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A62B 9/06

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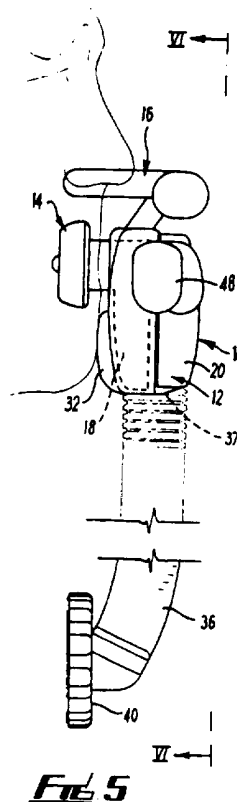
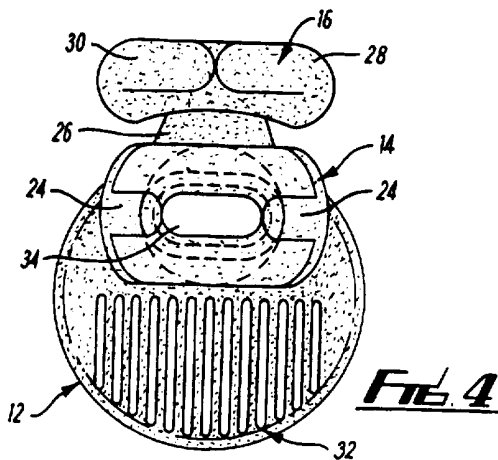
GB 1222570 A	GB 0254283 A	EP 0155991 A1
WO 92/21408 A1	US 5133347 A	US 4452240 A
US 4090511 A	US 3658058 A	

