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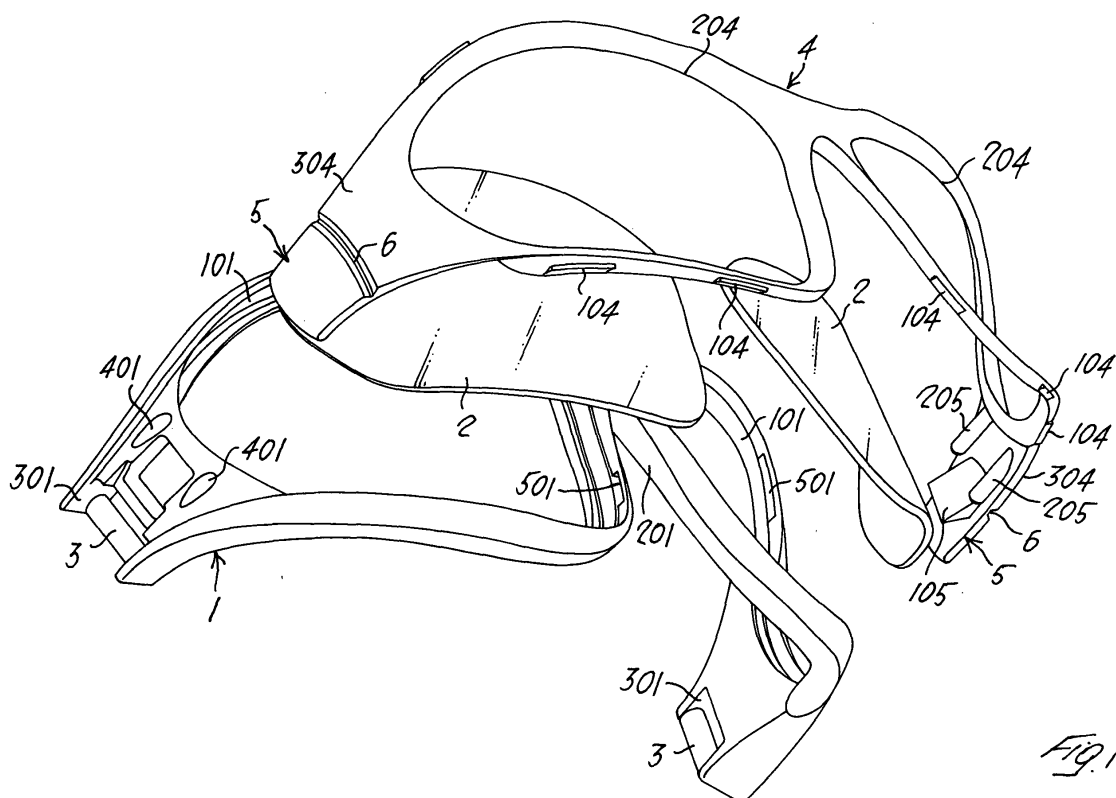
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(54) **Diving mask with integrated buckles for headpiece adjustment**

(57) Diving mask comprising a back frame (1) housing a single lens or a pair of lenses (2), a front frame (4) fastened to said back frame (1) and a headpiece (8) made of elastomeric material having each of the two free ends inserted into a suitable seat (301, 3); said seat (301, 3) is obtained on each of the two lateral ends of

said back frame (1) and cooperates with a buckle (5) for adjusting the length and/or the tensioning of said headpiece (8), said adjustment buckle (5) is obtained as one piece on each of the lateral ends (304) of said front frame (4) and comprises means (6) enabling a given elastic rotation of the latter with respect to said lateral ends (304) of the front frame (4).



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Description

[0001] The present invention relates to a diving mask provided with buckles for adjusting the length and/or the tensioning of the headpiece.

[0002] As is known, there are diving masks equipped with a back frame housing a single lens or a pair of lenses, a front frame fastened to said back frame for keeping said single lens or said pair of lenses in position and a headpiece made of elastomeric material. Said headpiece allows the diver to put on the mask by placing the headpiece around his/her head, and is equipped with two free ends inserted into suitable seats, obtained on each of the two lateral ends of said back frame and cooperating with buckles for adjusting the length and/or tensioning of said headpiece.

[0003] As is further known, said adjustment buckles are secured to the mask after the latter has been manufactured, and should be connected to said front frame or to said back frame so as to cooperate with said seats for the insertion of the free ends of the headpiece. The connection of said buckles to the front frame or to the back frame unavoidably involves long and expensive operations, which also endanger the efficiency of said buckles, since the latter can undergo breakage or unwanted disconnections from their seats.

