

March 19, 1957

HANORAH H. WONG

2,785,674

OXYGEN MASK

Filed Aug. 17, 1955

2 Sheets-Sheet 1

Fig. 1.

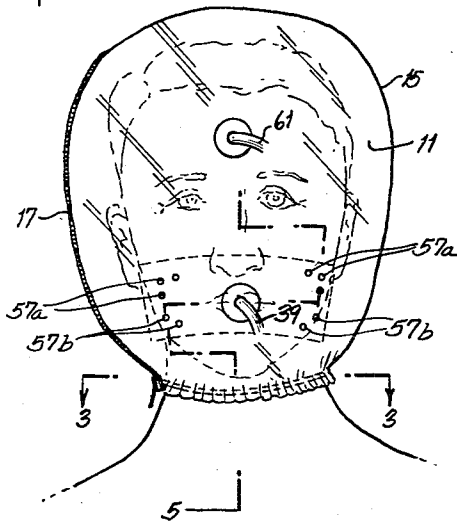


Fig. 3.

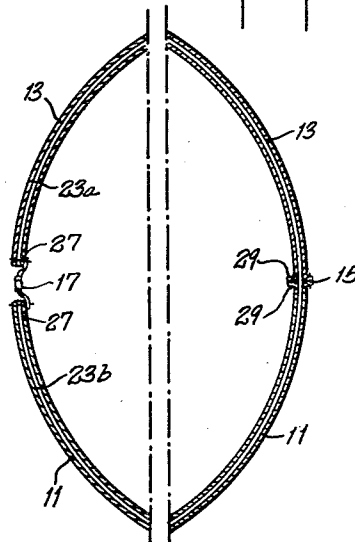


Fig. 2.

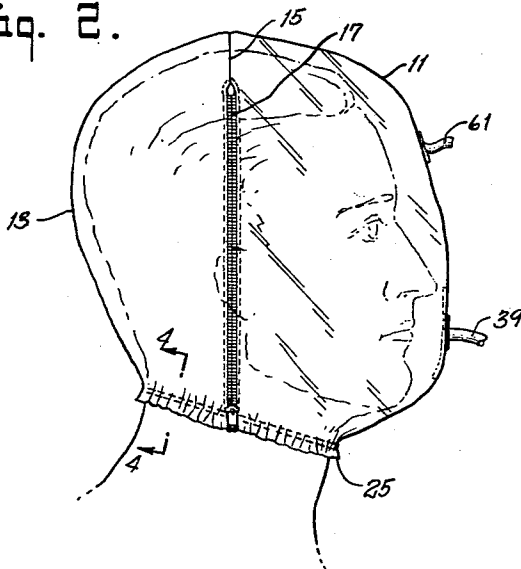
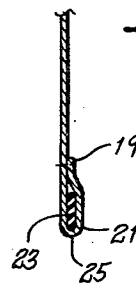


Fig. 4.



