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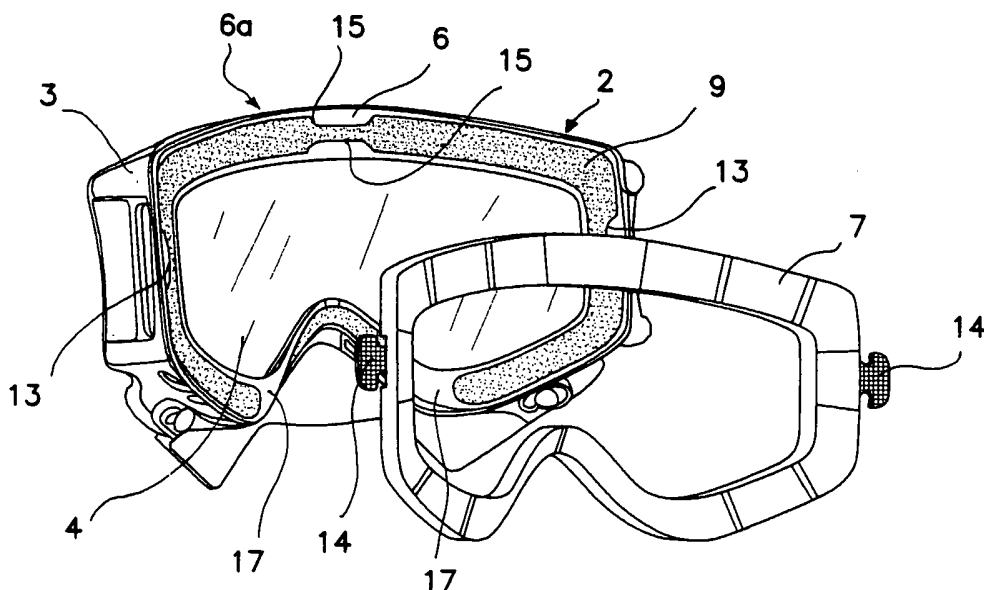
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(54) Title: MASK-STYLE PROTECTIVE GOGGLES, PARTICULARLY FOR SPORTING APPLICATIONS



(57) Abstract: What are described are mask-style protective goggles comprising a mounting (2) with a lens holding frame (3), at least one sealing element (7) associated with the frame and capable of contacting the face when the mask is worn, and removable means (8) of interconnection of the at least one sealing element (7) with the frame (3), in which the at least one sealing element (7) extends along the whole profile of the perimeter of the frame (3) of the mounting.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Mask-style protective goggles, particularly for sporting applications.

Technical field

The present invention relates to mask-style protective goggles, particularly for sporting applications, according to the precharacterizing
5 clause of the main claim n. 1.

Technological background

The invention relates particularly, although not exclusively, to the specific technical field of single-lens mask-style protective goggles designed to be fitted and retained on the face to protect the eyes during sporting
10 activities such as skiing, motorcycling, particularly motocross, and others.

Typically, a protective mask of this type is provided with an absorbent and breathable seal made from foam material, extending along the perimetric profile of the mounting, to provide a sealed joint between the mounting and the user's face, thus preventing the entry of dust, water,
15 snow or other agents into the mask, while also acting as a breathable barrier.

In some sporting activities, owing to the particularly demanding conditions of use, the seal may deteriorate irremediably, thus adversely affecting its functionality. A typical example is that of the use of such masks
20 in motocross, where the presence of dust, water and mud causes rapid deterioration of these seals.

In the prior art, therefore, protective masks have been developed in which the seal, instead of being rigidly fixed to the mounting, is designed to be connected removably to the mounting to provide interchangeability. This
25 conveniently makes it possible to replace the worn or otherwise damaged

seal only, while retaining the mounting; moreover, it enables a single mounting to be fitted, if necessary, with seals of different materials, shapes and dimensions, particularly shapes and/or dimensions adapted to the morphologies of the faces of the individual users, to obtain a kind of
5 "customization" of the mask, and consequently greater comfort in its fitting to the face. By way of example, but without restrictive intent, the use of polyurethane for making the seals will be considered for the purpose of forming "customized" seals.