[0004] The object of the present invention is therefore to carry out a diving mask with buckles for adjusting headpiece length and/or tensioning, which are integrated with the mask and are of simple use, efficient and cheap to be manufactured.

[0005] Said object is achieved by the present invention by means of a diving mask comprising a back frame housing a single lens or a pair of lenses, a front frame fastened to said back frame and a headpiece made of elastomeric material having each of the two free ends inserted into a suitable seat; said seat is obtained on each of the two lateral ends of said back frame and cooperates with a buckle for adjusting the length and/or the tensioning of said headpiece; characterized in that said adjustment buckle is obtained as one piece on each of the lateral ends of said front frame and comprises means enabling a given elastic rotation of the latter with respect to said lateral ends of the front frame.

[0006] According to a further feature of the present invention said means comprise a weakening area with small thickness obtained between each lateral end of said front frame and the corresponding adjustment buckle.

[0007] Further aims, characteristics and advantages of the present invention shall be evident in the course of the following description of one of its embodiments, regarded as a mere non-limiting example and referring to the accompanying drawings, in which:

- Figure 1 shows an exploded perspective view of a diving mask with integrated headpiece adjustment buckles according to the present invention;

- Figure 2 shows a front view of the diving mask of Fig. 1 after assembly;
- Figure 3 shows a view in lateral elevation of the diving mask of Fig. 2; and
- Figure 4 shows a sectioned view of the present mask considered along line IV-IV of Figure 2.

[0008] With reference to the accompanying drawings and in particular to Fig. 1, the numeral 1 refers to a back frame comprising a pair of eyepieces 101 housing a pair of lenses 2. Said back frame 1 is centrally equipped with a structure 201 housing the diver's nose and is provided on each of the lateral ends with an opening 301 having on its outer end a pin 3, and with a pair of hollows 401. A front frame 4 provided on its outer edge with a series of teeth 104 fitting with a trip gear into corresponding holes 501 obtained frontally on the inner edge of the eyepieces 101 of said back frame 1, is shown above said frame 1 and said lenses 2. Said front frame 4 comprises two circles 204 whose back edges rest on the front edges of said lenses 2, so as to keep the latter in position within the corresponding eyepieces 101, and comprises on each of the two lateral ends 304 a buckle 5 obtained as one piece and aligned with the corresponding lateral end 304. Between each of said two buckles 5 and the corresponding lateral end 304 there is a weakening area 6 with small thickness, which enables said buckles to elastically rotate of a given angle with respect to said lateral ends 304 and therefore to the front frame 4. Each of said buckles 5 further comprises an adjustment tooth 105 and two protruding elements 205 obtained on its lower surface, said protruding elements 205 being designed to engage into the hollows 401 of the back frame 1 during the assembly of the present mask.

[0009] Figs. 2 and 3 show the mask of Fig. 1 as assembled and in its operative embodiment, i.e. equipped with a face piece 7 and a headpiece 8, both made of elastomeric material. Said headpiece 8 comprises two free ends which are wound each around the pin 3 provided in the opening 301 obtained on each of the lateral ends of the back frame 1, see section IV-IV of Fig. 4. On the outer surface of each of the ends of said headpiece 8 relief elements 108 are transversally obtained, which are designed to engage with said adjustment tooth 105 obtained in the lower portion of each of the buckles 5. The two pins 3 of the back frame 1 and the two adjustment teeth 105 of the two buckles 5, protruding into the openings 301 towards said pins 3 and engaged into said relief elements 108 of the headpiece 8, enable to keep said headpiece around the diver's head and thus allow the present mask to be put on.