INVENTOR.
H. H. WONG
BY *Darby & Darby*
ATTORNEYS

March 19, 1957

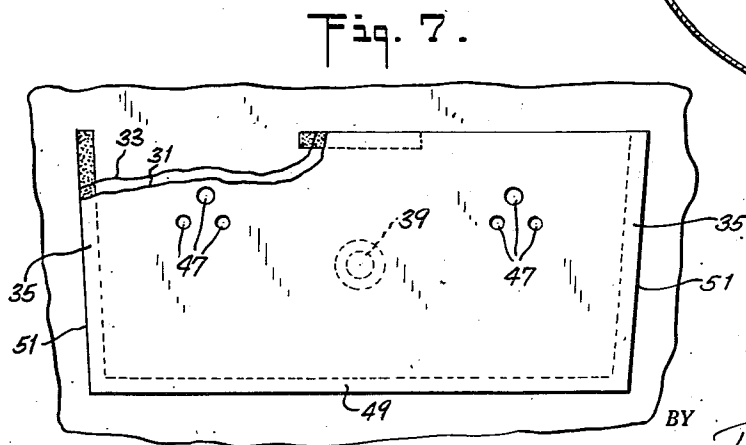
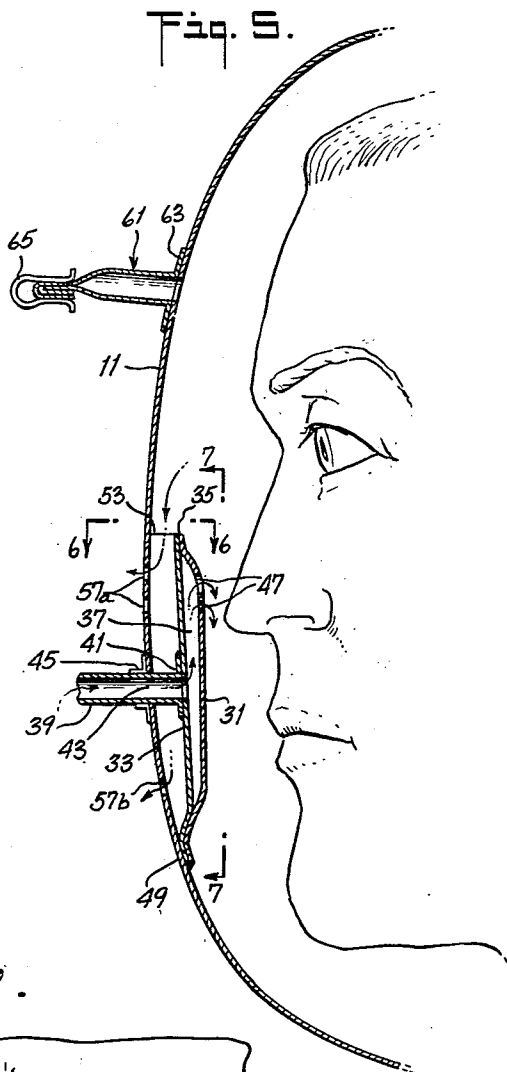
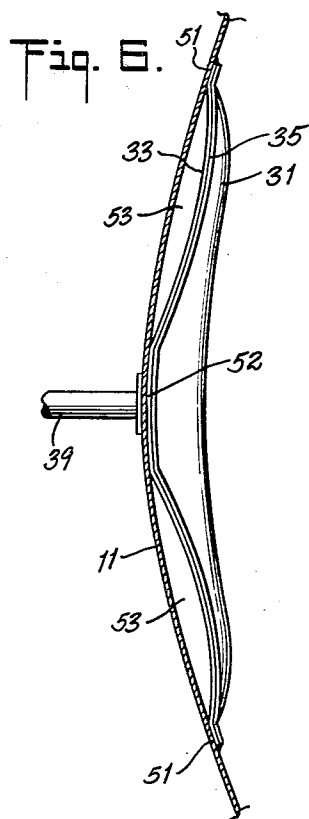
HANORAH H. WONG

2,785,674

OXYGEN MASK

Filed Aug. 17, 1955

2 Sheets-Sheet 2



INVENTOR.
H. H. WONG

BY

Darby & Darby

ATTORNEYS

1

2,785,674

OXYGEN MASK

Hanorah H. Wong, New York, N. Y.

Application August 17, 1955, Serial No. 529,033

5 Claims. (Cl. 128—141)

The present invention relates to the art including devices for administering therapeutic gases to persons, and is more particularly concerned with providing an improved oxygen mask which is simple and inexpensive to fabricate and convenient and efficient in use.

Heretofore oxygen or other therapeutic gases have been applied to patients either by way of a so-called oxygen tent or by way of a mask. The tent has the obvious disadvantage of requiring a complete enclosure about the entire body of the patient and necessarily is of large volume and inefficient in the application of gas to the patient. Furthermore, it requires bulky accessories, such as refrigeration apparatus, and the large volume of oxygen enclosed therein may become dangerous in situations where sparks or the like may initiate an explosion or flash fire.

Oxygen masks hitherto generally used have been of the type applied to only the mouth and nose of the patient. As such, they are relatively inefficient, since it is extremely difficult to maintain a good seal between the mask and the face, especially in the case of patients who may toss around or change position frequently. Such masks are also inefficient in failing to provide proper means for discharge of exhaled gases, such as carbon dioxide.

