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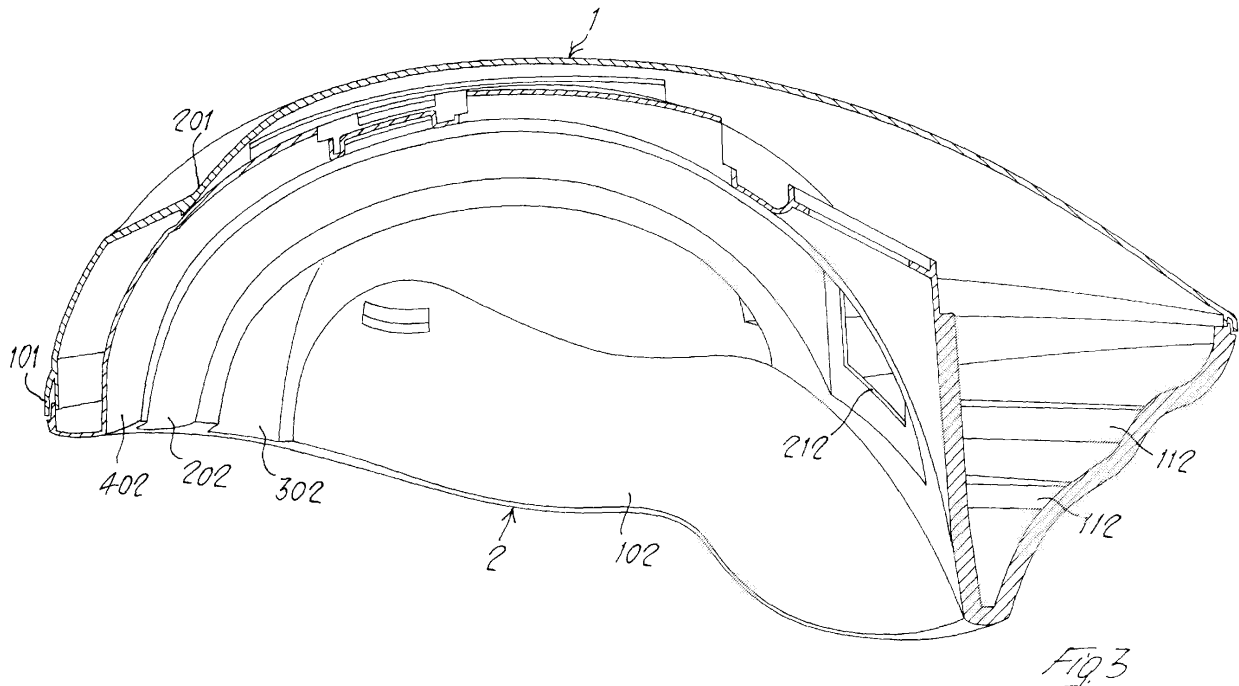
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(54) Cyclists' helmet

(57) Cyclists' helmet, comprising two shells (1, 2) with a substantially ellipsoidal shape able to be joined together, a first inner shell (2) of which, intended to seat the cyclist's head, has a plurality of pronounced longitudinal grooves (202, 302, 402) which are open at least at

one end thereof, while said second outer shell (1) is formed by a continuous smooth wall.

The said grooves (202, 302, 402) are open at the end directed towards the front portion of said helmet, and the said two shells (1, 2) define an interspace between them.



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Description

[0001] The present invention relates to a protective helmet for sporting activities and in particular relates to a cyclists' helmet.

[0002] Most cyclists' helmets which are at present commercially available have more or less the same constructional features: a rigid shell of thermoplastic material joined, by means of gluing or co-moulding, to an internal padding made of polystyrene or some other expanded polymer. Both the shell and the padding have a plurality of openings communicating with the exterior, so as to allow any circulation of air, since a considerable problem of these helmets consists in the overheating which they produce as a result of contact with the cyclist's head.

[0003] The presence of ventilation openings reduces, however, the safety of the helmet, in addition to prejudicing the aerodynamics thereof. Moreover, any insects which may be encountered along the cyclist's path may easily enter into the helmet, causing considerable discomfort.

[0004] The object of the present invention is therefore to provide a helmet which is able to ensure valid protection against impacts and at the same is insulated against external agents, but is capable of allowing efficient circulation of the air inside it.