An example of a protective mask provided with an interchangeable
10 seal is known from U.S. Patent 6,094,751. The mask described therein is of the single-lens type and the mounting is provided with discontinuous portions of an interchangeable seal, located in particular on the upper part for fitting against the brow and on the lower part for fitting against the area of the cheek-bones and nose. The close fitting of the seal on the face is
15 therefore limited to the aforesaid areas. Furthermore, the removable connection of the seal to the mounting requires an intermediate structure comprising a supporting strip having one side provided with means for removable attachment to the frame and the other side fixed to the seal. This interconnecting structure is provided in the aforesaid prior patent both
20 in the case in which the connection is made by means of protuberances removably engaged in holes formed in the frame, and in the case in which the connection is made by means of a tear-away closure, for example one of the type known by the trade name Velcro.

Description of the invention

25 A principal object of the present invention is to provide mask-style

protective goggles which have an easily and rapidly interchangeable seal and which can also overcome the limitations described with reference to the cited prior art.

Another object is to provide greater simplicity of construction of the
5 mask by comparison with the known solutions, while providing adequate functionality and greater comfort.

These and other objects, which will be evident from the following text, are achieved by mask-style protective goggles made in accordance with the following claims.

10 Brief description of the drawings

Further characteristics and advantages of the invention will be made clearer by the following detailed description of a preferred example of embodiment thereof, illustrated, for the purposes of guidance and without restrictive intent, in the attached drawings, in which:

- 15 - Figure 1 is a perspective view of a mask-style protective goggles made according to the present invention;
- Figure 2 is a partially exploded perspective view of the mask-style goggles of Figure 1;
- Figure 3 is another perspective view of the mask-style protective
20 goggles of the preceding figures;
- Figure 4 is a sectional view of a detail of the goggles of the preceding figures.

Preferred embodiment of the invention

With reference to the aforesaid figures, the number 1 indicates the
25 whole of mask-style protective goggles made according to the present

invention, designed in particular for use in sporting activities.

The goggles 1 are made in the form of a single-lens mask and comprises a mounting 2 with a frame 3 designed to hold a lens 4.

The number 5 indicates an elastic strip (for holding the mask on the user's head), having a conventional structure and fixed to the frame 3 at its opposing ends 5a, 5b.

A surround 6 whose profile encloses the perimeter of the lens 4 is identified on the frame 3, on the inner side of the mask (in other words, the side directed towards the user's face when the mask is fitted). A first portion 6a is formed on the surround 6 and extends in the upper part in the brow area, being extended at its opposite ends in corresponding temple portions 6b which in turn are connected to corresponding lower portions 6c which extend in the corresponding cheek-bone areas. The portions 6c terminate in a central lower portion 6d of the profile, extending in the proximity of the nose rest area.

The goggles 1 are also provided with a sealing element 7 associated with the frame 3 and capable of contacting the face when the mask is fitted.

The said sealing element 7 is made from a foam material having absorbent and breathable properties (such as foam rubber) and acts as a soft interface structure interposed between the frame and the user's face, to provide a correct sealed fitting of the mask on the face which can also prevent the entry of water, dust, snow or other undesired agents into the mask.

The sealing element 7 is preferably made in one piece with a closed

profile, and has an overall configuration such that, when applied to the frame 3, it mates with the perimetric profile of the surround 6, in such a way that it is fitted along each portion 6a-6d of the surround of the said frame.

5 The sealing element 7 is also fitted to the frame 3 in a removable way, by the provision of interconnection means, indicated as a whole by 8, so that it is replaceable or interchangeable, as will be made clear in the following description.

 The interconnection means 8 comprise a tear-away closure device
10 8a, such as one of the type better known by the trade name Velcro. A closure device of this type consists of a pair of strips 9 and 10 (made of fabric, for example) which adhere to each other as a result of simple pressure. Pluralities of hooked appendages 11 are provided on one side 9a of the strip 9, and can engage by hooking in corresponding pluralities of
15 looped appendages 12 provided on one (10a) of the opposing sides of the strip 10.

 The strip 9 of the tear-away closure is fixed directly to the frame 3, for example by gluing the side 9b of the strip (opposite the side 9a) on to the edge surface 6. One or both of the surfaces in contact can be made
20 adhesive by the application of an adhesive coating, or a double-sided adhesive film can be interposed between the surfaces to be fixed together.

 With connection procedures of this type, the strip 10 of the tear-away closure is fixed directly to the sealing element 7, by gluing the side 10b (opposite the side 10a) on to the edge surface of the sealing element 7.

