycle and motor racing, while still remaining within the inventive concept of the present invention.

[0025] According to the invention, fastening elements 7 are provided which are integral with the supporting frame 5, and are provided with portions that are undercut and embedded in the inner padding 3.

[0026] More specifically, the fastening elements 7 comprise arches 8, preferably five in number, equally spaced apart from each other and integral with the supporting frame 5.

[0027] Advantageously, the inner padding 3 is made by means of a process of co-molding together with the supporting frame 5, so as to fill the undercut regions with the fastening elements 7, and so render the supporting frame 5 non-separable, either on purpose or by accident, from the inner padding 3.

[0028] For this reason, the inner padding 3 is made of expanded polystyrene at least in the part at the region associated with the supporting frame 5.

[0029] As shown in Figures 1 and 2, the supporting frame 5 is associated with the inner padding 3 in proximity to an upper edge 9 of a front opening 10 defined on the outer cap 2 and designed to be arranged in front of the face of the user of the safety helmet 1.

[0030] Conveniently, by having to follow the contour of this upper edge 9 of the front opening 10, both the supporting frame 5 and the secondary supporting frame 6 are substantially C-shaped with the same curvature of the upper edge 9.

[0031] The connection between the supporting frame 5 and the secondary supporting frame 6 is made in a manner that is known per se, i.e. by means of elements for quick fastening and release 11 that are interposed between the supporting frame 5 and the secondary supporting frame 6.

[0032] More specifically, the quick fastening and release elements 11 comprise three tabs 12 which are arranged at two outermost arches 8 and at a central arch 8 and each of which has a retaining tooth 13 that can be inserted in a respective engagement seat 14 defined on the secondary supporting frame 6.

[0033] The retaining teeth 13 are directed toward the inner padding 3 and the tabs 12 are spaced from the main structure of the supporting frame 5 in such a manner as to define gaps 15, into which the portions of the secondary supporting frame 6, which have the engagement seats 14, are inserted.

[0034] In this manner, during the insertion of these portions through the gaps 15, the tabs 12 undergo an elastic flexion owing to the rubbing of the retaining teeth 13 against the secondary supporting frame 6 until the engagement seats are positioned under the retaining teeth 13 which click into them, by way of the elastic recall of the tabs 12.

[0035] Considering the comfort lining 4, such lining is sewn to the secondary supporting frame 6 by means of stitching 16 applied on the side facing toward the inner padding 3.

[0036] In this manner, once the supporting frame 5 and the secondary supporting frame 6 are associated with each other, as shown in Figure 3, the comfort lining 4 is firmly interposed between them.

[0037] The safety helmet 1 can further be provided, in a manner that is known per se, with a plurality of further elements such as, for example, air intakes, helmet fastening devices, high or low frequency radio communication devices, inner or outer visors, which are not described since they are outside the scope of the appended claims.

[0038] Operation of the safety helmet 1, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, is clear and evident from the foregoing description.

[0039] In practice it has been found that the safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, according to the present invention, fully achieves the intended aim and objects in that, since the fastening of the supporting frame, with which the secondary supporting frame coupled to the comfort lining is then engaged, occurs by means of a process of co-molding the supporting frame with the polystyrene of the inner padding, it ensures, thanks to the filling of the hollow regions of the arches embedded in the expanded polystyrene, a fastening that is much more secure and sturdy with respect to the known art, without the use of other fastening means like adhesive materials and the like.

[0040] In fact, the use of a co-molding process to fasten the supporting frame to the inner padding makes it possible to have a fastening without the risks of detachment or peeling that occur with the known art.

[0041] Consequently, the problems present in the known art, linked to possible interference with the movement of the sun visor, if provided, by the comfort lining which is subject to the above mentioned detachments, are also solved.

[0042] A further advantage of the safety helmet according to the present invention consists in that it has implementation costs that are substantially lower than those of the known art since, by implementing the process of co-molding described, all the gluing operations necessary for fastening the supporting frame or the comfort lining to the inner padding are avoided.

[0043] The safety helmet, particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0044] Moreover, all the details may be substituted by other, technically equivalent elements.

[0045] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0046] Where the technical features mentioned in any claim are followed by reference numerals and/or signs, those reference numerals and/or signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference numerals and/or signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference numerals and/or signs.