[0005] The present invention therefore relates to a cyclists' helmet, comprising two shells, having a substantially ellipsoidal shape, made of thermoplastic resin and able to be joined together, a first inner shell of which, intended to seat the cyclist's head, has a plurality of pronounced longitudinal grooves open towards at least one end, and preferably towards the front end of said helmet, such as to allow circulation of the air, while said second outer shell has a continuous smooth wall.

[0006] In one embodiment, said two shells define between them an interspace, inside which the air is able to circulate and can enter through openings formed in the wall of said inner shell, in the region of the grooves.

[0007] According to a further feature of the invention, the said helmet is provided with means for securing in an easily removable manner to the helmet an earphone holder device.

[0008] Further advantages and characteristic features of the device according to the present invention will emerge clearly from the following detailed description of an embodiment thereof, provided by way of a nonlimiting example, with reference to the accompanying illustrative plates in which:

Figure 1 is a side elevation view of an embodiment of the helmet according to the present invention;
Figure 2 is a cross-sectional view of the helmet shown in Figure 1;
Figure 3 is a longitudinally sectioned view of the helmet according to Figure 1;
Figure 4 is a perspective view of the earphone holder device according to the invention;

Figure 5 is longitudinal sectional view in enlarged scale through one side skirt of the cyclist helmet of Figures 1 to 3, showing the pocket formed in the side skirt for the accommodation of one end of the earphone holder device of Figure 4; and

Figure 6 is a side elevational view similar to that of Figure 1, of the helmet according to the present invention provided with the earphone holder of Figures 4 and 5.

[0009] With reference to the drawings, Figure 1 shows a helmet according to the present invention; 1 denotes the outer shell of said helmet which has along its peripheral outgoing edge the flange 101 for joining to the inner shell 2, of which only the bottom portion of the side skirt 102, provided with air discharge slits 112, can be seen.

[0010] Figure 2 shows a cross-sectional view of the helmet according to the invention; the outer shell 1 has, between the flange 101 and the outgoing edge 111, the pocket 121 which allows joining to the lip 122 of the side skirt of the inner shell 2, said skirt being folded outwards with respect to the shell 2 itself. The shell 2 has, formed therein, longitudinal grooves, and in particular the grooves 302, in the vicinity of the two templar ends of the helmet, the wide grooves 202 in the middle portion and the groove 402 along the longitudinal axis of the helmet. All the grooves 202, 302 and 402 are respectively provided with openings 212, 312, 412 which place them in communication with the interspace defined between the outer shell 1 and the inner shell 2; the grooves 202 also envisage further openings 222. It should also be noted that, in the region of the openings 222, the inner shell 2 has U-shaped portions 232 which make contact with the inner side of the outer shell 1.

[0011] Figure 3 shows a longitudinally sectioned view of the helmet according to the present invention; identical parts are indicated by identical numbers. As may be noted from the figure, the end of each of the grooves 402, 202 and 302 directed towards the front portion of the helmet is open so as to allow the air to flow into the said grooves. At the same time the openings 212 formed at the opposite end of the grooves 202 allow the outflow of the air towards the slits 112 formed in the skirt 102 of the inner shell 2. The outer shell 1 has, formed therein, in the vicinity of its front end, a depression 201 so that the inner side of the wall of the outer shell 1 at that point makes contact with the wall of the inner shell 2.

[0012] The operating principle of the helmet according to the present invention and its constructional design will become obvious from the description below.

[0013] As already mentioned above, the helmet according to the present invention differs from the known art in that it consists of two shells which are made by means of moulding of thermoplastic material, preferably ABS, and/or polypropylene and/or polycarbonate and are then assembled by means of suitable adhesives, such as dual-component acrylic adhesives or the like, or by means of vibration welding, ultrasound welding or laser

welding. The outer shell has, as can be seen from the figures of the accompanying drawings, a structure which is substantially continuous and substantially devoid of irregularities such that on the one hand it is practically inaccessible to external agents, such as rain or also solid bodies such as stones, branches and the like; on the other hand, because of its structural rigidity, it is decidedly effective from the point of view of aerodynamics, since it offers very small areas of resistance to the air.