(58) Field of Search

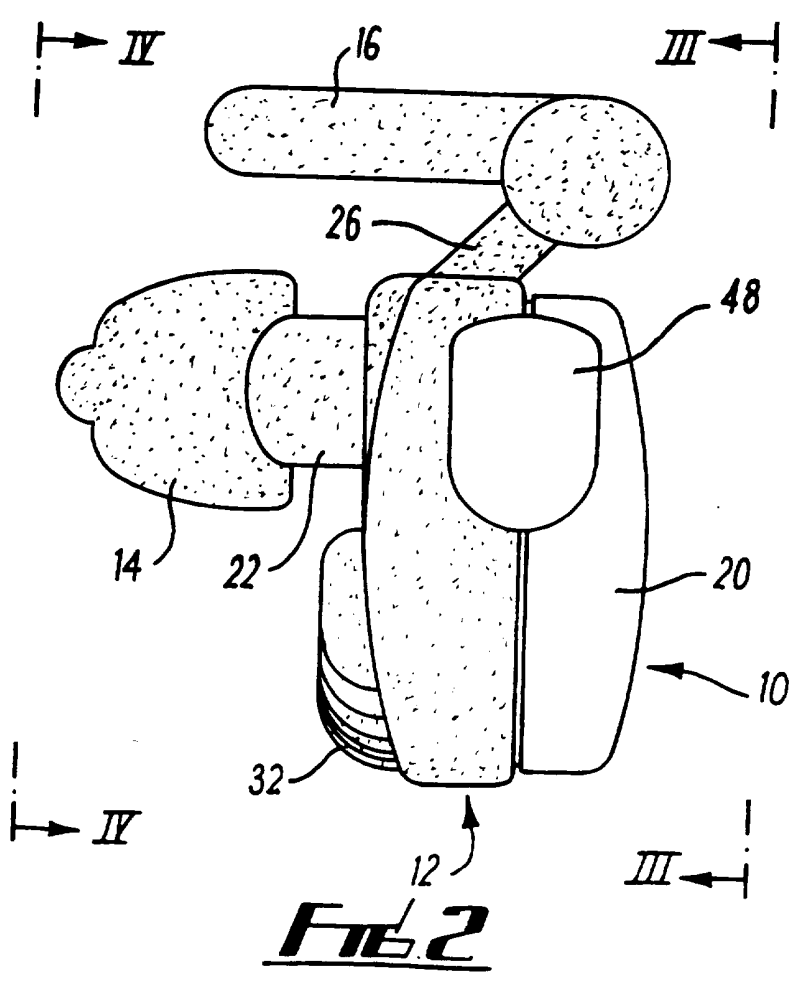
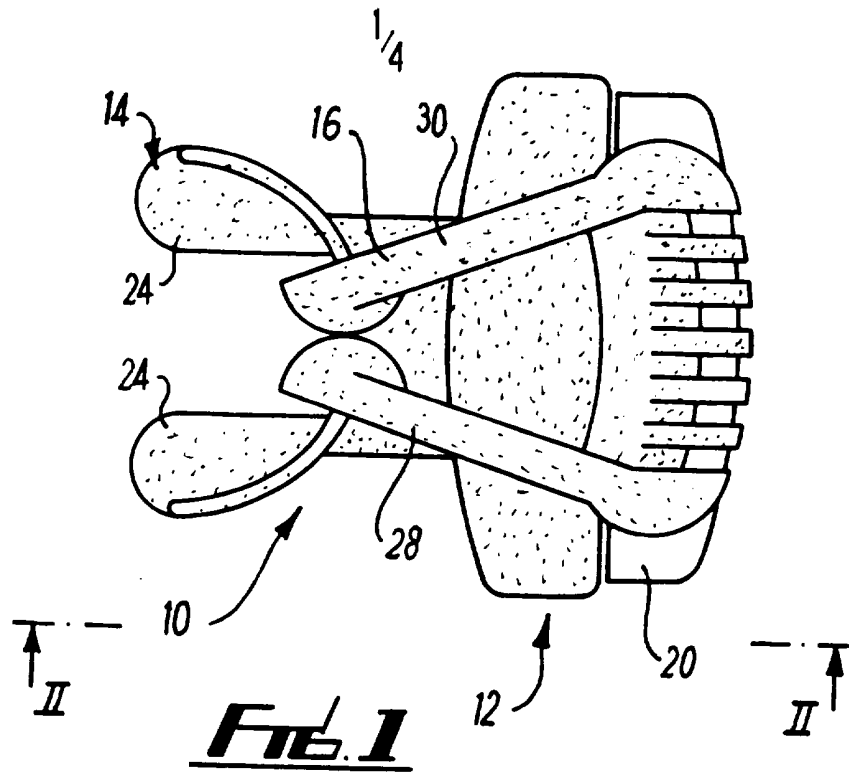
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INT CL⁶ A62B 9/06 , B63C 11/18
