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W. H. KITCHEN

2,402,820

WELDER'S MASK

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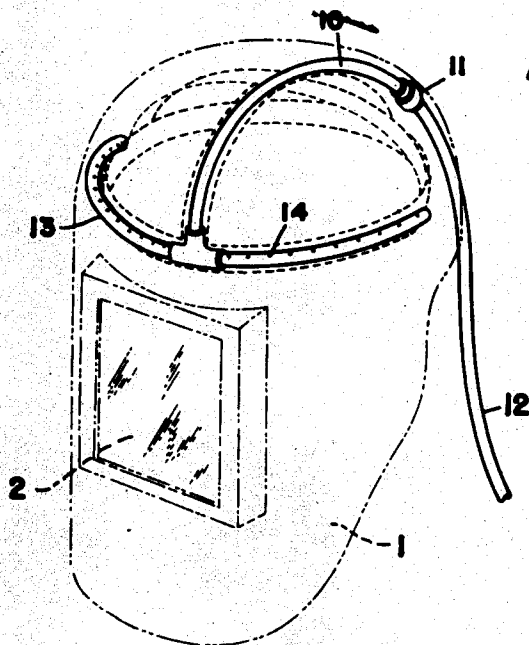


FIG. 1

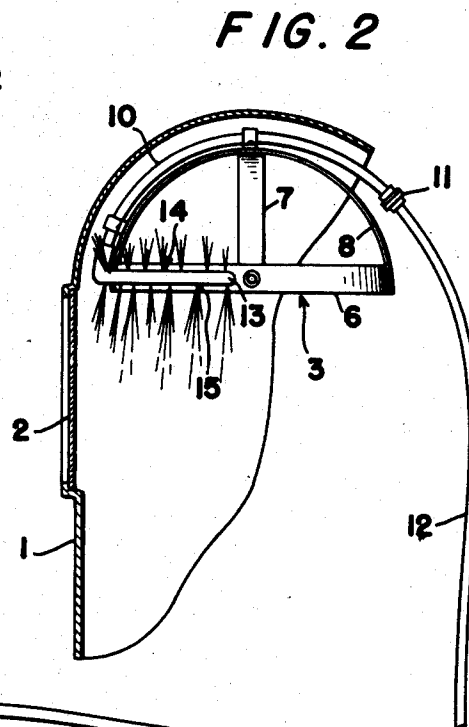


FIG. 2

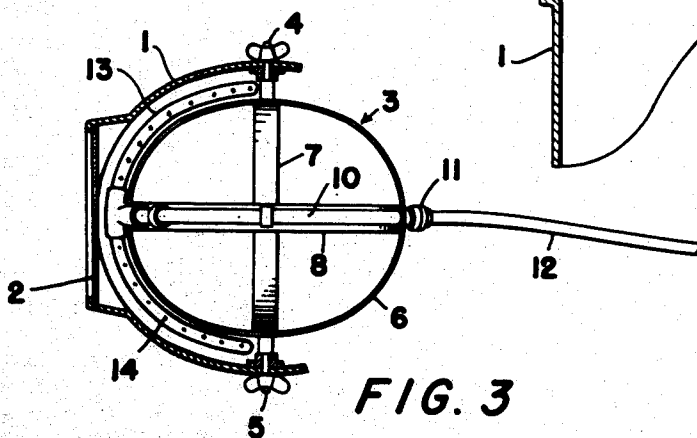


FIG. 3

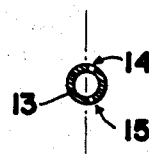


FIG. 4

WILLIAM H. KITCHEN

INVENTOR

BY *Paul Bliven*

ATTORNEYS

UNITED STATES PATENT OFFICE

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WELDER'S MASK

William H. Kitchen, Seattle, Wash.

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4 Claims. (Cl. 128-142)

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The present invention relates to improvements in a welder's mask and in more particular to improvements in welder's masks which will provide at all times fresh clean air to the welder using the mask.

In the process of welding with either gas or an arc, there are liberated various gases that are disagreeable and harmful to the operator. This condition may be further aggravated when the process of welding is being done in close quarters such as in the double bottom of a ship or in similar places. In the past, the time which a person could spend in such a place would be but about fifteen minutes in an hour. This in spite of the fact that blowers would be provided for ventilating the compartment. Welder's masks have been in the form of a face shield with a window arranged therein to give him a view of his work. A head frame has been provided to closely fit the crown of the wearer's head, and to this frame has been attached the mask in a manner to allow it to be pivoted up and off the face of the worker. This construction has meant that the mask was open and that the air-borne noxious gases could easily be drawn into the mask and breathed by the worker. It has not been practicable to entirely enclose the mask to form a closed helmet because of the discomfort to the worker. Attempts have been made to provide a welder's mask with a fresh air supply, but the devices have been objectionable because of physical discomfort to the wearer. The provision of a nose piece and an air supply thereto is objectionable when worn for long periods. A simple air opening connected to a source of pure air has been objectionable in that the inlet of air from a nozzle has induced air currents from outside of the mask and sucked in objectionable gases that made the situation as bad or worse than before.

Having in mind these defects of the prior art, it is an object of the present invention to provide a welder's mask with ventilating means that will allow the mask to remain open and yet will not induce air currents into the mask.

A further object of the present invention is the provision of an air supply pipe to a welder's mask that will deliver the air to the welder's face without inducing outside air into the mask.