[0014] The inner shell, where the cyclist's head is seated, has a plurality of "air ways" which ensure circulation of the air in a manner decidedly better than that of the helmets known according to the state of the art. The air, in fact, forced by the movement of the cyclist, enters via the open end of the channels and flows around the cyclist's head along the whole length of said channels; then, via the openings positioned in the rear (occipital) portion of the helmet, the air may be discharged externally through the slits 112 formed on the skirt 102. Advantageously, openings may be envisaged, positioned in the vicinity of the front end of the helmet, so as to favour the circulation of the air also inside the interspace formed between the outer shell and the inner shell; said interspace performs in fact the function of a heat insulator and efficient circulation of the air inside it increases notably this capacity. The points of contact between the inner shell and the outer shell have substantially the function of stabilising and reinforcing the connection between the two shells.

[0015] Optional padding means, not shown in the accompanying figures, may be positioned in the cavity of the inner shell, these however having the principal function of increasing the comfort and wearability of the helmet according to the invention; the safety aspect of the helmet is derived principally from its structure consisting of a double superimposed shell. This novel design allows an improved circulation of the air inside the helmet, substantially eliminates that part of the cyclist's head which is exposed to any impacts by solid bodies and increases considerably the capacity of penetration of the air.

[0016] Having now reference to Figures 4 to 6, the earphone holder device 5 for the helmet 1 according to the invention will be now described.

[0017] The said earphone holder 5 comprises an elongated body 105 ending at one end with a lance-point like element 205 and at the opposite end with a basket-like element 6 open at the bottom and closed sidewise and partially at its front by two confronting L-shaped side walls 106, and provided at its rear wall with three slits 206.

[0018] In its middle region, the earphone holder 5 is provided with a pad-like member 7, the outer surface of which is rendered rough by a plurality of small raised spots 107.

[0019] The said earphone holder device 5 is made from a thermoplastics rubber and is provided at its interior by co-moulding with a steel foil 8 (see Figure 5).

[0020] The said steel foil 8 can assume two stable positions, namely a first position shown with full lines in

Figure 5 in which the earphone basket 6 is maintained close to the ear of the user, and a second position, shown in dotted lines in Figure 5, in which said earphone basket 6 is maintained remote from the ear of the user.

[0021] As shown in Figure 5, in the side skirt 102 of the helmet 1 a pocket 9 is formed for the insertion of the end 205, 7 of the earphone holder device 5. Thanks to the lance-like point 205 and to rough outer surface of the pad-like member 7, the said device 5 is firmly secured to the helmet 1.

Claims

1. Cyclists' helmet, comprising two shells (1, 2) with a substantially ellipsoidal shape able to be joined together, a first inner shell (2) of which, intended to seat the cyclist's head, has a plurality of pronounced longitudinal grooves (202, 302, 402) which are open at least at one end thereof, while said second outer shell (1) is formed by a continuous smooth wall.
2. Cyclists' helmet according to Claim 1, in which said grooves (202, 302, 402) are open at the end directed towards the front portion of said helmet.
3. Cyclists' helmet according to Claim 1 or 2, in which said two shells (1, 2) define an interspace between them.
4. Cyclists' helmet according to Claim 3, in which said first inner shell (2) is provided with a side skirt (102) folded back towards the top of said shell (2), the outgoing edge of said skirt being joined to the outgoing edge (101, 111) of said second outer shell (1).
5. Cyclists' helmet according to any one of the preceding Claims 1 to 4, in which said grooves (202, 302, 402) have, formed therein, one or more openings (212, 312, 412) in fluid communication with the exterior.
6. Cyclists' helmet according to Claim 4 or 5, in which the occipital portion of said side skirt (102) of the said inner shell (2) is provided with a plurality of slits, in fluid communication with said grooves (202, 302, 402).
7. Cyclists' helmet according to any one of the preceding Claims 1 to 6, in which said two shells (1, 2) are made by means of moulding from thermoplastic material, preferably ABS, and/or polypropylene and/or polycarbonate.
8. Cyclists' helmet according to any one of the preceding Claims 1 to 7, in which said two shells are assembled by means of suitable adhesives, such as dual-component acrylic adhesives or the like, or by

means of vibration welding, ultrasound welding or laser welding.

