July 3, 1962 P. F. EARLY ET AL 3,042,033

CONNECTING MEMBER

Filed July 27, 1959

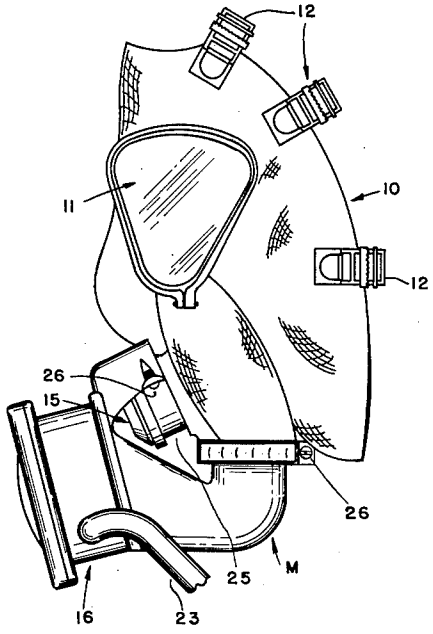


FIG. 1

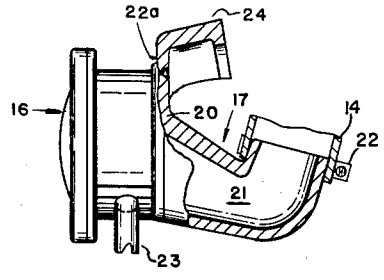


FIG. 3

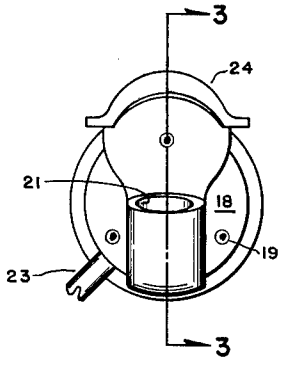


FIG. 2

PAUL F. EARLY
BENJAMIN SMILG
INVENTORS

BY Milton E. Gilbert

THEIR ATTORNEY

United States Patent Office

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CONNECTING MEMBER

Paul F. Early and Benjamin Smilg, Dayton, Ohio, assignors to Globe Industries, Inc., Dayton, Ohio, a corporation of Ohio

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This invention relates to a connecting member, and more particularly to a connecting member that provides a unitary assembly between a demand valve and a breathing mask.

One use of a breathing mask is to permit the wearer to enter into an ambient condition in which there is insufficient breathing air, or only impure or contaminated air. In such situations, it is normal for the wearer of the mask to carry a source of oxygen on his back, for example, to permit mobility. The regulation of the supply of oxygen to the interior of the mask is normally controlled by a demand valve, which is well-known in the art, whereby the flow of oxyegn to the wearer of the mask is controlled by his requirements or needs. It has been normal practice to mount the demand valve adjacent the oxygen source and then connect a flexible tube therefrom to the breathing mask. However, this arrangement results in the demand valve being located in such a position that the wearer of the mask cannot reach it, or wherein it is difficult to reach it, if such is necessary while within the contaminated ambient. Also, such prior arrangements provide a rather bulky and awkward apparatus.

The present invention satisfactorily solves the problem by providing a connecting member that essentially mounts the demand valve upon the breathing mask whereby easy access may be had thereto by the wearer of the mask, and whereby a compact apparatus is provided. This connecting member also has means to permit flow of oxygen from the demand valve to the interior of the mask.

A primary object of this invention is to provide a connecting member that both secures a demand valve to a breathing mask, and permits communication between the demand valve and the breathing mask to allow for free flow of oxygen from the demand valve to the interior of the breathing mask.

Other objects of the invention will be readily perceived from the following description.

This invention relates to a connecting member for attaching a demand valve to a breathing mask that has both inhalation and exhalation ports or conduits. Means are employed which are adapted to secure the connecting member to the demand valve and other suitable means secure the member to the mask. The connecting member has duct means therein to connect the interior of the demand valve to the inhalation port of the mask for free flow of oxygen therethrough to the wearer of the mask.