25 The strip 10 is made to be housed in a corresponding seat 7a formed

on the sealing element 7. Preferably, this seat is delimited by a lowered surface portion of the edge of the sealing element 7, shaped in such a way as to house, by what is essentially a positive connection, the outer profile of the strip 10.

5 By means of the provision of the seat 7a for housing the strip 10, the object of reducing the overall thickness of the assembly consisting of the strip 10 and the sealing element 7 is advantageously achieved.

In an intermediate area of each portion 6b of the frame, the corresponding portions of strip 9 applied have a reduced transverse
10 extension, delimited by corresponding recesses 13 formed in the strip. In the portions of the sealing element 7, in positions corresponding to the recesses 13 (with the seal fitted), there are provided corresponding grips 14 projecting from the seal. The said projecting grips 14 facilitate the operation of opening the tear-away closure (to remove the seal from the frame), this
15 operation being additionally facilitated by the lower resistance encountered as a result of the reduced connection surface of the strips 9 and 10 (due to the presence of the recesses 13).

The projecting grips 14 can conveniently be made in one piece with the strip 10, as shown in Figure 2.

20 In an intermediate part of the portion 6a of the edge of the frame 3, the strip 9 fitted on it has a further transverse surface reduction created by the provision of a pair of opposing recesses 15.

According to another characteristic of the invention, the strip 9 (or portions of it) is made to be housed at least partially in corresponding seats
25 16 formed in the frame 3. Preferably, these seats 16 are formed by lowered

surface portions of the frame surround 6, shaped in such a way as to house the outer profile of the strip 9 by what is essentially a positive connection.

The provision of the seats 16 for partially housing the strip 9 advantageously facilitates the operations of positioning and fitting the said strip on the frame of the mounting.

The provision of the seats 16 for partially housing the strip 9 also advantageously achieves the object of reducing the overall thickness of the assembly consisting of the strip 9 and the frame 3.

10 The strip 9 also has localized interruptions along the surround 6 of the frame 3. These interruptions, identified by the reference numerals 17, are provided, in particular, across each pair of portions 6c-6d, in the area of transition between the opposing cheek-bone areas and the central nose rest area of the mask. At the positions of these interruptions of the strip 9, the surround of the frame 3 has a full thickness, owing to the absence of the
15 lowered surfaces (for housing the strip) provided elsewhere, thus providing a kind of ribbing of the surround of the frame. Additionally, these areas 17 of interruption of the strip 9 are located at the points of the frame where there is a marked change of curvature of the profile (in the transition from
20 the cheek-bone area to the nose area), and therefore make the portions of strip on each side of the interruptions structurally independent, thus facilitating the fitting of these without the need to provide sharp bends in the strip.

In the proximity of the peak area of the portion 6d of the frame surround (the nose rest area), the strip 9 is made significantly thinner to
25

facilitate its bending and fitting to the frame, while still providing an adequate surface area for adhesion to the opposing strip 10 of the tear-away closure. A corresponding thinner area (with a reduction in the transverse surface) is formed in the strip 10, in the central nose rest
5 portion, to facilitate the bending of the said strip and its fitting on the sealing element 7.

Thus the invention achieves the proposed objects while yielding numerous advantages by comparison with the known solutions.

A principal advantage lies in the fact that the mask-style protective
10 goggles according to the invention ensure effective sealed retention of the mask on the face, while also making the sealing element of the mask replaceable or interchangeable. This is particularly advantageous in particular sporting activities such as motocross, where, on the one hand, there is a need to ensure an adequate sealed fitting of the mask to the face,
15 to prevent the entry of dust or mud into the mask, and, on the other hand, the rather rapid deterioration of the seal, due to the severe environmental conditions of use, necessitates the frequent replacement of the said seal.

Another advantage lies in the simplified construction of the protective mask according to the invention, which is achieved by the provision of a
20 tear-away closure interposed between the mounting and the sealing element, where one of the flaps of the tear-away closure is fixed directly to the frame of the mounting and the other is fixed to the sealing element, without requiring further structural elements.

Another advantage lies in the greater ease of use of the mask with
25 respect to the operations of replacing the sealing element, by comparison

with the solutions proposed by the prior art.