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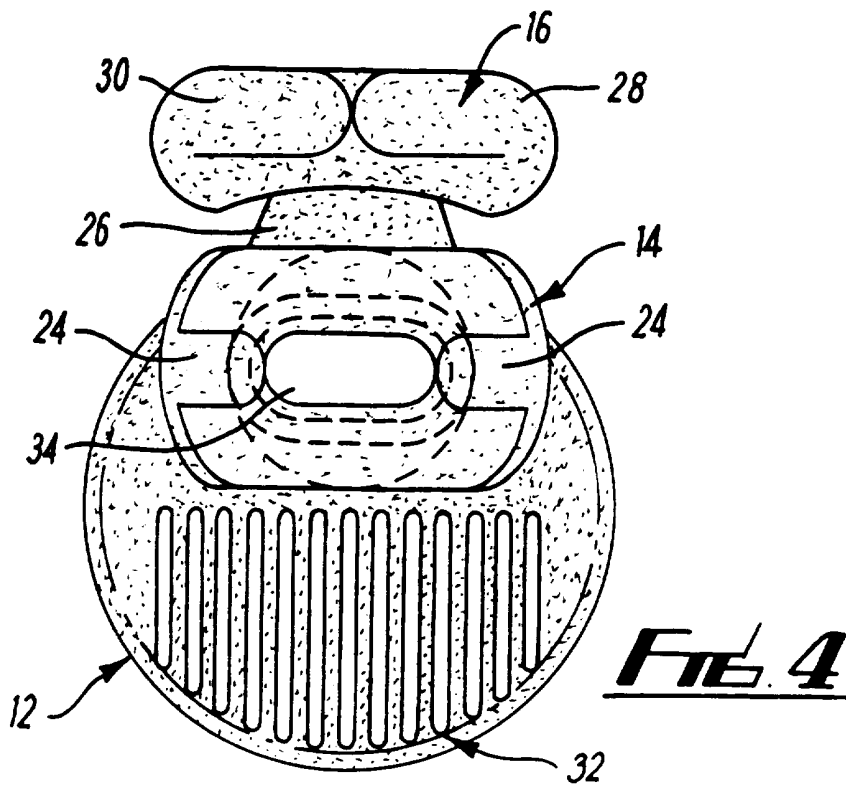
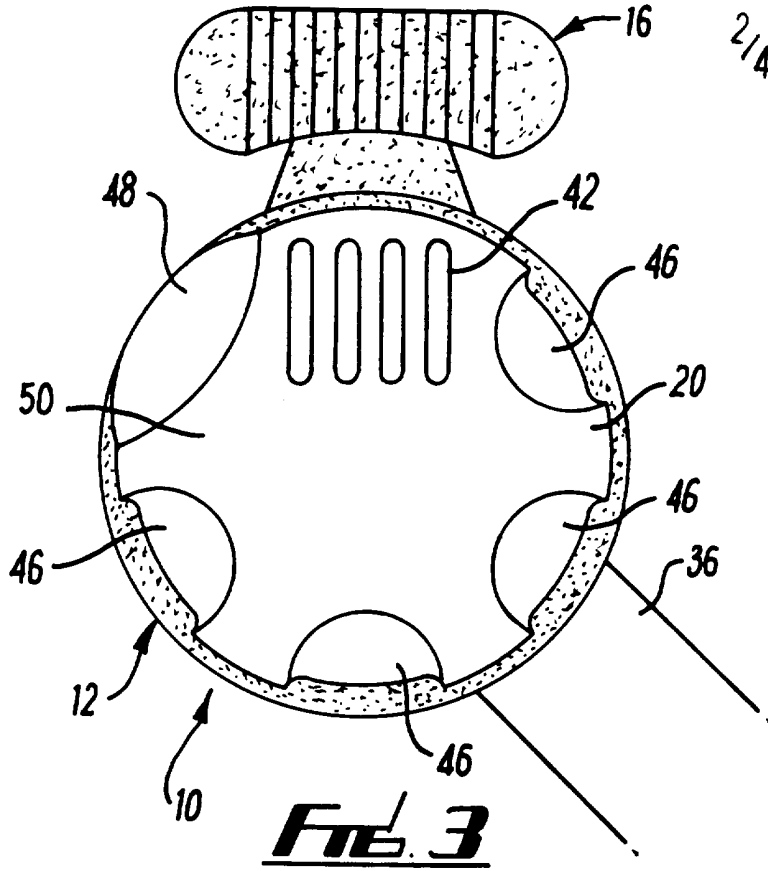
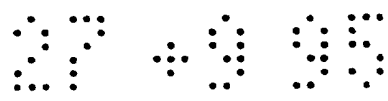
(54) **Breathing device with mouthpiece and nose clip**