It is an object of the present invention to provide an oxygen mask which provides a considerable number of the advantages of an oxygen tent without the disadvantages of the conventional mask. According to the present invention, a mask is provided which completely encircles the head of the patient. By making the mask front of transparent plastic, the sense of confinement, which might have a harmful psychological effect, is minimized. By use of such a head mask oxygen may be administered to the patient without substantial loss or leakage, and without incurring the danger of explosion or fire. At the same time, since the mask is supported by the head, movements of the patient can cause no disadvantageous effects on the administration of the desired gas.

The present invention also provides special means for assuring that the gas administered does not cause undesirable drafts across the face of the patient, and also provides special means for the efficient discharge of the exhaled gases.

These and other objects and advantages of the present invention will become more fully apparent from consideration of the following description of a preferred embodiment thereof, taken in conjunction with the appended drawings in which:

Fig. 1 is a front elevational view of the mask of the present invention illustrating its relationship to the head of the patient.

Fig. 2 is a side elevational view of the device of Fig. 1.

Fig. 3 is a partial cross sectional plan view taken along line 3—3 of Fig. 1.

Fig. 4 is a fragmentary elevational cross sectional view taken along line 4—4 of Fig. 2.

Fig. 5 is an enlarged side elevational cross sectional view.

2

Fig. 6 is a fragmentary cross sectional plan view taken along line 6—6 of Fig. 5.

Fig. 7 is a fragmentary elevational view seen along line 7—7 of Fig. 5.

Referring to the drawings, the mask of the present invention is formed of a front section 11, preferably of transparent flexible material, such as any of the synthetic plastic materials currently commercially available, and a rear section 13, preferably of soft cloth, such as cotton or the like. These two sections are joined together in any suitable manner, such as by sewing, cementing, heat-sealing, etc., at a seam 15 extending nearly completely around the head of the patient in a plane parallel to the front thereof. A separable fastener 17 such as a zipper or the like forms a continuation of seam 15 to permit ready application of the mask to and removal from the head of the patient. The bottom edge 25 of the mask is turned up and fastened in a hem as shown in Fig. 4 to form a passage 21 within which is located an elastic strip 23 which can be tied to maintain a firm contact between the bottom edge 25 of the mask and the neck of the patient. The use of cloth portion 13 is important since it is that portion on which the head of the patient normally rests. By the use of such a fabric, the creation of static electricity upon moving of the head of the wearer on the bed or headrest is avoided. At the same time, the transparent front portion 11 avoids possibly harmful psychological effects from completely enclosing the patient's head by permitting him to have complete visibility.

The elastic strip 23 may be formed in two portions 23a and 23b, as seen in Fig. 3, each having one end secured adjacent the closure 17 as at 27. The other ends 29 may pass through an opening at the seam 15 to permit the strips 23a and 23b to be tied snugly about the neck of the wearer. Of course, other modes of securing the lower edge 25 may be used as desired.

For the administration of oxygen or similar gases, it is important that the inflowing gas be diffused into the space enclosed by the mask rather than forming a draft or stream upon the patient. For this purpose a pair of strips 31 and 33, preferably of the same material as the mask front 11, are sealed together about their entire periphery 35 to form an envelope or a pocket 37. A flexible inlet tube 39 communicates with the pocket 37 at an aperture 41 in the front strip 33 to which the inlet tube 39 is sealed. The inlet tube 39 also passes through an opening 43 in the mask front 11 to which it is similarly sealed as at 45. The strip 31 forming the inner face of the pocket 37 is provided with a plurality of apertures 47 at either end thereof. These strips 31, 33 as shown in Fig. 1, extend across the entire face of the patient and the apertures 47 are preferably located to the sides of the patient's face so as not to blow directly upon his face as jets. A plurality of apertures is utilized, with each of relatively small area, so as to provide the proper amount of flow with good diffusion and without excessive draft upon the patient's face.