Claims

1. A safety helmet (1), particularly for motorcycle and/or motor racing, with improved fastening of the comfort lining, comprising an outer cap (2) and an inner padding (3) internally associated with said outer cap (2) and wearable over the head of a user, there furthermore being a comfort lining (4) associated with said inner padding (3) by means of a supporting frame (5) fastened to said inner padding (3) and a secondary supporting frame (6) fastened to said comfort lining (4) and removably associated with said supporting frame (5), **characterized in that** it comprises fastening elements (7) that are integral with said supporting frame (5) and are provided with portions that are undercut and embedded in said inner padding (3), said inner padding (3) being made by means of a process of co-molding together with said supporting frame (5).

2. The safety helmet (1), according to claim 1, **characterized in that** said fastening elements (7) comprise arches (8) that are integral with said supporting frame (5).

3. The safety helmet (1), according to claim 1 or 2, **characterized in that** said supporting frame (5) is associated with said inner padding (3) in proximity to an upper edge (9) of a front opening (10) defined on said outer cap (2) and designed to be arranged in front of the face of said user.

4. The safety helmet (1), according to one or more of claims 1 to 3, **characterized in that** said supporting frame (5) and said secondary supporting frame (6) are each substantially C-shaped with the same curvature of said upper edge (9).

5. The safety helmet (1), according to one or more of claims 1 to 4, **characterized in that** it comprises five arches (8) which are substantially equally spaced apart from each other.

6. The safety helmet (1), according to one or more of claims 1 to 5, **characterized in that** it comprises elements for quick fastening and release (11) that are interposed between said supporting frame (5) and said secondary supporting frame (6).

7. The safety helmet (1), according to one or more of claims 1 to 6, **characterized in that** said comfort lining (4) is sewn to said secondary supporting frame (6) from the side facing toward said inner padding (3).

8. The safety helmet (1), according to one or more of claims 1 to 7, **characterized in that** said inner padding (3) is made at least partly from expanded polystyrene in the region associated with said supporting frame (5).

9. The safety helmet (1), according to one or more of claims 1 to 8, **characterized in that** it is of the full-face type.

10. The safety helmet (1), according to one or more of

claims 1 to 8, **characterized in that** it is of the modular or flip-up type.

11. The safety helmet (1), according to one or more of claims 1 to 8, **characterized in that** it is of the open-face type.