9. Cyclists' helmet according to any one of the preceding claims 1 to 8, further comprising an earphone holder device (5) formed by an elongated body (105) ending at one end with a lance-point like element (205) and at the opposite end with a basket-like element (6) open at the bottom and closed sidewise and partially at its front by two confronting L-shaped side walls (106), and provided at its rear wall with at least one slit (206). 5 10
10. Cyclists' helmet according to claim 9, in which the said earphone holder (5) is provided in its middle region with a pad-like member (7), the outer surface of which is rendered rough by a plurality of small raised spots (107). 15
11. Cyclists' helmet according to claims 9 and 10 in which the said earphone holder device (5) is made from a thermoplastics rubber and is provided at its interior by co-moulding with a steel foil (8) which can assume two stable positions, namely a first position in which the said earphone basket (6) is maintained close to the ear of the user, and a second position in which said earphone basket (6) is maintained remote from the ear of the user. 20 25
12. Cyclists' helmet according to any one of the preceding claims 9 to 11 wherein in the side skirt (102) of the helmet (1) a pocket (9) is formed for the insertion of the end (205, 7) of the earphone holder device (5). 30

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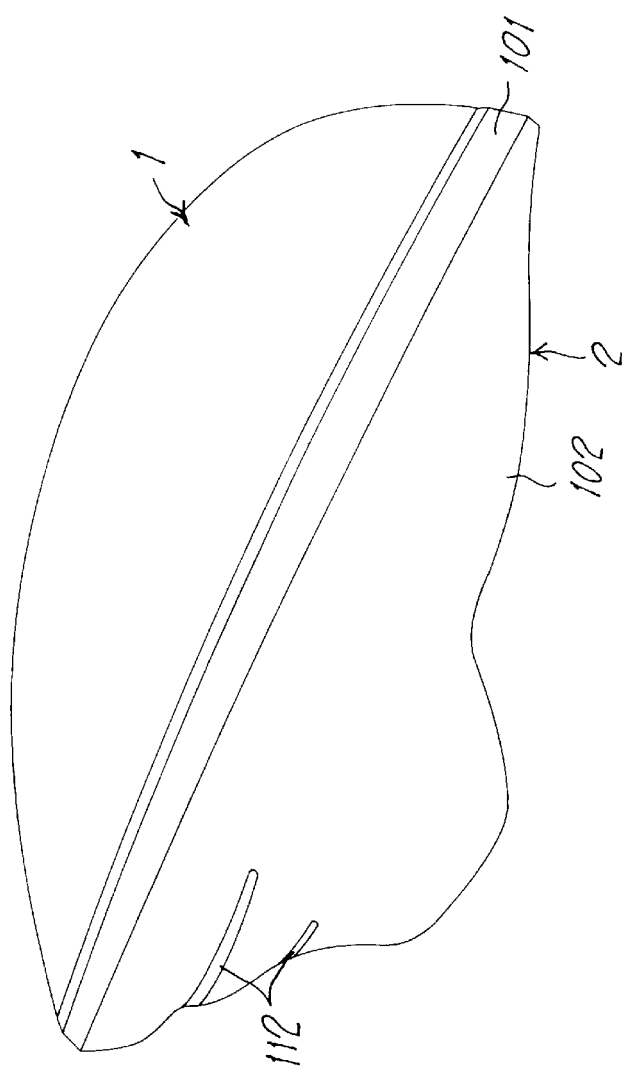
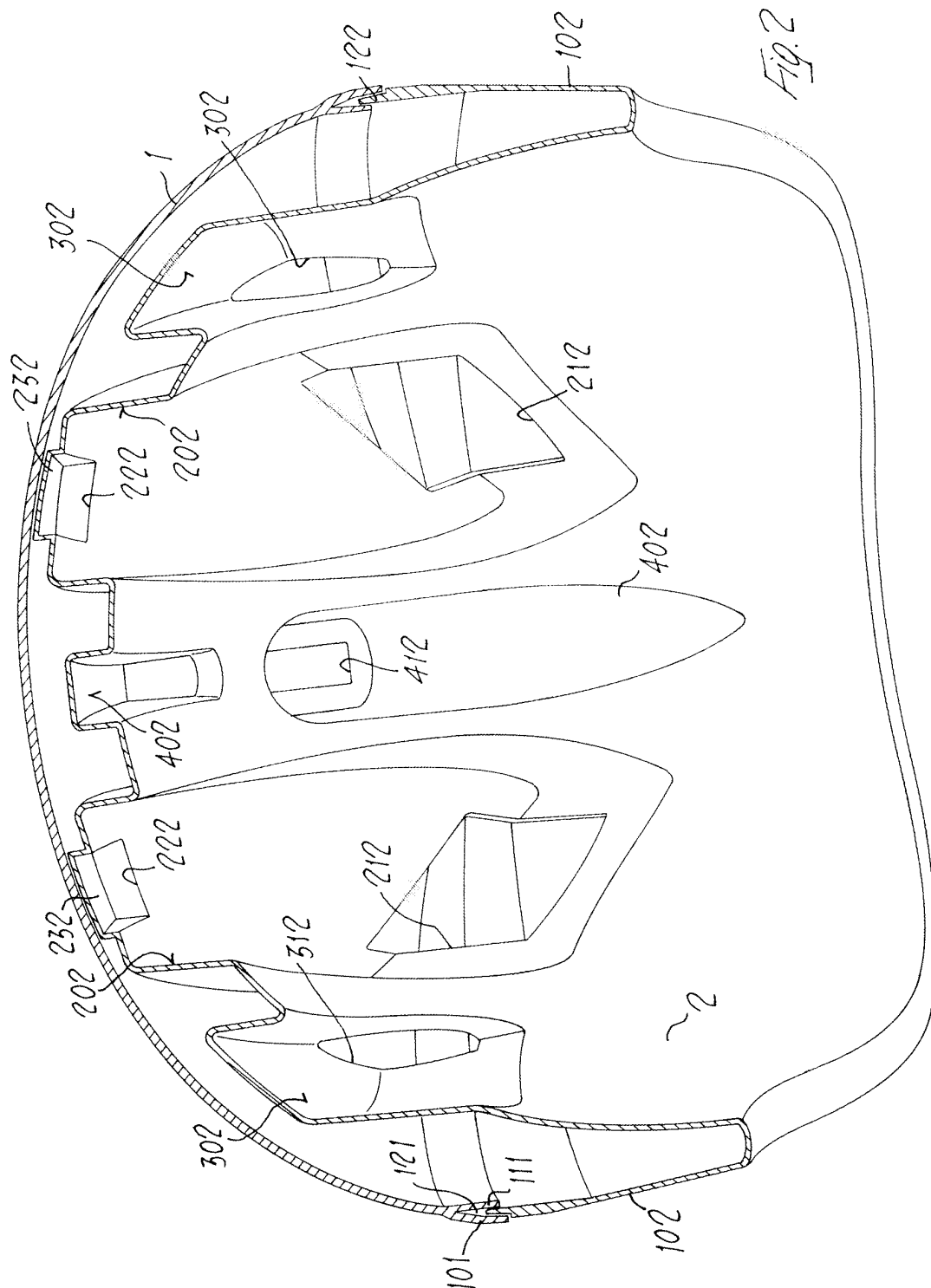