For the purpose of separating the exhaled air from the incoming gas, the strips 31 and 33, forming the pocket 37, are sealed to the front mask portion 11 at the bottom edge as at 49, and at the side edges 51, but are open at the top as shown at 53, except possibly at the extreme edges and at a point near the center, thereby providing an open pocket between the front strip 33 and the mask front 11. A plurality of apertures 57 are provided in the mask front 11 in the wall of this pocket 53 to permit exhaled gas to escape therefrom. In this way the incoming fresh gas flushes out the exhaled air through the vents 57.

In one form of mask constructed according to the present invention, the strips 31, 33 were 10 inches long

and 4 inches high, made of clear plastic secured together at their edges. The top edge of these strips 31, 33 was made in the shape of an arc providing a maximum height of 5½ inches. The aperture for the supply tube 39 was placed at the center thereof. Three perforations 47 for incoming gas were found to be sufficient, located 2 inches on either side of the position of the connecting tube 39, thereby allowing oxygen to flow into the mask indirectly, without too much force, but close to the patient's nostrils. The exhaust perforations 57 in the mask front 11 were made in two sets. A pair of upper perforations were spaced 2 inches from each lateral edge of the strips 31, 33 and about ½ inch from the top. Three lower perforations were spaced 1½ inches from the top and ¾ inch from the sides. The upper edge of the pocket 37 may be secured to the mask front 11 at the center, as at 52, or may be left completely unsecured, as desired. The exhaust perforations 57 are preferably made considerably larger than the inlet perforations to allow three exhalation. The mask back 13 and mask front 11 may be made from sheets approximately 18 by 17 inches.

In certain types of illness, it is necessary to provide forced feeding of the patient through a tube inserted into the patient, sometimes known as a Levine or Miller-Abbott tube, which may be used with a Wagenstein suction apparatus. To permit the use of such a tube, the mask front 11 is provided with an access tube 61 sealed thereto at 63 through which a Levine or Miller-Abbott tube may be inserted when desired. When such a tube is not in use, the access tube 61 may be tied off as by string or a clip 65 so as to avoid oxygen leakage.

It will be appreciated that the mask of the present invention provides a more comfortable and less frightening way of administration of oxygen or other therapeutic gases to patients, without the use of the many bulky pieces of apparatus required with the use of an oxygen tent. The patient is provided with a more comfortable feeling than is obtained with an oxygen tent, since he has complete visibility and does not have the impression of being caged in. The present mask will provide the same advantages as an oxygen tent at a fraction of the cost, requiring less apparatus and being less of a responsibility to the nursing staff.

The present mask is extremely easily adjusted and once applied stays in position without required constant attention as in the case of conventional masks which may fall off or become improperly adjusted upon movements by the patient. The present mask permits the use of Wagenstein suction apparatus or similar devices simultaneously with the administration of oxygen without impairing either function. The patient is provided complete freedom of movement and can readily be turned from side to side when required without affecting the application of oxygen. Accordingly, the present invention has provided a convenient, practical and economical mask for administering oxygen or similar gases to patients.

While the present invention has been described with respect to a preferred embodiment, it is to be understood that this description is illustrative only, and that the scope of the invention is defined solely by the appended claims.

I claim as my invention:

1. A gas-administering mask comprising a head-enclosing envelope having a front portion, means forming a totally enclosed pocket secured to said mask front portion across the front thereof and along the bottom and sides of said pocket, a gas inlet tube sealedly passing through said mask front portion and communicating with said pocket, said pocket being perforated at the inner surface thereof adjacent the edges thereof on either side of the normal position of the nostrils of the wearer, and said front portion having exhaust vents in the portion opposite said pocket and above the bottom edge thereof.

2. A mask as in claim 1 further comprising a tube inlet sealed to said front portion at the upper portion thereof above said pocket.

3. A mask as in claim 1 wherein said pocket is formed of a pair of strips sealed to one another about their peripheries.

4. A mask as in claim 1 wherein said front portion is of transparent flexible material, and the remainder of said envelope is composed of anti-static-producing material.

5. A mask as in claim 1 further including tie means for conforming the lower edge of said envelope about the neck of the wearer.

No references cited.