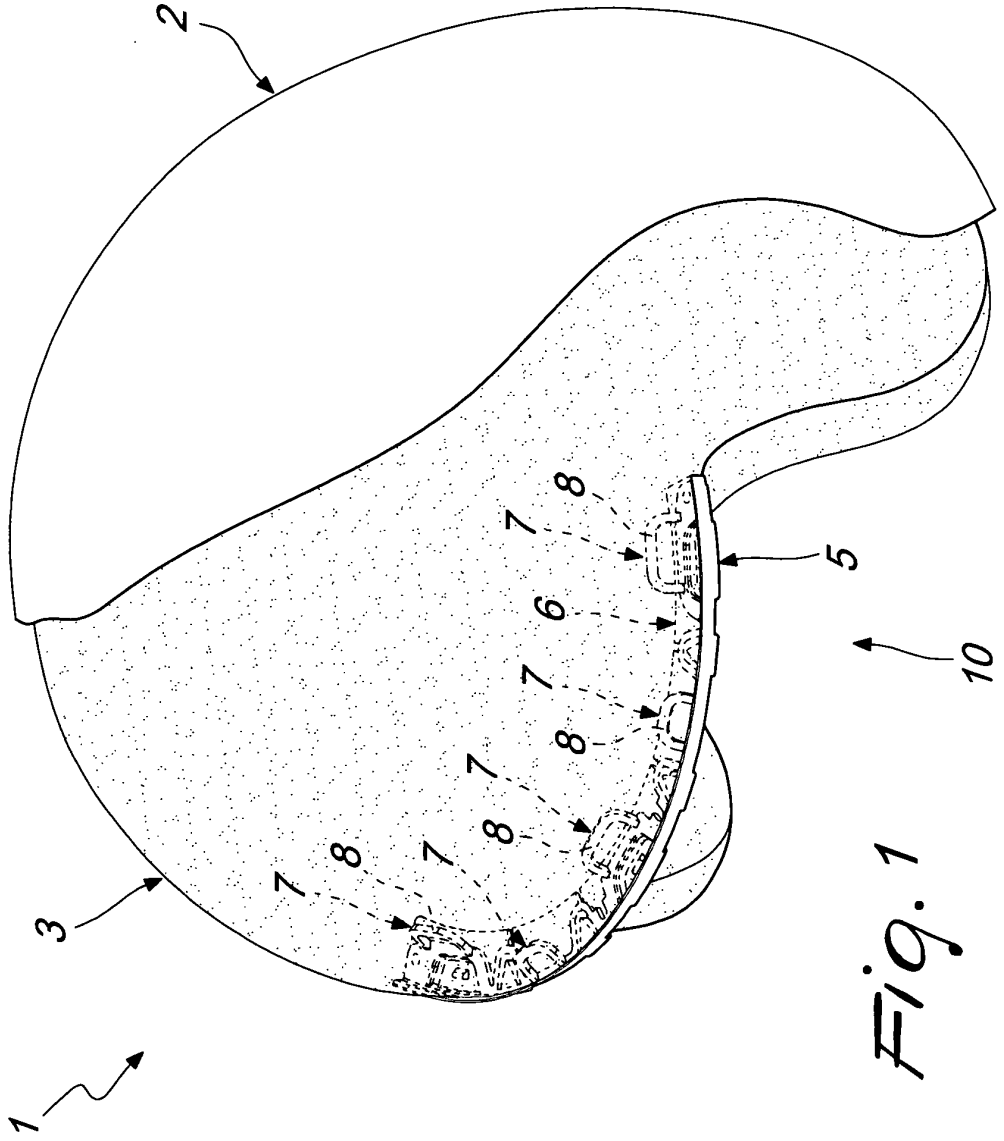

Fig. 1

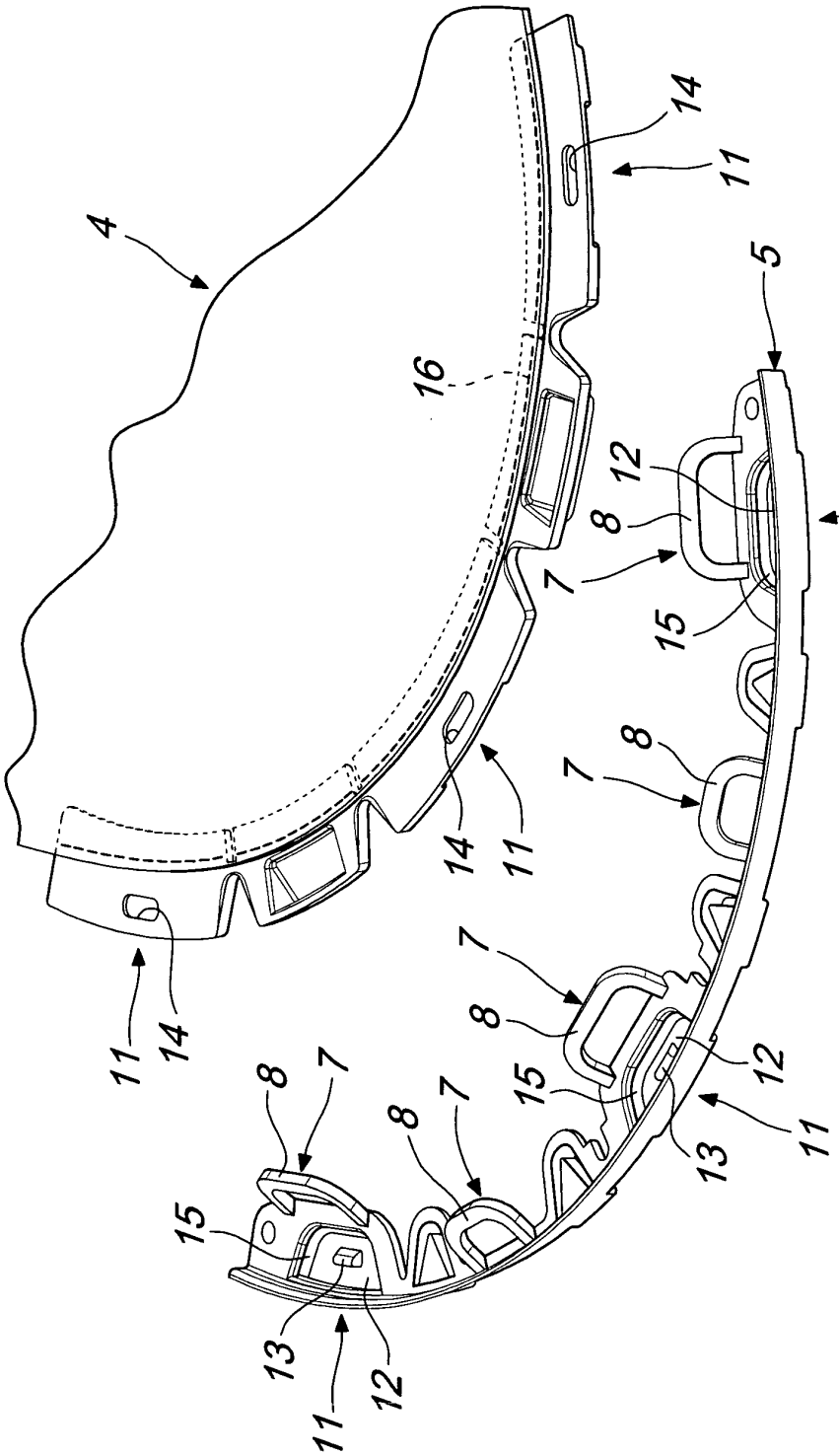

Fig. 2

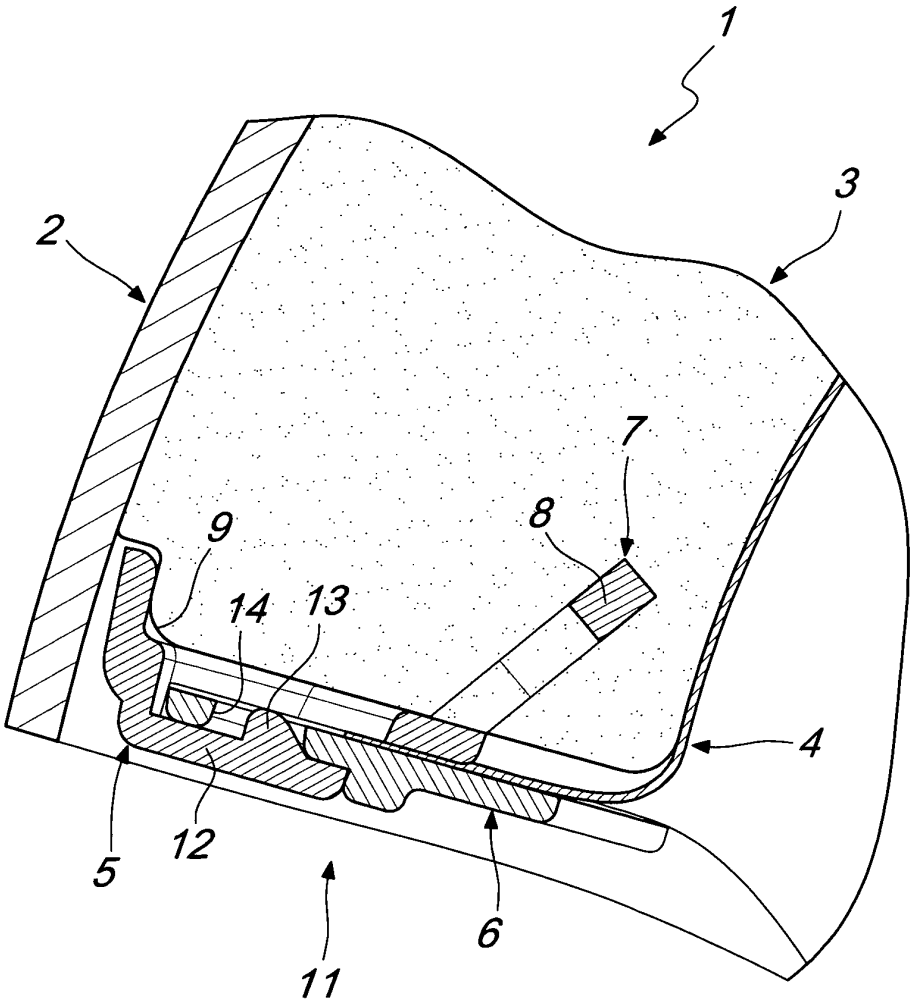

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 11 42 5141

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 885 209 A1 (MSA GALLET [FR]) 13 February 2008 (2008-02-13) * paragraphs [0022], [0025], [0026]; figures 2,4 *	1	INV. A42B3/04 A42B3/10
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A	FR 2 496 422 A1 (SAINT MARS ELIANE DE [FR]) 25 June 1982 (1982-06-25) * claim 1; figure 1 *	1	
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			A42B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 October 2011	D'Souza, Jennifer

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 42 5141

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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28-10-2011

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