(57) The device comprises a main body 12 which defines a passage 18 communicating with an external region, a mouthpiece 14 and an integral nose clip 16 for holding the user's nostrils closed, the mouthpiece and nose clip preferably being so positioned as to simultaneously engage the wearer. The connection between the nose clip and main body may be resilient to allow for anthropometric variation. The device may be used with a re-breathing bag or with an air or oxygen cylinder and can also be used in respiratory testing.



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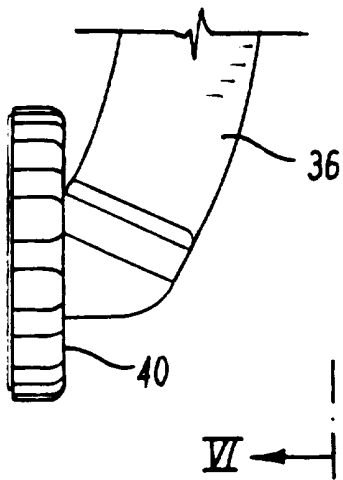
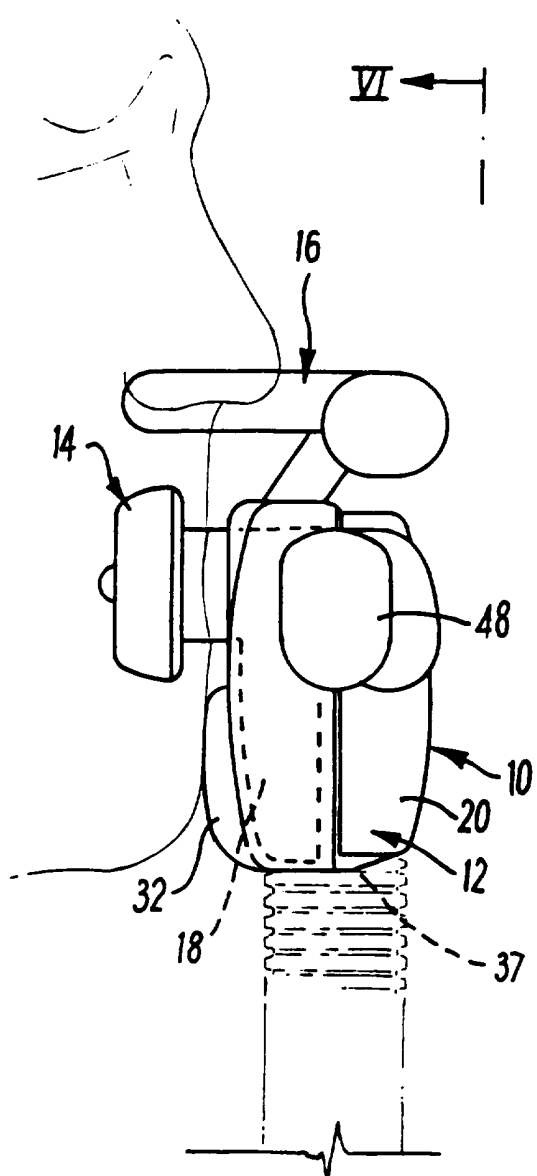


