United States Patent

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[54] **DISPOSABLE COOLED OXYGEN MASK**
12 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **128/146.7**
[51] **Int. Cl.** **A62b 7/00**
[50] **Field of Search** ..... 128/146, 146.3, 146.7, 142.5, 142.7, 141; 2/(Inquired)

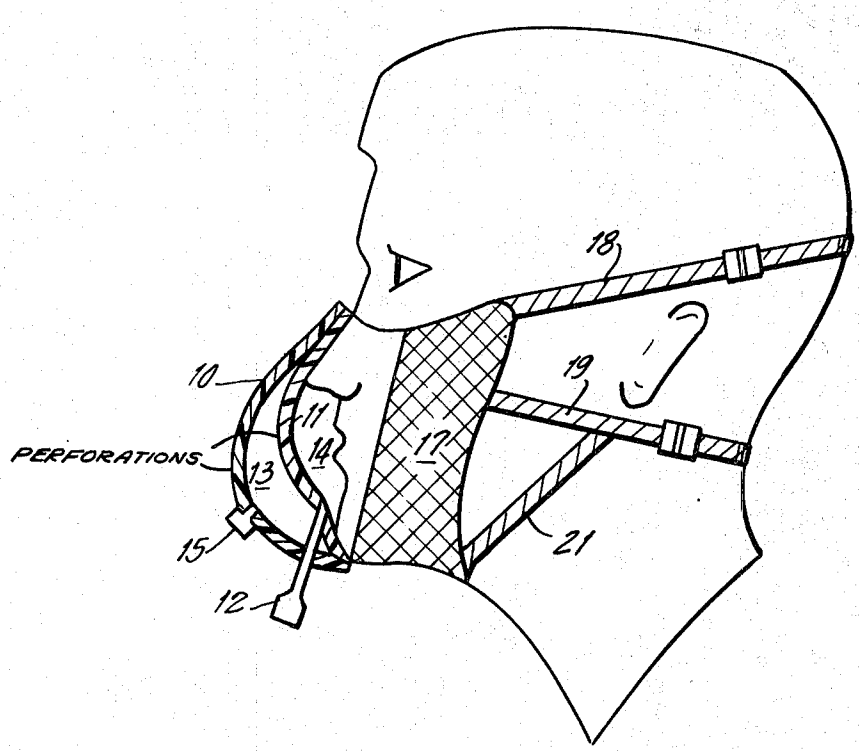
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ABSTRACT: A disposable oxygen mask formed of a dual-walled thermoplastic material shaped to be sealed around the nose and mouth of a wearer. The interior pocket receives a coolant medium such as alcohol or a forced airflow while the region between the interior mask panel and the wearer's mouth and nose receives an oxygen or air conduit.