Another object of the present invention is the provision in a welder's mask of an air supply that will not impinge directly upon the head or face of the welder.

Still a further object of the present invention is the provision in a welder's mask of an air sup-

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ply that will prevent the window from fogging and keep the interior of the mask dry.

A welder's mask that remedies the above-mentioned defects of the prior art, and achieves the before-mentioned objects and others is had by taking the conventional mask and arranging an air supply connection at the rear of the mask and attached to the head frame. This air supply connection is adapted to be coupled to a suitable air supply. Air from the supply is delivered by a small air tube to the front portion of the head band of the head frame and distributed through a plenum tube extending along the head band from one side to the other of the wearer. This plenum tube is provided with two series of small openings, one series directed upwardly and the other series directed downwardly. The individual holes of one series are staggered with respect to the holes of the other series.

A device accomplishing these objects and constructed in accordance with the above outline is shown in the accompanying drawing, in which:

Figure 1 is a perspective of a welder's mask embodying the present invention, the mask being shown in phantom.

Figure 2 is a vertical sectional view of the device shown in Figure 1.

Figure 3 is a sectional plan view of the device shown in Figures 1 and 2.

Figure 4 is a cross-section of the plenum tube shown in the other figures.

The present invention is an attachment that can be readily applied to an ordinary welder's mask. In such a mask there is usually provided a shield 1 for covering the top of the head and the face, and extending down to the chest of the wearer. There is arranged in the shield a window 2 that is composed of one or more thicknesses of glass. This window provides a view of the material being operated upon, and the various glasses are for strength and the filtering out of undesirable light rays from the arc or flame. The shield is supported on the head by means of a head frame 3 that is pivoted to the shield at the sides by bolts or pins 4, 5. The head frame has a head band 6 that is adapted to pass across the brow and around the back of the head of the wearer. Crown straps 7, 8 pass across the top of the head from side to side, and front to back, and have their ends secured to the head band. The pivot pins 4, 5 usually are arranged to pass through the ends of the side crown strap 7 and through the head band. The back portion of the crown strap 8 has secured thereto an air hose 10 from an air supply. This air hose is

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secured to the frame by means of a coupling 11 that is in turn fastened to a supply tube 12 secured directly to and running forwardly along the crown strap 8. This supply tube connects to a plenum tube 13 at the front portion of the head band 6. This plenum tube 13 extends along the front portion of the band from about one end of the crown strap 7 to the other end. The plenum tube 13 has formed therein two series of small openings. One series 14 is arranged along the upper side of the plenum tube so that air under pressure in the tube will leave and be directed upwardly in a series of small jets which will merge together to form a sheet of upwardly directed air. The other series 15 of openings are on the under side of the plenum tube and are directed downwardly. This second series will also supply air to form a downwardly directed sheet of air. It is to be noted that the holes of one series are in staggered relation to the holes of the other. This staggering of the holes, while not necessary, is desirable in that it reduces the eddy currents formed of induced air from the outside, if any. The eddy current space is broken by the opposite air opening.

When a mask embodying the present invention is placed on the head of an operator, the plenum tube will be in position above the eyes of the wearer, and when the supply air hose 10 is connected to the supply tube 12 by the coupling 11, and air is supplied from any suitable source to the hose and tubes, air will be delivered through the series of openings 14, 15 in the plenum tube 13. This air will form an upwardly and a downwardly directed sheet. The inductive effort of one sheet will balance that of the other and prevent the induction into the mask of outside air. This will allow the wearer to breathe air delivered into the mask from the air source without its being contaminated by gases from the welding process. This air will also keep the window from fogging. It is desirable that the air line have means for eliminating condensed moisture so that the air delivered to the mask will be relatively dry. This apparatus and method of air delivery to a welder's mask allows the operator to remain in close and cramped quarters for long periods of time without discomfort or impairment of health.

Having thus described my invention, I claim:

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1. An open welder's mask having attached thereto air supply means including a plenum tube extending across the inside face of said mask and having therealong two series of openings, one directed upwardly and one downwardly, and the individual openings of one series being staggered with respect to the individual openings of the other series.

2. An open welder's mask having a shield and a head frame for supporting the shield on the head of a wearer, said head frame having a band for encircling the upper part of a wearer's head, and a plenum tube attached to the front part of said head band; said plenum tube being adapted to be connected to a suitable source of air, said plenum tube being arranged along said band so as to extend from one side to the other of a wearer's head, and said tube having formed therein two series of openings, one along the upward side and one along the lower side for delivering air in an upwardly and a downwardly directed sheet respectively.

3. An open welder's mask having attached thereto air supply means including a plenum tube arranged inside of said mask and so as to extend across the face of a wearer from one side to the other, and said tube having formed therein two series of openings, one along the upward side and one along the lower side in opposition to the series along the upper side; said series of openings being adapted for the delivery of air in an upwardly directed sheet from the holes on the upward side and a downwardly directed sheet from the holes on the lower side, and for the delivery of such sheets in opposition across the face of a wearer.

4. An open welder's mask having attached thereto air supply means including a plenum tube arranged inside of said mask and so as to extend across the face of a wearer from one side to the other, and said tube having formed therein two series of openings, one along the upward side and one along the lower side; said series of openings being adapted for the delivery of air in a sheet directed upwardly and outwardly from the face of a wearer, and in a sheet directed downwardly and outwardly from the face of a wearer, respectively and for the delivery of such sheets in opposition across the face of a wearer.

WILLIAM H. KITCHEN.