FIG. 5

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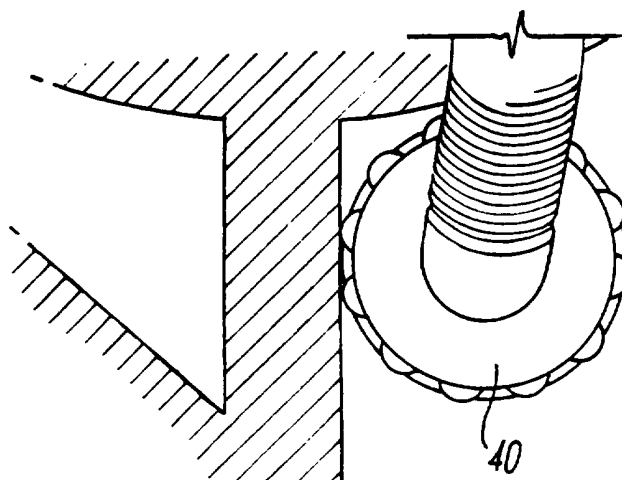
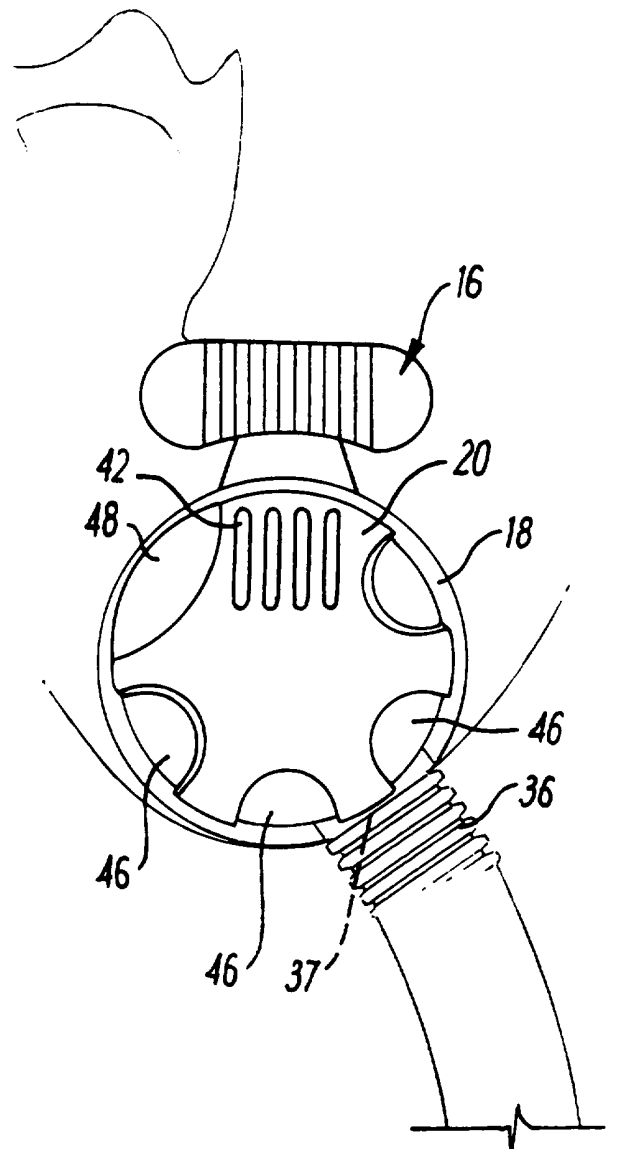
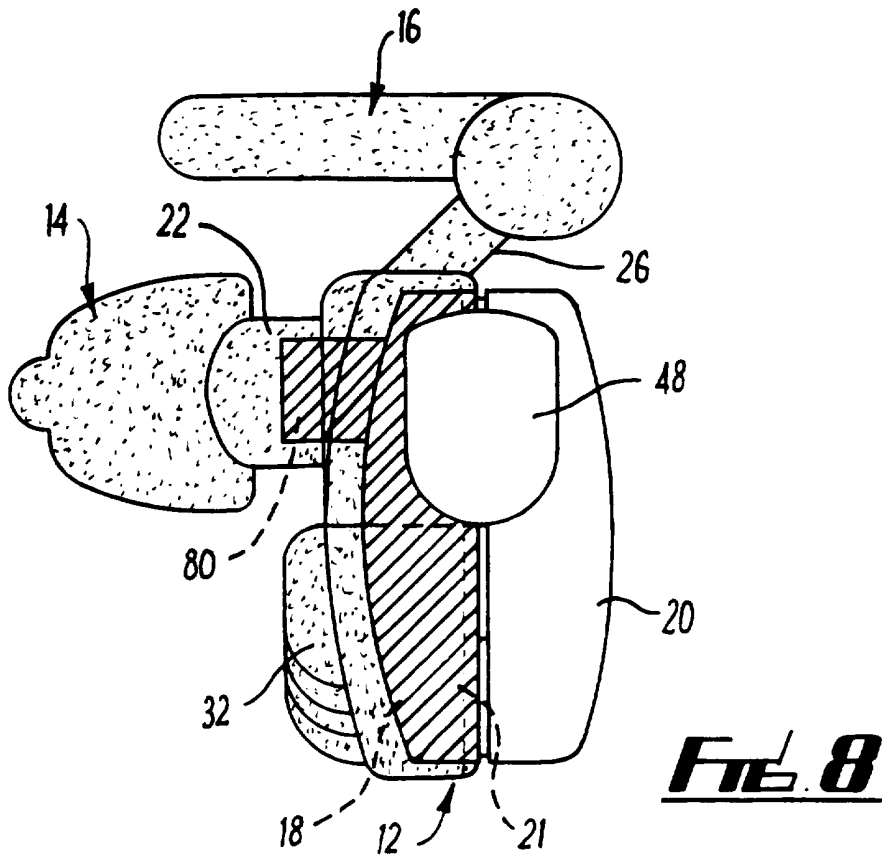
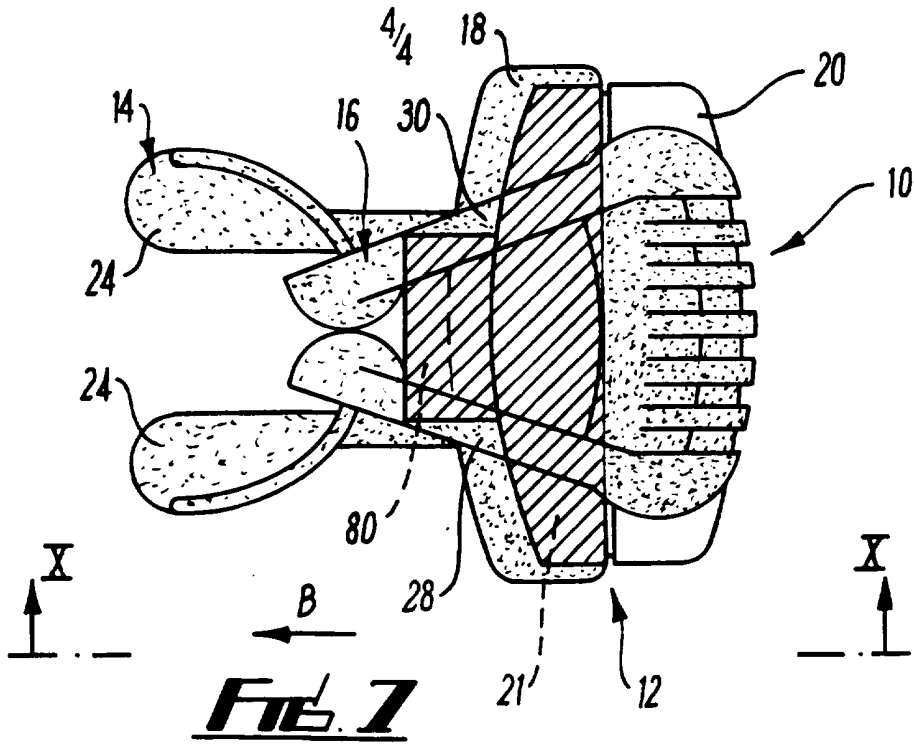