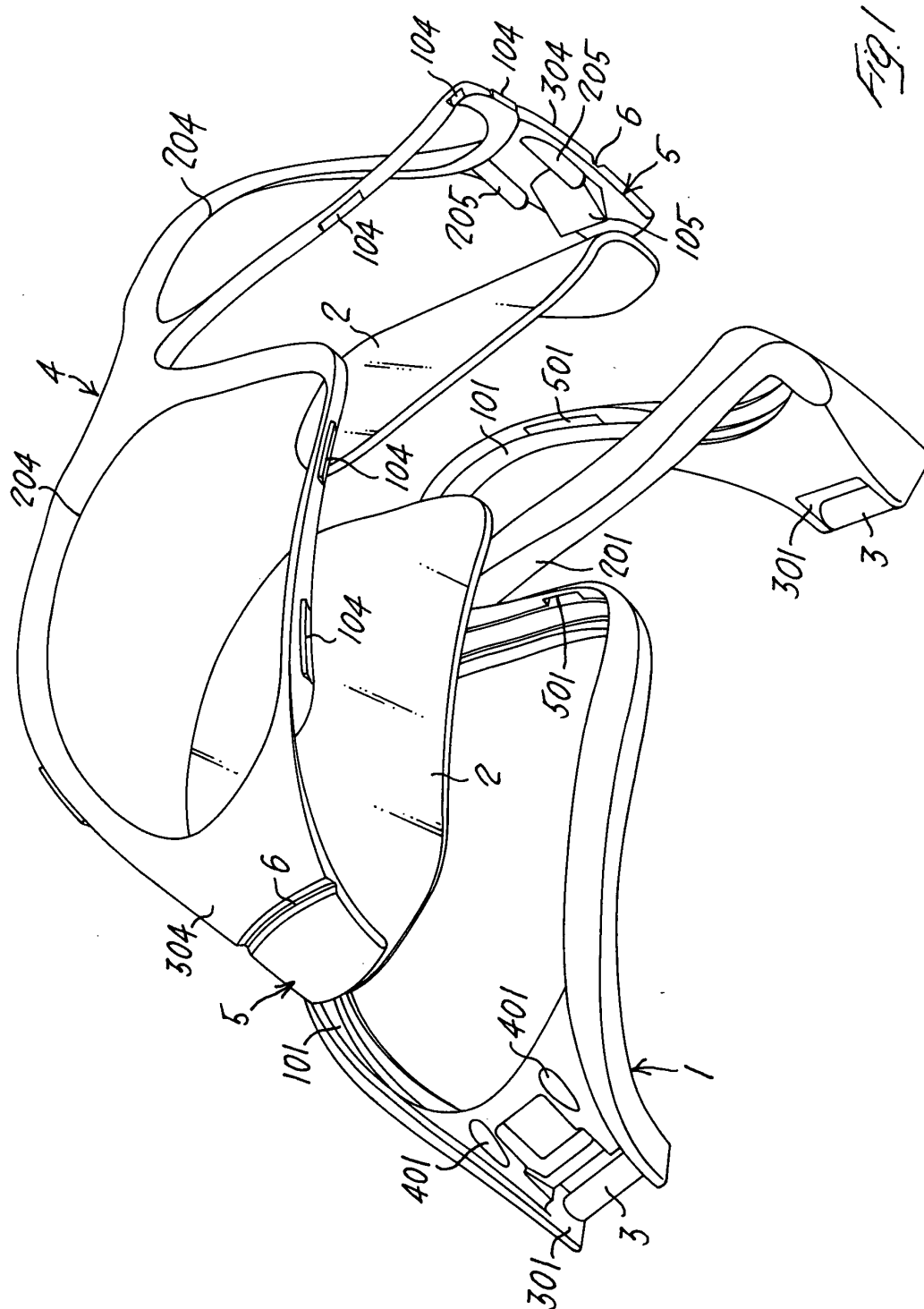
[0010] The working of the present mask can be easily inferred: when the diver wants to insert the free ends into the two openings 301 and around the two pins 3, or when s/he simply wants to adjust the length or tensioning of said headpiece if said ends are already in, s/he just has to slightly lift the buckle or buckles 5 so as to