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FIG. 2

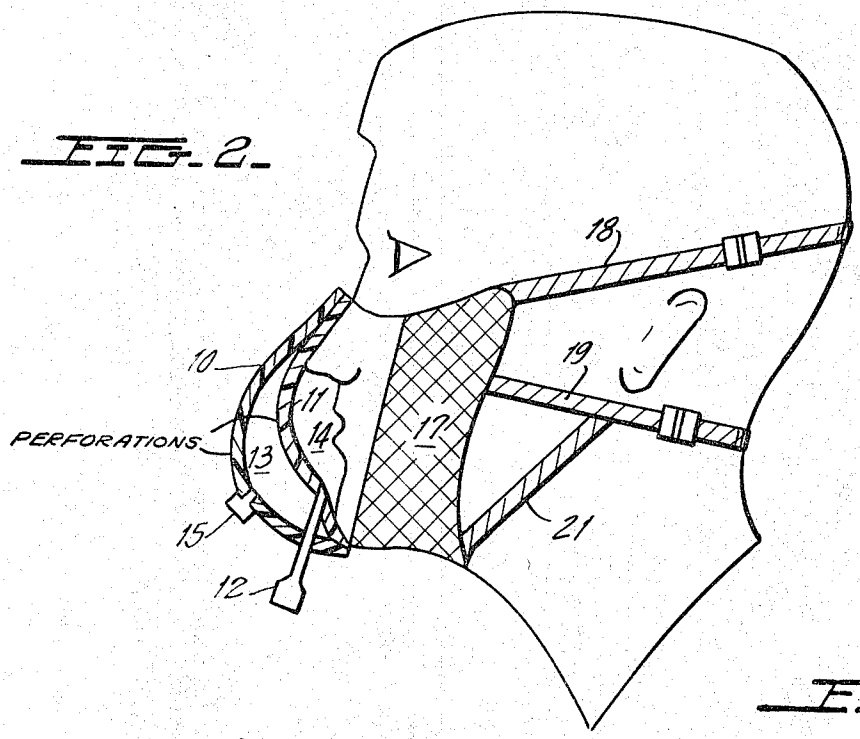
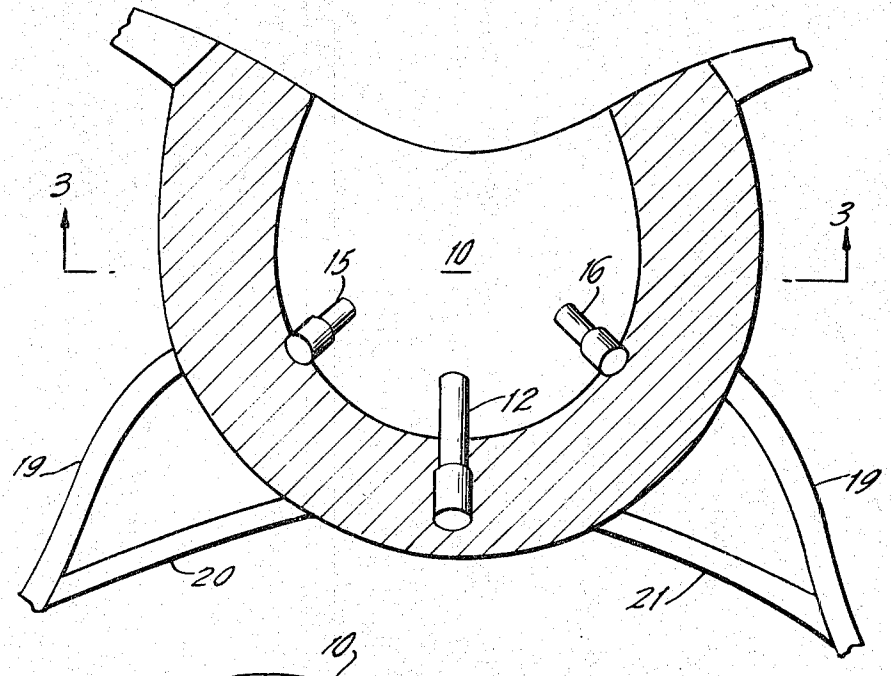


FIG. 1



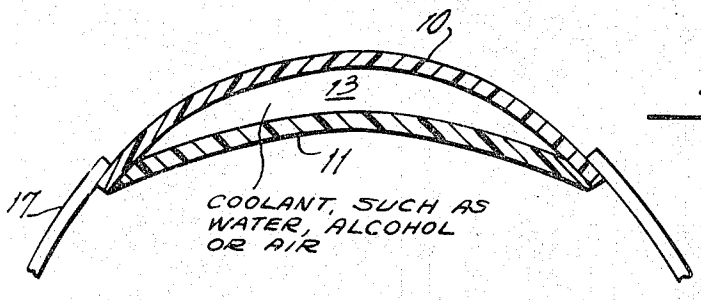


FIG. 3

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DISPOSABLE COOLED OXYGEN MASK

This invention relates to oxygen masks, and more particularly relates to an oxygen mask having a coolant-receiving pocket which engages the wearer's face.

Oxygen masks are well known which contain enlarged pockets extending around the edge of the mask which engage the wearer's face. The enlarged pocket normally receives a soft, pliant, solid material so that the mask will easily follow the contours of the wearer's face without excessive pressure being applied to sensitive pressure points. When such masks are used for an extended period of time, the portions of the mask engaging the wearer's face can become uncomfortably warm. In accordance with the present invention, the mask pocket which is normally filled with a soft, pliant material such as a rubber foam, or the like, is left hollow and inflated with a coolant material such as a liquid or a gas, either of which may be constantly replenished. The fluid medium in the pocket retains the desired flexibility to ensure sealing of the mask around the wearer's face, where, however, the use of the coolant for inflating the pocket will ensure that the mask remains cool and comfortable against the wearer's face over extended periods of time.

Accordingly, a primary object of this invention is to provide a novel oxygen mask structure which remains comfortable to wear for extended periods of time.

A further object of this invention is to provide a novel means for cooling portions of an oxygen mask which engage a wearer's face.

Yet another object of this invention is to provide a novel oxygen mask formed of inexpensive material whereby the mask can be disposed of after use.

These and other objects of this invention will become apparent from the following description when taken in connection with the drawings in which:

FIG. 1 is a front plan view of the mask of the present invention when the mask elements are laid flat.

FIG. 2 is a side view of the mask of FIG. 1 when fitted to a wearer's face.