FIG. 6



Improvements in or relating to breathing devices

This invention relates to breathing devices. More particularly, but not exclusively, this invention relates to breathing devices for use with re-breathing bags.

In certain emergency situations, it is often necessary to provide a means whereby a person can be given air. It is known that exhaled air contains oxygen and can be re-breathed several times. Devices utilising this feature are known, but they have disadvantages of being bulky and difficult to use.

It is an object of this invention to obviate and/or mitigate this disadvantage.

According to this invention there is provided a breathing device comprising a main body defining a passage for communication with a region external of said device, a mouthpiece provided on said main body defining an opening to allow communication with said passage to allow breathing when the mouthpiece is held in a user's mouth, and a nose clip to hold closed the nostrils of the user.

Preferably, the nose clip is integral with said main body. The connection between said nose clip and said main body may be resilient to allow for anthropometric variation between the nose and the mouth from individual to individual. In one embodiment, the mouthpiece may be integral with the main body.

Preferably, the mouthpiece and the nose clip are so positioned to allow the nose clip to engage the nose of the wearer at substantially the same time as the mouthpiece is received in the user's mouth.

The main body may be formed of a suitable material capable of forming a seal to prevent ingress of water. Preferably the material is an elastomeric material to provide a degree of impact protection and comfort for the user. The connection between the main body and the nose clip may be formed of said elastomeric material.

The mouthpiece and at least part of the main body may be formed by moulding said elastomeric material. The nose clip may be formed of a resilient plastics material and encapsulated by said elastomeric material during moulding.

The breathing device may define a first opening in

communication with the region external of said device and a second opening defined by the mouthpiece.

The breathing device may also include valve means mounted on said main body. The breathing device may define a third opening to allow communication between the second opening and a further region external of said device. Said further region may be in the form of an oxygen cylinder or a re-breathing means.