The drawing illustrates a preferred embodiment of this invention, in which:

FIGURE 1 is a side elevational view of a conventional breathing mask and a demand valve attached thereto by the connecting member of the instant invention;

FIGURE 2 is a rear elevational view of the demand valve and the connecting member with the mask removed therefrom;

FIGURE 3 is a view, partly in section, taken along the line 3—3 of FIGURE 2.

Referring to the drawing and particularly FIGURE 1, there is shown a breathing mask **10** having transparent eyepieces **11** (only one being shown). The mask has a plurality of fasteners **12** attached to the edge thereof. Suitable straps (not shown) are joined to these fasteners in a conventional manner to provide for attachment of the breathing mask **10** to the head of the wearer. The

mask **10** has an inhalation tube or port **14** extending downwardly therefrom and an exhalation port or tube provided with the exhalation valve **15** disposed above and forward of the inhalation tube **14** and extending forwardly from the mask **10**. Each of these tubes protrudes from the mask **10**.

A demand valve **16** is secured to the breathing mask **10** by the connecting or coupling member **17**. The connecting member **17** is preferably of cast metal and comprises a base **18**, which is joined to the demand valve **16** by a plurality of fasteners **19**. The base member **18** has an opening **20** therein that communicates with the interior of the demand valve **16**. The connecting member **17** is formed with a free flowing duct **21** extending from the opening **20**. The end of the duct **21** is attached to the inhalation tube **14** by suitable means such as a clamp member **22**. The connecting member **17** is sealably connected to the demand valve **16** by a suitable gasket assembly **22***a*.

The duct **21** is of sufficient diameter to permit the flow of oxygen from the interior of the demand valve **16** to the interior of the breathing mask **10** without any restrictions therein to create a pressure reduction and thereby prevent adequate flow thereto. It should be understood that oxygen is supplied from a suitable source (not shown) on the back of the wearer of the mask, for example, to the demand valve through a hose **23**, and that the demand valve so operates as to permit flow of such oxygen through duct **21**.

In order to firmly secure the demand valve **16** onto the mask **10**, the connecting member **17** also includes a flange **24** extending from the base **18** in spaced relation to the duct **21**. This flange fits over the conventional protruding portion of the exhalation valve **15** and is secured thereto by suitable means such as a metal clamp band member **25** and suitable fasteners **26**.

In assembling the unit, the connecting member **17** is first secured to the demand valve **16** and thereafter, the end of the duct **21** and the flange **24** are respectively joined to the tube **14** and valve **15**. A band clamp **22** may be used to further secure the assembly of duct **21** into the tube **14**.

An advantage of the present invention is that it provides a unitary assembly for the wearer to which only oxygen need be supplied from a suitable source. Another advantage of this invention is that it places the demand valve in a readily accessible position to the wearer of the mask. A further advantage of this invention is that it eliminates the conventional flexible hose connection between the demand valve and the breathing mask.

For purposes of exemplification, a particular embodiment of the invention has been shown and described according to the best present understanding thereof. However, it will be apparent that changes and modifications in the arrangement and construction of the parts thereof may be resorted to without departing from the spirit and scope of the invention.

We claim:

In combination: a breathing mask having protruding therefrom an inhalation tube and an exhalation valve, said exhalation valve being provided externally with one element of a mating mounting means; a demand valve connected to a source of oxygen; and a connecting member for interconnecting the demand valve to the breathing mask and for mounting upon said exhalation valve, said connecting member comprising a base, means releasably securing the base to the demand valve, said base having an opening in a portion thereof, said connecting member including duct means interconnecting the opening in the base with the inhalation tube to permit flow of oxygen from the demand valve through the opening to the in-

terior of the breathing mask, means releasably securing the end of the duct means remote from the base to the protruding portion of the inhalation tube, said duct being so constructed as to permit free flow of oxygen from the demand valve to the interior of the breathing mask, said connecting member further having a flange extending from the base in spaced relation to the duct which is provided with the other element of the said mating mounting means, and means releasably securing the end of the flange remote from the base externally to the protruding portion of the exhalation valve.

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