CLAIMS

1. Mask-style protective goggles comprising a mounting (2) with a lens holding frame (3), at least one sealing element (7) associated with the frame and capable of contacting the face when the mask is worn, and
5 removable means (8) of interconnection of the at least one sealing element (7) with the frame (3), characterized in that the said at least one sealing element (7) extends along the whole profile of the perimeter of the frame (3) of the mounting.
2. Mask-style protective goggles according to Claim 1, comprising a single
10 sealing element (7) having a closed profile and extending along the whole perimetric profile of the frame (3) of the mounting.
3. Mask-style protective goggles according to Claim 1 or 2, in which the said means of interconnection comprise a tear-away closure (8a) including a pair of strips which can be fixed removably to each other by simple pressure,
15 one of these strips being connected directly to the frame (3) and the other being connected directly to at least one sealing element (7).
4. Mask-style protective goggles according to Claim 3, in which a first strip (9) of the said pair has, on one side (9a), a plurality of hook-shaped appendages (11) for connection to corresponding pluralities of looped
20 appendages (12) formed on the facing side (10a) of the second strip (10), the first strip being fixed, on its opposite side (9b), to the frame (3) of the mounting.
5. Mask-style protective goggles according to Claim 4, in which the first strip (9) of the said tear-away closure has a reduced surface extension in
25 localized portions of the strip, grips (14) projecting from the sealing

element (7) being provided next to the said localized portions of the first strip (9) to facilitate the opening of the said tear-away closure (8a).

6. Mask-style protective goggles according to Claim 5, in which a pair of the said projecting grips (14) of the sealing element (7) is provided, the grips
5 being positioned on laterally opposing parts of the frame (3).

7. Mask-style protective goggles according to Claim 5 or 6, in which the said projecting grips (14) are provided in corresponding opposing temple areas of the mask.

8. Mask-style protective goggles according to any one or more of Claims 4
10 to 7, in which the said first strip (9) of the tear-away closure has interruptions (17) in an area of the frame extending across the portions (6d, 6c) of the frame designed to rest on the nasal and cheek-bone regions of the face.

9. Mask-style protective goggles according to any one or more of Claims 4
15 to 8, in which seats (16) are provided in the frame (3) to house, at least partially, portions of the said first strip (9) of the tear-away closure.

10. Mask-style protective goggles according to Claim 9, in which the said seats (16) comprise lowered surface portions of the frame (3) of the said mounting.

20 11. Mask-style protective goggles according to any one or more of Claims 4 to 10, in which the second strip (10) of the said tear-away closure extends with a continuous profile along the whole perimetric profile of the sealing element (7).

12. Mask-style protective goggles according to any one or more of Claims 4
25 to 11, in which the second strip (10) of the said tear-away closure is fixed

by gluing to the sealing element (7).

13. Mask-style protective goggles according to any one or more of Claims 4 to 12, in which the first strip (9) of the said tear-away closure is fixed by gluing to the frame (3) of the mounting (2).

5 14. Mask-style protective goggles according to any one or more of Claims 4 to 13, in which seats (7a) are provided in the sealing element (7) to house, at least partially, the said second strip (10) of the said tear-away closure (8a).

15. Mask-style protective goggles according to Claim 14, in which the seats
10 (7a) for housing the second strip (10) comprise corresponding lowered surface portions of the edge of the said sealing element (7).