Preferably, the valve means is adapted to be selectively movable between a first position in which the first opening is in communication with the second opening, and a second position in which the third opening is in communication with the second opening.

An embodiment of the invention will now be described by way of example only with reference to the accompanying drawings in which:-

- Fig. 1 is a top plan view of a breathing device;
- Fig. 2 is a view along the lines II-II in Fig. 1;
- Fig. 3 is a view along the lines III-III in Fig. 2;
- Fig. 4 is a view along the lines IV-IV in Fig. 3;
- Fig. 5 is a side view of a breathing device in operation;
- Fig. 6 is a view along the lines VI-VI in Fig. 5;

Fig. 7 is a top plan view of another embodiment;
and

Fig. 8 is a view along the lines X-X of Fig. 7.

Referring to the drawings, there is shown a breathing device 10 which comprises a main body 12, a mouthpiece 14 and a nose clip 16. An internal passage 18 (see Fig. 5) is defined in the main body, and will be explained below. Valve means 20 is secured to the breathing device. The mouthpiece 14 is connected to the main body 12 by a connecting portion 22.

As can be seen from Figs. 1,2 and 4, the mouthpiece 14 is shaped to fit inside a user's mouth, and has inwardly extending members 24 upon which the user can bite, if desired. As can be seen from Figs. 1 and 2, the mouthpiece 14 extends rearwardly of the main body 12.

The nose clip 16 is connected to the main body 12 by a connecting member 26. The nose clip 16 comprises first and second gripping members 28,30 adapted to grip the nose of the user, thereby closing and sealing the user's nostrils. The nose clip 16 extends rearwardly of the main body 12, and is so positioned to engage the nose of the user at the same time as the mouthpiece 14 is inserted in the user's mouth.

Ribs 32 also extend rearwardly from the main body 18 and are so arranged to engage the chin of a user (see Fig. 5). The ribs 32 which are adapted to provide cushioning from impact of the breathing device 10 against the users face.

The main body 12, and the mouthpiece 14 are formed of an appropriate elastomeric material by moulding. The nose clip 16 is formed from a resilient plastics material and is encapsulated in the elastomeric material at the same time as the moulding of the main body 12 and the mouthpiece 14. The connecting portion 22 and the connecting member 26 are also formed by moulding during the aforementioned moulding process.

Referring to Fig. 4, the mouthpiece 14 is provided with an opening 34 which is in communication with a passage 18 in the breathing device 10 to enable the user to breathe, as will be explained below.

In one embodiment shown in Figs. 5 and 6, the breathing device 10 is connected to a re-breathing bag 38, via the valve means 20.

In one mode of operation, the opening 34 is in communication with a pipe 36, via the passage 18, and an

aperture 37 in the valve means 20 to the re-breathing bag 38. In an alternative mode of operation, the opening 34 communicates via the internal passage 18 to apertures 42 on the valve means 20 to allow the user to breathe from the external atmosphere.

The valve means 20 comprises a rotatable member 50 which can be rotated from a first position to allow the user to breathe via the apertures 42, to a second position to allow the user to breathe exhaled air in the bag 38 via the pipe 36. Rotation of the rotatable member 50 is effected by pressing a button 48 to release a catch (not shown) inside the valve means 20. Recesses 46 are provided as finger grips to facilitate rotation of the rotatable member 50.

Various modifications can be made without departing from the scope of the invention. For example, the recesses 46 could be replaced by tactile grips, protrusions or other formations capable of enabling the user to hold the second portion to move it to the first position from the second position.

Although the breathing device 10 has been described with reference to its use with a re-breathing bag 38, the breathing device 10 could be used in other applications.

For example, the pipe 36 could be connected to an oxygen or air cylinder to enable the user to breathe non-exhaled air or oxygen in hazardous situations for example, under water, in mines or near fires. The breathing device 10 can also be used in medical applications for example in testing the respiratory systems of athletes, in which case the pipe 36 could be connected to an appropriate known measuring apparatus.

A further modification is shown in the embodiment shown in Fig. 7 and 8 in which the features which are the same as those shown in Figs. 1 to 6 have been designated with the same reference numeral.