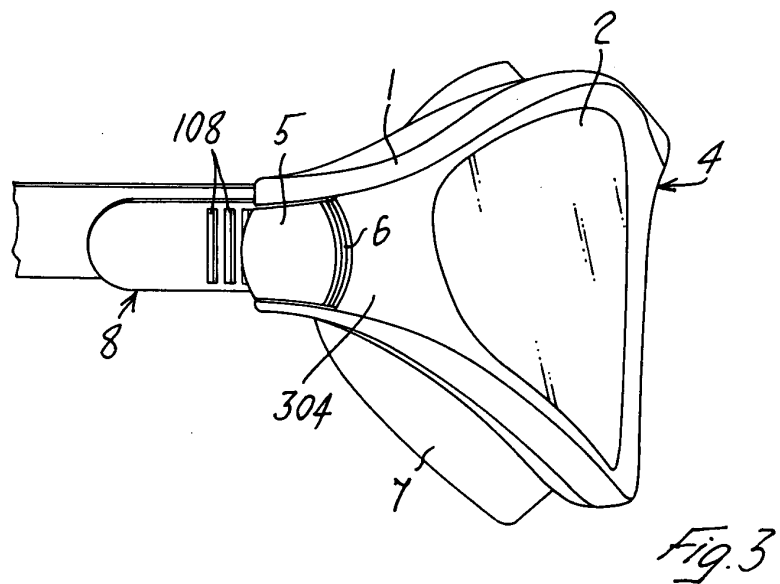
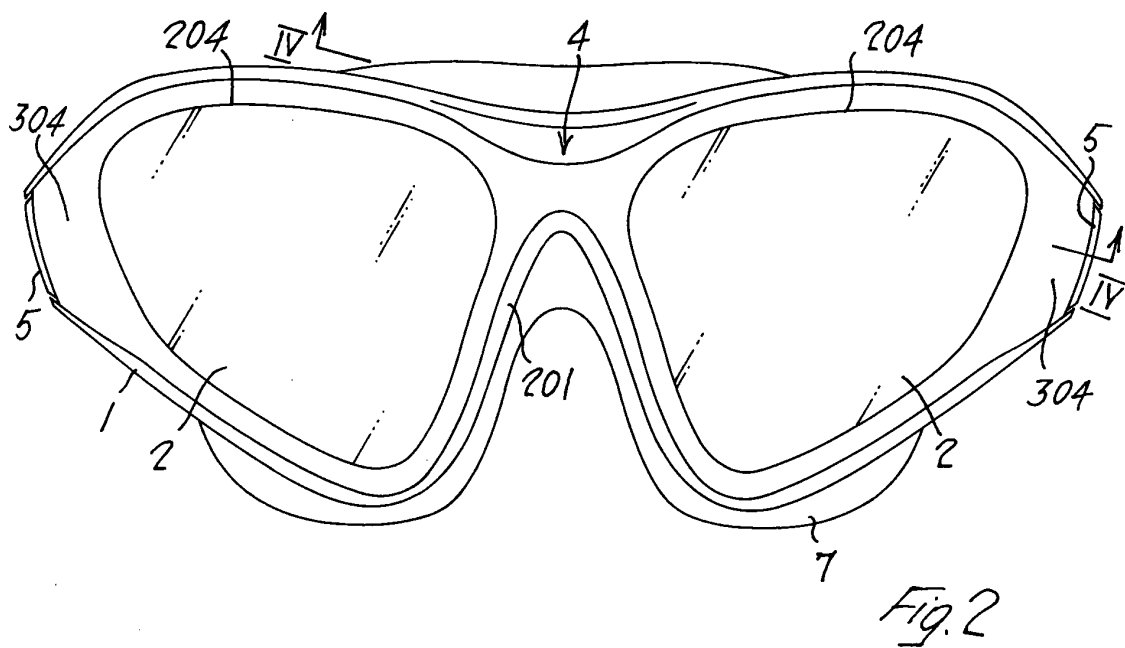
make them elastically rotate around the corresponding weakening areas 6 towards the outside, therefore right in Fig. 4, so that the adjustment teeth 105 disengage from the relief elements 108 and allow the headpiece 8 to slide around the pin 3. Once the desired length or tensioning of said headpiece 8 have been achieved, the diver simply releases the buckle or buckles 5 so that they are again aligned with the corresponding lateral ends 304 of the front frame 4 and the adjustment teeth engage again with said relief elements 108.

(501) obtained frontally on the inner edge of said back frame (1).

Claims

1. Diving mask comprising a back frame (1) housing a single lens or a pair of lenses (2), a front frame (4) fastened to said back frame (1) and a headpiece (8) made of elastomeric material having each of the two free ends inserted into a suitable seat (301, 3), said seat (301, 3) being obtained on each of the two lateral ends of said back frame (1) and cooperating with a buckle (5) for adjusting the length and/or the tensioning of said headpiece (8), **characterized in that** said adjustment buckle (5) is obtained as one piece on each of the lateral ends (304) of said front frame (4) and comprises means (6) enabling a given elastic rotation of the latter with respect to said lateral ends (304) of the front frame (4).
2. Diving mask according to claim 1, **characterized in that** said hinging means comprise a weakening area (6) with small thickness obtained between each lateral end (304) of said front frame (4) and the corresponding adjustment buckle (5).
3. Diving mask according to claim 1, **characterized in that** each of said buckles (5) comprises in its lower portion at least an adjustment tooth (105) engaging into suitable relief elements (108) obtained outside on each of the free ends of said headpiece (8).
4. Diving mask according to claim 1, **characterized in that** in each of the lateral ends of said back frame (1) there is an opening (301) having a pin (3) around which the corresponding free end of the headpiece (8) is wound, said adjustment tooth (105) of the buckle (5) protruding into said opening (301) and towards said pin (3).
5. Diving mask according to claim 1, **characterized in that** each of said buckles (5) comprises in its lower portion protruding elements (205) fitting into corresponding hollows (401) obtained on the lateral ends of said back frame (1).
6. Diving mask according to claim 1, **characterized in that** said front frame (4) comprises on its outer edge teeth (104) fitting with a trip gear into suitable holes