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Fig. 1

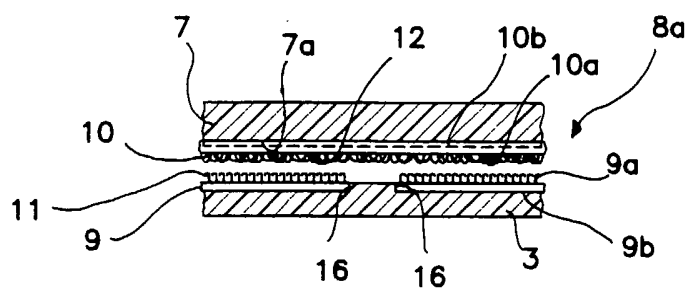
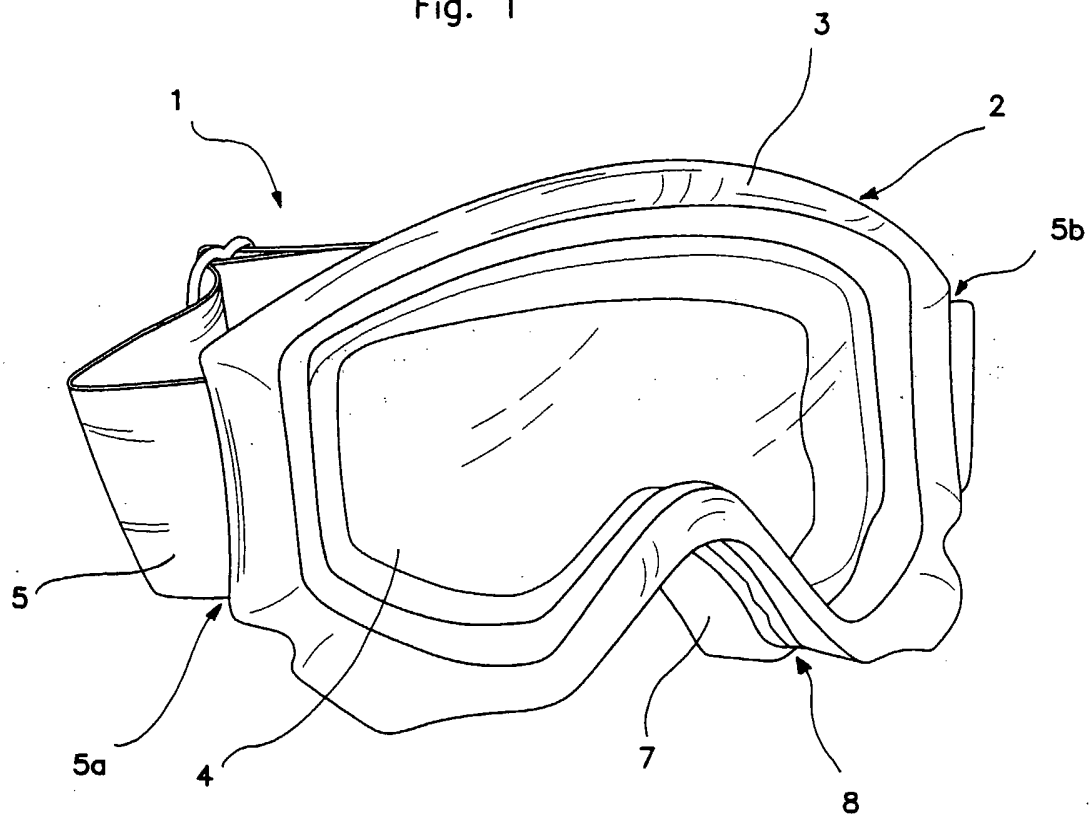