In Figs. 7 and 8 a part 21 of the valve means 20 of the main body 12 is shown extending into the passage 18, such that the passage 18 is defined within the part 21. The part 21 of the valve means 20 extending into the passage 18 is shaded in Figs. 7 and 8. It will be appreciated that in the embodiment shown in Figs. 1 to 8 the second portion 20 also extends into the passage 18 in the same way as shown in Figs. 7 and 8 but this has not been shown in Figs. 1 to 6 for clarity.

In the embodiment shown in Figs. 7 and 8 the modification comprises a flange 80 extending from the

valve means 20 towards the mouthpiece 14. In this embodiment, the mouthpiece 14 and the connecting portion 22 are formed as a single unit separate, and detachable, from the main body 12. The connecting portion 22 engages the flange 80 and is a push fit thereon. The mouthpiece 14 and the connecting portion 22 can be detached from the main body 12 by being pulled in the direction indicated by the arrow B. This has the advantage that the mouthpiece 14 can be cleaned separately from the rest of the breathing device 10.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

CLAIMS

1. A breathing device comprising a main body defining a passage for communication with a region external of said device, a mouthpiece provided on said main body defining an opening to allow communication with said passage to allow breathing when the mouthpiece is held in a user's mouth, and a nose clip to hold closed to nostrils of the user.

2. A breathing device according to Claim 1 wherein the nose clip is integral with said main body.

3. A breathing device according to Claim 1 or 2 wherein the connection between said nose clip and said main body may be resilient to allow for anthropometric variation between the nose and the mouth from individual to individual.

4. A breathing device according to any preceding claim, wherein the mouthpiece is integral with the main body.

5. A breathing device according to any preceding claim wherein the mouthpiece and the nose clip are so

positioned to allow the nose clip to engage the nose of the wearer at substantially the same time as the mouthpiece is received in the user's mouth.

6. A breathing device according to any preceding claim wherein the main body is formed of a suitable material capable of forming a seal to prevent ingress of water.

7. A breathing device according to Claim 6 wherein the material is an elastomeric material to provide a degree of impact protection and comfort for the user.

8. A breathing device according to Claim 6 or 7 wherein the connection between the main body and the nose clip may be formed of said elastomeric material.

9. A breathing device according to Claim 6,7 or 8 wherein the mouthpiece and the main body is formed by moulding said elastomeric material.

10. A breathing device according to Claim 8 wherein the nose clip is formed of a resilient plastics material and encapsulated by said elastomeric material during moulding of said main body.

11. A breathing device substantially as herein

described with reference to and as shown in the accompanying drawings.

12. Any novel subject matter or combination including novel subject matter herein disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

Application number
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Relevant Technical Fields

- (i) UK Cl (Ed.N) A5T (TCD, TCE, TCKA)
- (ii) Int Cl (Ed.6) A62B 9/06, B63C 11/18

Search Examiner
L V THOMAS

Date of completion of Search
24 OCTOBER 1995

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Documents considered relevant following a search in respect of Claims :-
1-11

Categories of documents

- X:** Document indicating lack of novelty or of inventive step.
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- A:** Document indicating technological background and/or state of the art.
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- E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
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Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1222570 (DRAGER) see page 1 lines 10-73	1, 3-5
X	GB 254283 (DRAGER) see page 1 lines 68-74 and Figure 1	1, 2, 4
X	EP 0155991 A1 (DRAGERWERK) see page 5 lines 14-17 and Figure 1	1, 3, 4
X	WO 92/21408 A1 (BROOKDALE INT) see page 5 lines 1-10, page 20 lines 4-12, and Figures 2, 3 & 5	1, 4, 5
X	US 5133347 (HUENNEBECK) see Column 3 lines 14-40	1, 4
X	US 4452240 (MORETTI) see column 2 line 29 - column 3 line 10, column 3 line 55 - column 4 line 5 and column 4 lines 34-64	1, 2, 4, 5
X	US 4090511 (GRAY) see column 2 line 57 - column 3 line 3	1-4
X	US 3658058 (NEIDHART ET AL) see whole document	1, 2, 4-8

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