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INHALER MASK

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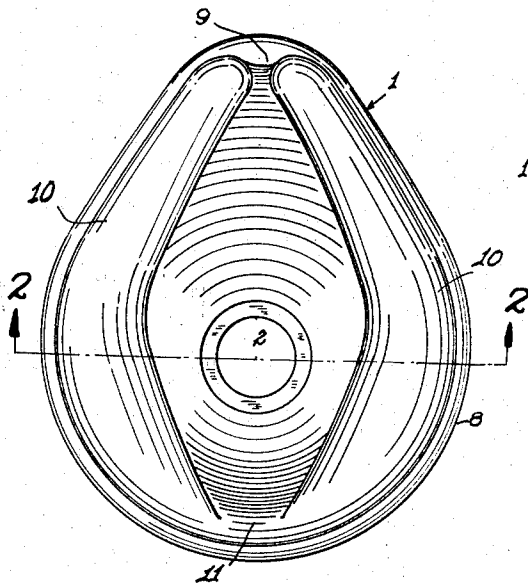


FIG. 1

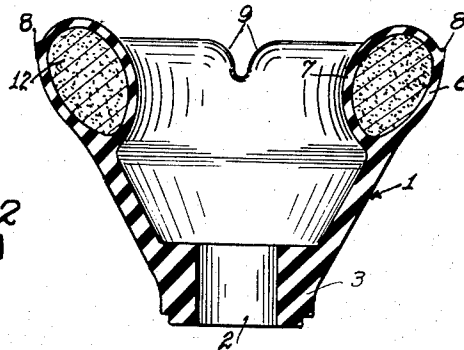


FIG. 2

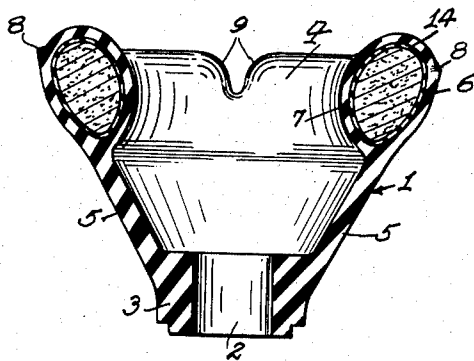


FIG. 3

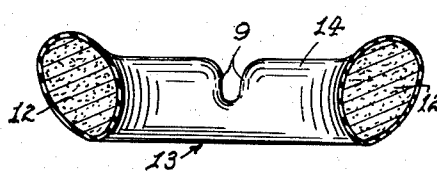


FIG. 4

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INHALER MASK

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11 Claims. (Cl. 128—146)

My invention relates to face masks and more particularly to the type used to supply oxygen, anesthesia or other gases to be inhaled by a patient.

It is one of the objects of this invention to provide a face mask of the inhaler type which can easily and quickly be shaped to conform to the contour of the patient's face and to enable the portions of the mask engaging the face of the patient to retain the shape imparted thereto as long as desired in fitting the mask to the patient.

It is another important object of this invention to provide a mask of this type which affords a high degree of comfort in use and which effectively seals the mask to the face of the wearer against the loss of gases such as oxygen or anesthesia gas supplied thereto when in use.

Another object of this invention is a mask of this type which is of extremely simple construction and which is durable in use and easily manufactured.

A further object of the invention is a mask of the inhaler type having a face engaging portion which can be preshaped or molded by hand pressure to easily conform to the contours of a person's face in applying the same in use, and which will retain the mating contour shape imparted to it when disengaged from the face, if so desired.

Another object of the invention is a mask formed of rubber or other non-porous material which can readily be molded into shape and which is provided with a substantially annular recess or envelope housing a material pliable at normal temperature, such as molding clay or similar pliable materials comprising relatively small particles movable over one another under light external pressure, disposed to engage the face of the wearer whereby the said face engaging portions may be formed or molded to comfortably and sealingly conform to the contours of the patient's face over the areas contacted by the mask.