Fig. 1



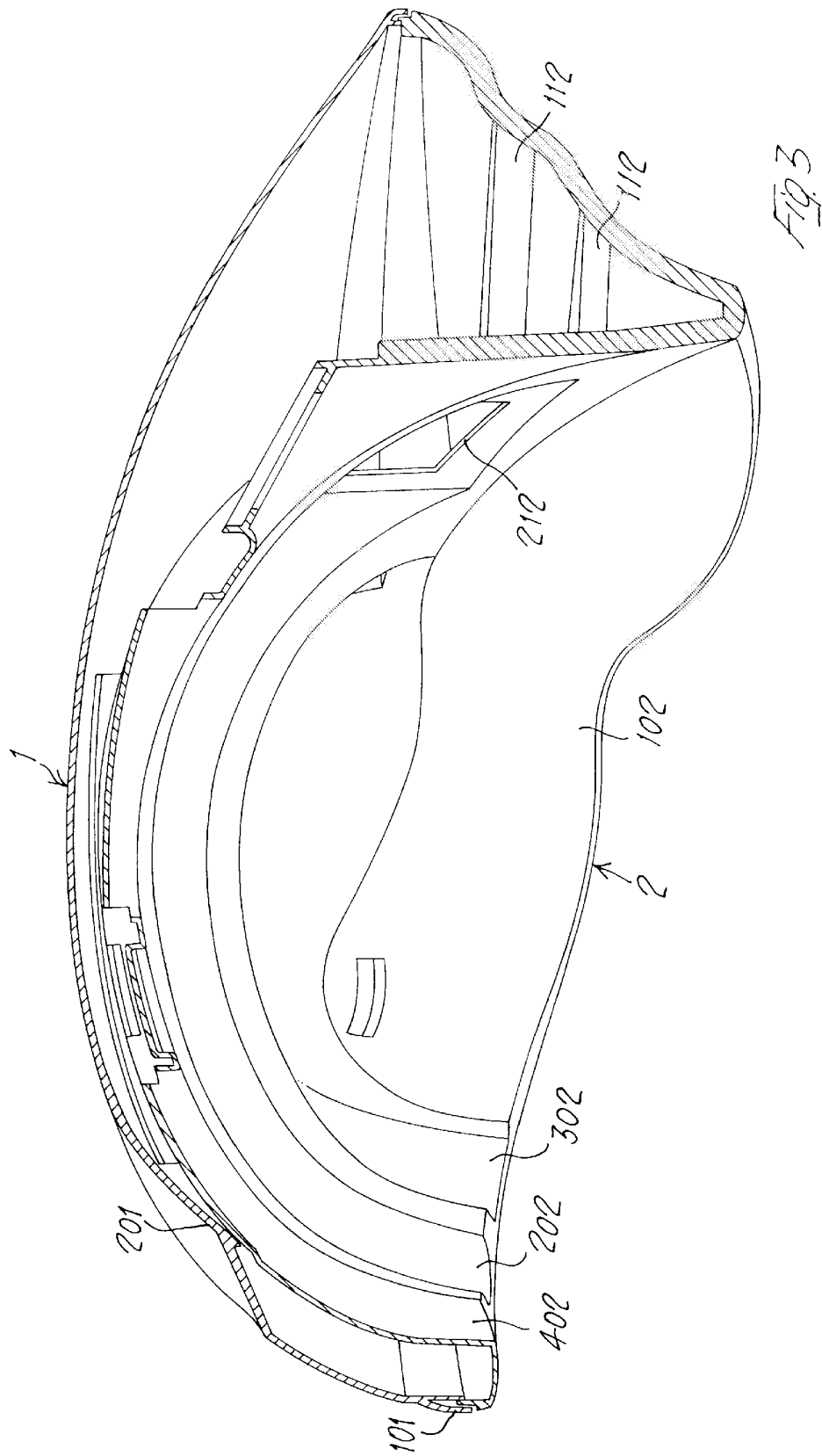
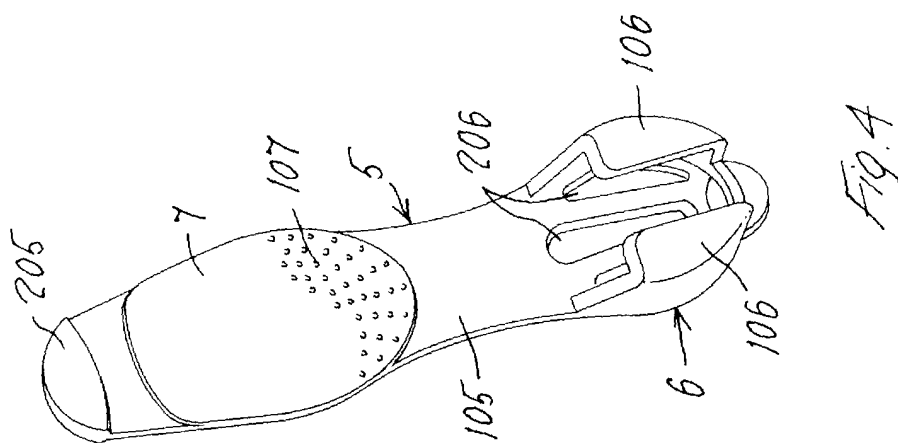
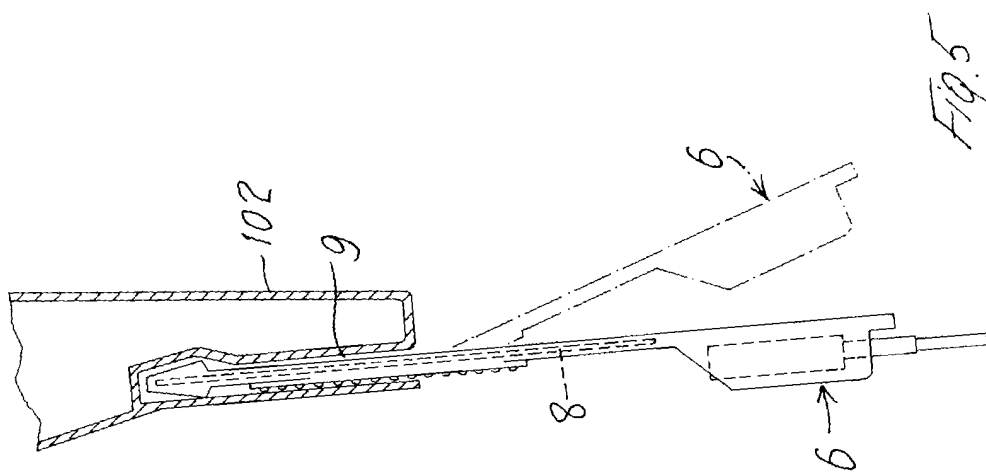
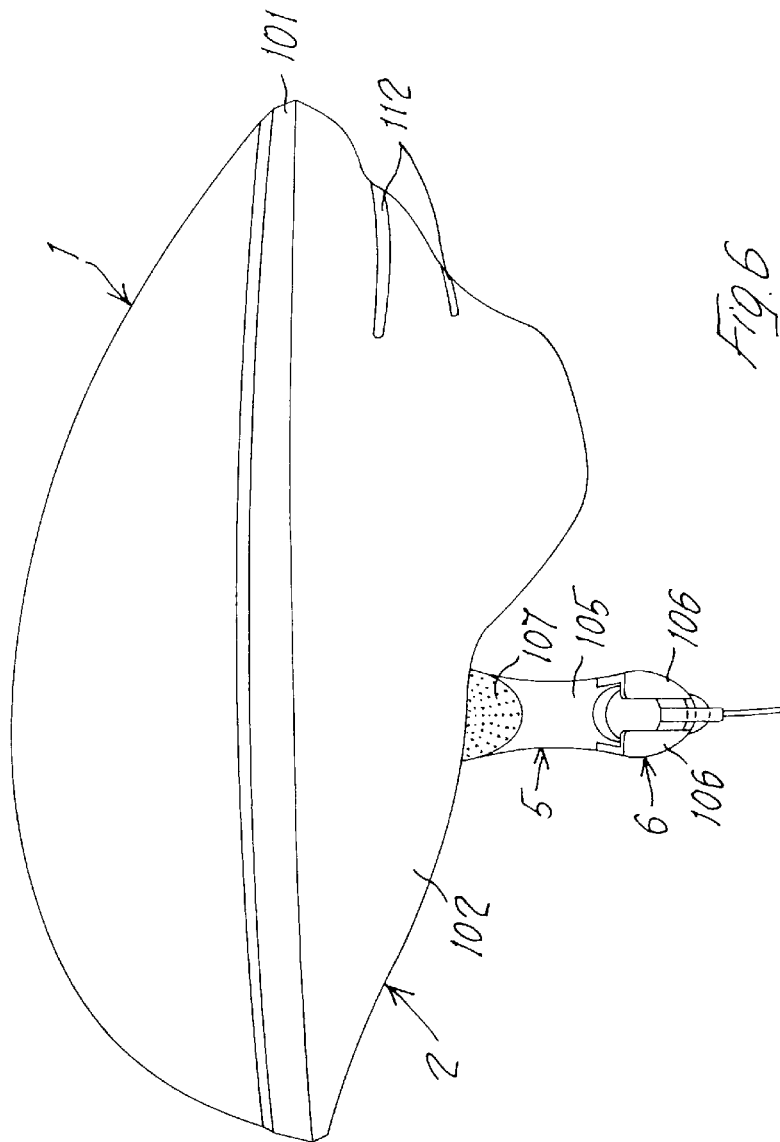


Fig. 3







European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 5723

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	US 6 094 750 A (LEE ET AL) 1 August 2000 (2000-08-01) * column 2, lines 13,-48; figure 3 *	1	
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Y	EP 1 317 888 A (LOCATELLI S.R.L) 11 June 2003 (2003-06-11) * the whole document *	9-12	TECHNICAL FIELDS SEARCHED (IPC) A42B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 November 2005	Examiner Hannam, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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