FIG. 3 is a cross-sectional view of FIG. 1 taken across the section line 3–3 in FIG. 1.

Referring now to the drawings, the novel oxygen mask of the invention is formed of two flexible thermoplastic panels 10 and 11 which are heat sealed to one another along their outer periphery. By way of example, sheets 10 and 11 may be formed of polyethylene sheet having a thickness of about 5 mils.

A standard oxygen connection nipple 12 extends through outer panel 10 and inner panel 11, the nipple 12 being suitably sealed to sheets 10 and 11 to prevent leakage from the sealed chamber 13 formed between sheets 10 and 11. Thus, oxygen or air can be admitted into the volume 14 between panel 11 and the wearer's nose and mouth in the usual manner.

Two additional connection nipples 15 and 16, which are of a standard variety, are then formed in the outer panel 10 for the purpose of introducing gaseous or liquid fluid into the volume 13, as will be described later.

The mask structure is then completed by the addition of a webbing 17 which is suitably secured to the outer periphery of panel 10, with webbing 17 carrying head straps 18 and 19. Straps 18 and 19 may be conventional elastic bands or can be two separate strips buckled together. A pair of chin bands 20 and 21 of suitable elastic material are secured to webbing 17 and connected to strap 19 to retain webbing 17 under the wearer's chin.

In operation, the mask, which is seen to be extremely inexpensive to manufacture, is secured to the patient's face, and oxygen or air is into introduced to the patient's mouth and nose through nipple 12. The pocket 13 is then inflated as by filling pocket 13 with alcohol or water through the nipples 15 and 16. The pocket 13 will then inflate to the shape illustrated in FIG. 2 with the inflated portions of the mask bearing upon the wearer's facial contours to seal around the nose and mouth area.

Moreover, the coolant fluid causing the inflation of pocket 13 causes the mask to remain cool against the wearer's face over extended periods of time. Preferably, the coolant within pocket 13 will be circulated as by continuously introducing cool fluid into nipple 16 and withdrawing heated fluid from nipple 15. Where alcohol is used, the rate of change of the fluid volume within pocket 13 may be decreased as compared to liquids, such as water, having a lower specific heat constant. Clearly, other fluids such as air could also be circulated through pocket 13 by connection of a compressor to nipple 16 with a suitable valve connected to nipple 15 which permits gradual release of the air pressure within pocket 13 to maintain a constant pressure therein. If desired, and where circulated air is to be used as the cooling medium within pocket 13, nipple 15 can be disposed of and panel 10 (as well as panel 11) can have small perforations therein to permit air leakage from pocket 13.

Although there has been described a preferred embodiment of this novel invention, many variations and modifications will now be apparent to those skilled in the art.

I claim:

1. An oxygen mask comprising first and second panels of plastic material sealed to one another to form a sealed chamber, said panels being flexible so as to enable the innermost panel in airtight relationship against wearer's face; fluid passage means extending through the outer of said panels into said chamber; liquid coolant means in said chamber for inflating said sealed chamber; mounting means connected to the periphery of said mask for securing said mask to a wearer's face; and fluid conduit means extending through both panels to the space between the inner panel and the wearer's face for introducing oxygen into the space between a wearer's face and the inner panel.

2. The mask of claim 1 which further includes a web strip secured around at least a portion of the outer periphery of said first and second panels; and head strap means secured to said webbing.

3. The mask of claim 1 wherein said coolant is alcohol.

4. The mask of claim 1 wherein said coolant is water.

5. An oxygen mask comprising an outer panel and an inner panel of plastic material sealed to one another to form a sealed chamber, said panels being flexible so as to enable the innermost panel to fit in airtight relationship against a wearer's face; fluid coolant in said chamber for inflating said chamber, first passage means extending through said outer panel for the introduction of fluid coolant into said chamber, second passage means extending through one of said panels for removing fluid coolant from said chamber, third passage means extending through said outer and inner panels to supply oxygen to the space defined by a wearer's face and said inner panel and mounting means connected to the periphery of said mask adapted to secure said mask to a wearer's face.

6. The mask of claim 5 wherein said coolant is air.

7. The mask of claim 5 which further includes a web strip secured around at least a portion of the outer periphery of said first and second panels; and head strap means secured to said webbing.

8. The mask of claim 5 wherein the inner panel is of a size adapted to cover the nose and mouth of a wearer.

9. The mask of claim 8 wherein the plastic material is a flexible thermoplastic.

10. The mask of claim 5 wherein said second passage means extends only through said outer panel.

11. The mask of claim 5 wherein said second passage means comprises small perforations in said outer and inner panels.

12. The oxygen mask of claim 5 wherein said second passage means comprises small perforations in said outer panel only.