Another object of this invention resides in the provision of a pliable plastic form-sustaining face-engaging rim for a mask of the type defined.

Other objects and advantages of this invention will become more apparent as the following description of two embodiments thereof progresses, reference being made to the accompanying drawing in which like reference characters are employed to designate like parts throughout the same.

In the drawings:

Figure 1 is a front elevation of an inhaler mask of the type described looking in the direction toward the interior of the mask;

Figure 2 is a section taken on line 2—2 of Figure 1;

Figure 3 is a sectional view of the mask similar to that shown in Figure 2, but illustrating a modified form of the present invention; and

Figure 4 is a detail view in transverse section of a form-sustaining cell unit adapted to be inserted in and around the peripheral face engaging portions of the mask, as illustrated in Figure 3.

Attempts have been made heretofore to increase the

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comfort of wearing a mask, such as an anesthesia mask, by providing an air cushion internally of the mask and which is adapted to engage the facial contours of the patient to which the mask is applied but such an air cushion at times has been found to be incapable of providing an effective seal between the mask and the face of the person wearing it because of the inability of the cushion to closely contact deep depressions in a face contour in the area of the cushion.

In carrying out my invention as illustrated in the drawings, the mask is indicated generally at 1 and is provided with an intake opening 2 and a nipple 3 by which a hose supplying gas to the mask is attached.

The mask body is preferably molded of a rubber or non-porous and flexible or resilient material and extends rearwardly from the relatively thick nipple walls at 3 toward the rearwardly disposed face engaging peripheral portion indicated generally at 4, the connecting walls between the face engaging portion and the nipple diverging rearwardly as at 5. These diverging walls are of less thickness than the walls of the nipple but are sufficiently thick and rigid to sustain the general shape of the mask body. The diverging walls terminate rearwardly in a peripheral or marginal cell, envelope or recess formed within the outer rear walls 6 and the inner rear wall 7 which are preferably integral with the mask body and which may be joined together preferably by vulcanizing, such as at 8.

The portion of the mask which fits generally across the bridge of the patient's nose is indicated at 9, while the cheek portions of the mask are indicated at 10 extending downwardly on opposite sides of the nose bridge portion and face in a diverging direction and then in a converging direction as in Fig. 1, terminating in a lower chin portion 11.

One of the primary objects of this invention is, as stated above, to provide an anesthesia mask or inhaler mask which is characterized by a construction affording a very high degree of comfort to the patient when the mask is applied in use, thereby enabling the contacting surfaces of the mask with the cheek, nose and chin portions of the patient's face to extend over a rather large area and in sealing relationship with the facial surface of the patient, even where unusual contours are encountered.

In accordance with this invention and in order to provide a construction which possesses the characteristics of comfort, simplicity of construction, effective sealing of the mask against the patient's face, thus preventing loss of gases supplied to the mask in use, I have provided means by which the face engaging portions of the mask may easily be molded by hand and by the application of light pressure to effectively engage the patient's face in sealing relation. Furthermore, by this invention, the mask when fitted to the contour of a person's face will retain the impression of such contours in the mask as long as it is desired, but on the other hand will permit the face engaging areas of the mask to be re-formed or molded by slight pressure to contours of other faces to which the mask is applied.

Referring again more particularly to Figs. 1 and 2, I have shown the peripheral cell, envelope or recess formed between the walls 6 and 7 as filled with a pliable material 12 which possesses the ability of being formed by relatively light pressure into contours complementary to those portions of the selected patient's face engaged by the mask and wherein such pliable material will enable the face engaging walls of the cells 10 to retain the contour imparted to it until such time as it is desired to change such contour as when fitting the mask to another face. I find as one example of a desirable material that molding clay may be employed for this purpose.