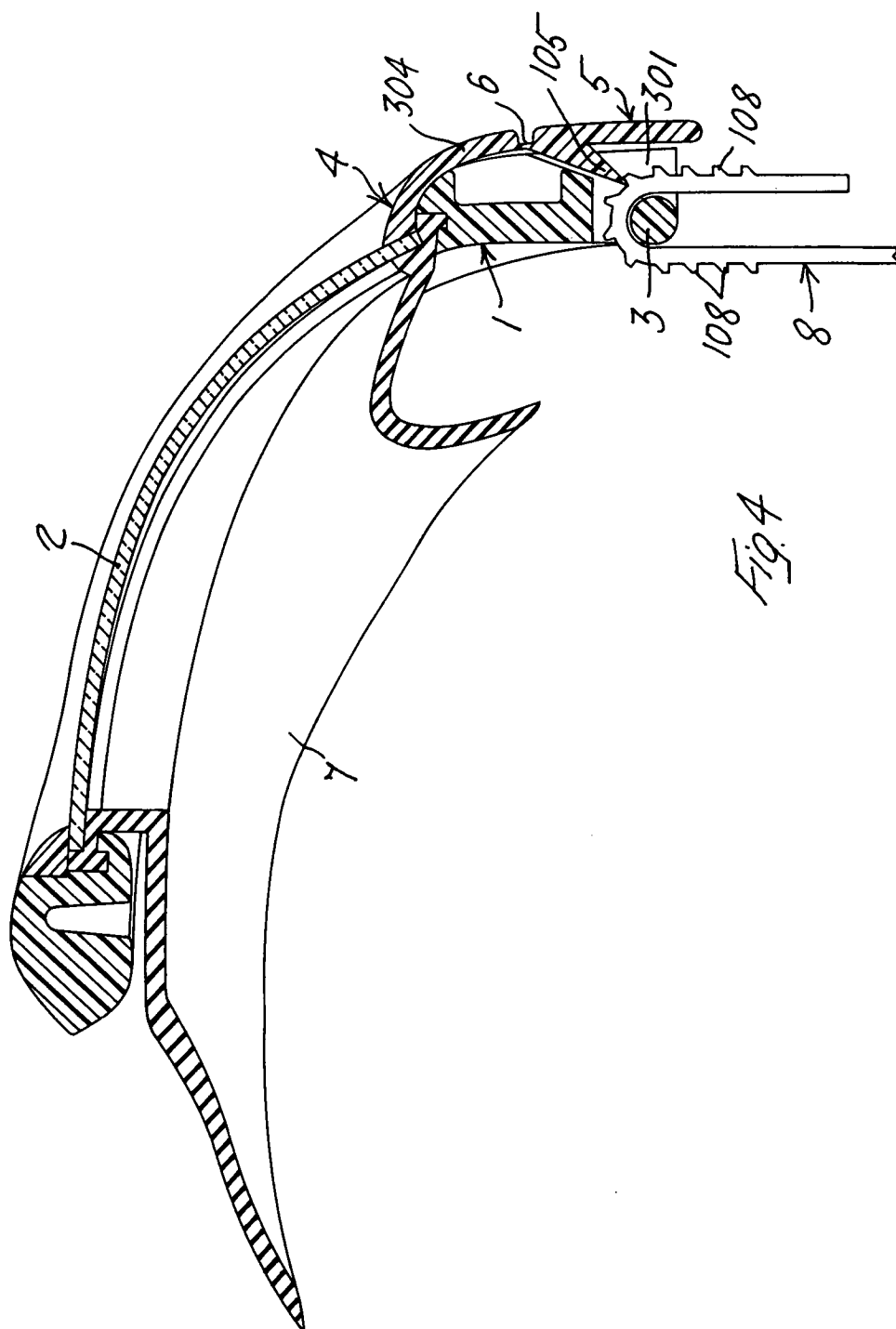


Fig. 4



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Application Number
EP 04 00 3120

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| Place of search The Hague | | Date of completion of the search 17 June 2004 | Examiner Häusler, F.U. |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> | | | |

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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