Fig. 4

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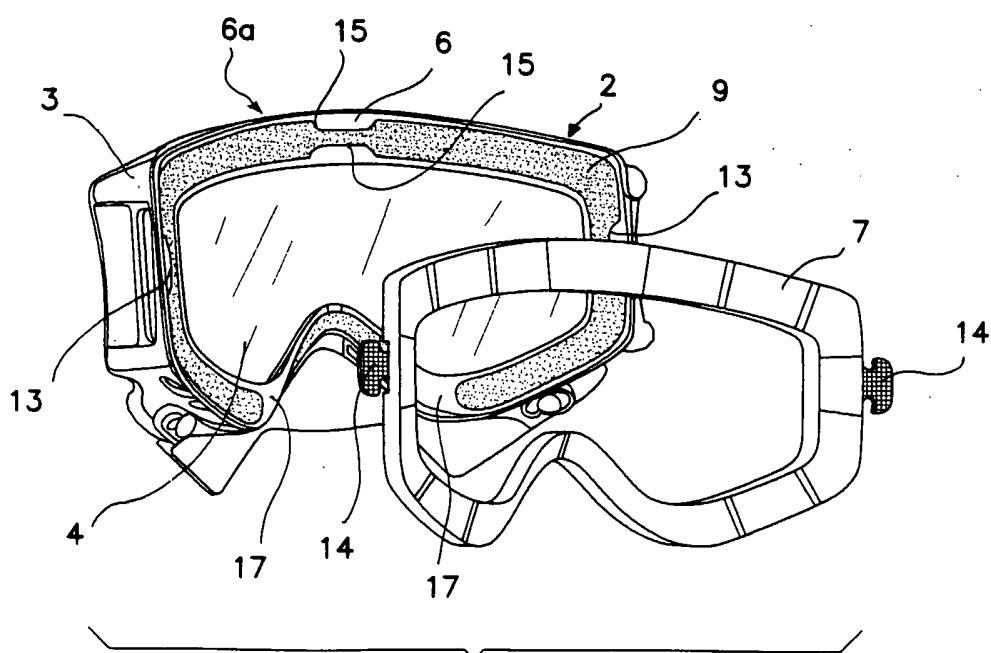
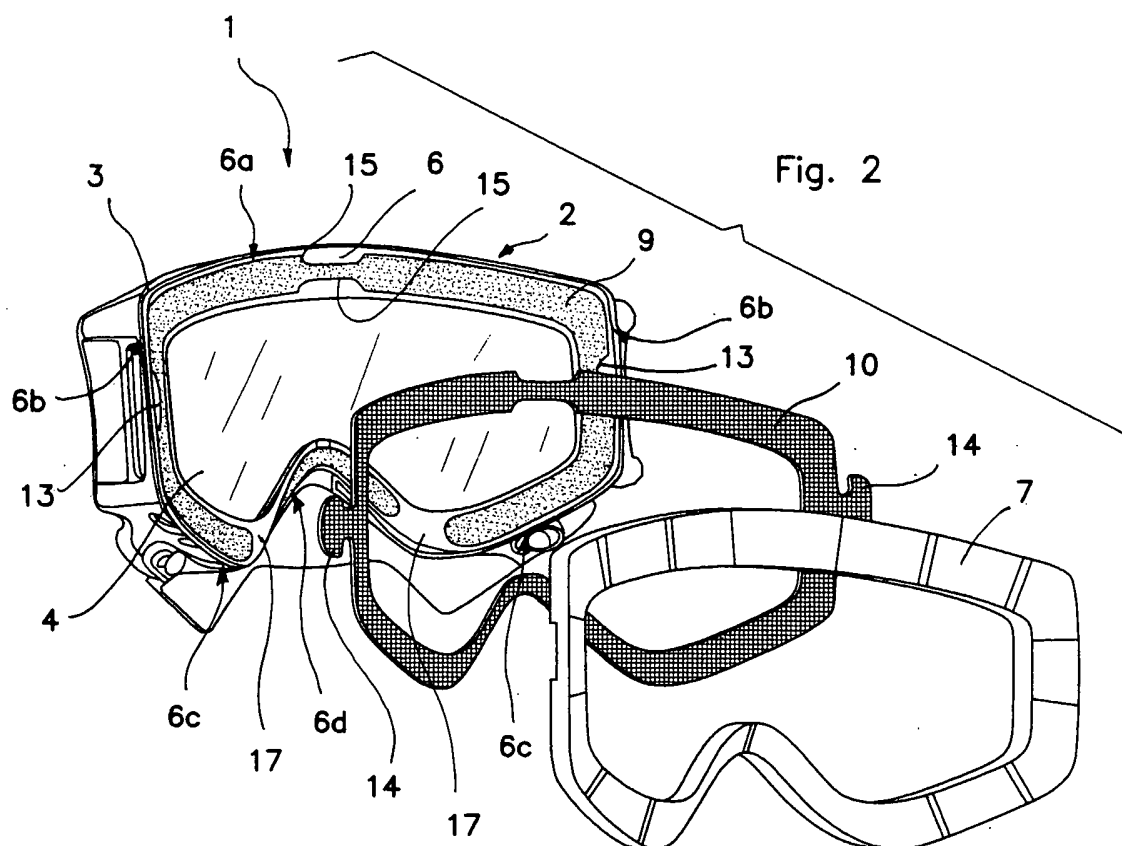


Fig. 3

INTERNATIONAL SEARCH REPORT

IB2004/002214

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F9/02

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)

IPC 7 A61F

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	US 2003/035082 A1 (OLNEY JOEL WILLIAM) 20 February 2003 (2003-02-20) paragraph '0022!; figure 7	1,2
Y	-----	3-15
Y	US 6 094 751 A (PARKS ET AL) 1 August 2000 (2000-08-01) cited in the application column 2, line 9 - line 60 -----	3-15
A	FR 2 087 403 A (BOLLE MAURICE) 31 December 1971 (1971-12-31) page 1, line 1 - page 2, line 18 -----	1-15
A	FR 2 257 100 A (PLASTINAX, FR; PLASTINAX) 1 August 1975 (1975-08-01) page 1, line 1 - page 2, line 14 ----- -/--	1-15



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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.

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Date of the actual completion of the international search

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 339 119 A (GARDNER ET AL) 16 August 1994 (1994-08-16) figure 3 column 2, line 4 - column 4, line 32 -----	1-15

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