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In Figs. 3 and 4, I have illustrated a modified form of this invention which resides primarily in the provision of a cell insert indicated generally at 13 and which comprises a container 14 adapted to be enclosed within the marginal cell or envelope formed between the walls 6 and 7, as in the case of the modification shown in Figs. 1 and 2. The insert container is preferably formed of very thin sheet material such as any suitable thermoplastic sheet material and is, of course, filled with a pliable material such as molding clay or the like, as described above. By this construction, it will be seen that by enclosing the pliable material within a plastic container such as 14, the inner walls of the rubber envelope of the mask will be protected against contact with any excessive or deteriorating oils which might be present in the pliable material 12.

My invention also contemplates the provision of a face engaging rim or section for a mask in which the rim or section is separably attached to the mask at points around the mask and includes a container or envelope of sheet material corresponding substantially to 14 in Fig. 4, the said container enclosing a pliable, kneadable material such as molding clay.

Various changes may be made in the details of construction and arrangement of parts of the invention without departing from the spirit thereof or the scope of the appended claims.

I claim:

1. In a respiratory mask, a hollow mask body molded to conform marginally generally to the frontal contours of the human face, said body having an inlet opening and means in the marginal area of the mask body whereby said area may be shaped to conform to the facial contours in sealing relation thereto under the application of a light pressure, said means including a body of pliable material enclosed in the marginal portions of the mask and capable of retaining the impressed contour in the marginal area after said pressure is released.

2. In a respiratory mask, a hollow mask body molded to conform marginally generally to the frontal contours of the human face, said body having an inlet opening and means in the marginal area of the mask body whereby said area may be shaped to conform to the facial contours in sealing relation thereto, said means including a body of selective contour retaining material moldable to the facial contours under relatively light manual pressure.

3. In a respiratory mask, a hollow mask body molded to conform marginally generally to the frontal contours of the human face, said body having an inlet opening and means in the marginal area of the mask body whereby said area may be shaped to conform to the facial contours in sealing relation thereto, said means including a body of molding clay enclosed in the marginal portions of the mask.

4. In a respiratory mask, a hollow mask body having a gas inlet opening and a marginal envelope engageable with the face of the wearer, and a filler in said marginal envelope to render the latter sufficiently pliable to be shaped under light pressure to sealingly conform to the

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facial contours with which it is engaged and to retain said conformity when said pressure is released.

5. In a respiratory mask, a hollow mask body having a gas inlet opening and a marginal portion engageable with the face of the wearer, said marginal portion comprising a marginal cell, and a pliable selective contour retaining material enclosed in said cell.

6. In a respiratory mask, a hollow mask body having a gas inlet opening and a marginal portion engageable with the face of the wearer, said marginal portion comprising a marginal cell, and a filler in the cell, said filler comprising a casing of impervious thin sheet material and a selective contour retaining moldable material in said casing.

7. In a respiratory mask, a hollow mask body having a gas inlet opening and a marginal portion engageable with the face of the wearer, said marginal portion comprising a marginal cell, and a filler in the cell, said filler comprising a casing of impervious thin sheet material and a mass of molding clay enclosed in the casing.

8. A pliable contour forming face rim for a respiratory mask comprising an envelope adapted to be carried by said mask at its rear peripheral portion, and a pliable, kneadable selective contour retaining material within said envelope substantially filling the same.

9. A pliable facial contour responsive rim for respiratory masks comprising an enclosed cell or envelope adapted to be carried by the rear peripheral face portion of the mask, and a soft pliable filler in said envelope characterized by its ability to mate the contour of the face to which it is applied under relatively light pressure and to retain the imparted mating contour when said pressure is released.

10. In a respiratory mask, a hollow stiff mask body having a relatively soft marginal cell for engagement with the contoured surface of the wearer's face, and a body of workable material within said cell characterized by its ability to be shaped by light pressure on the mask to bring the said marginal cell into mating and sealing contact with the facial contour and to retain the imparted mating contour when said pressure is released.

11. A facial contour responsive construction for respiratory masks comprising a marginal cell disposed along the rear facial portions of a mask body for contacting the face of the wearer, and a filler of pliable material in said cell characterized by its ability to retain a contour set after said mask has been pressed under light pressure to the face of the wearer.

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