United States Patent

Cialone

[15] **3,657,740**

[45] **Apr. 25, 1972**

[54] VENTILATED WELDER'S MASK ASSEMBLY

[72] Inventor: **Armando A. Cialone,** 5304 Killder, Long Beach, Calif. 90808

[22] Filed: **Nov. 26, 1969**

[21] Appl. No.: **880,054**

[52] **U.S. Cl.** **2/8,** 2/171.3, 128/142.3, 128/142.7

[51] **Int. Cl.** **A61f 9/06**

[58] **Field of Search** 2/8, 9, 10, 3, 171.3; 128/142.7, 142.3; 239/590.5, 592, 502

[56] **References Cited**

UNITED STATES PATENTS

2,314,078	3/1943	Crawford	239/590.5
2,882,894	4/1959	Fahey et al.	2/8 UX
3,413,972	12/1968	Depping	128/142.7
3,467,965	9/1969	Murphy	2/8
3,496,703	2/1970	MacLeod et al.	128/142.7 X

FOREIGN PATENTS OR APPLICATIONS

732,248	6/1955	Great Britain	2/10

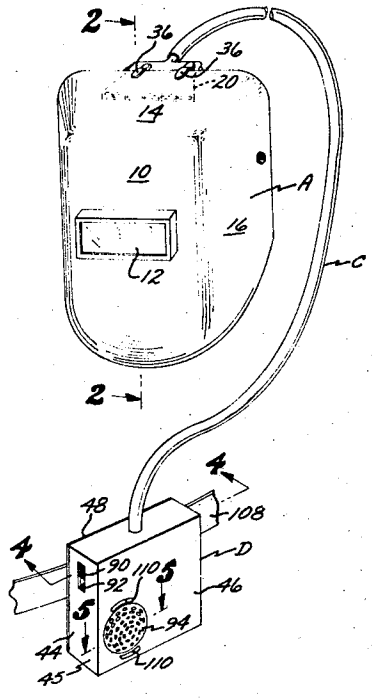
Primary Examiner—James R. Boler
Attorney—William C. Babcock

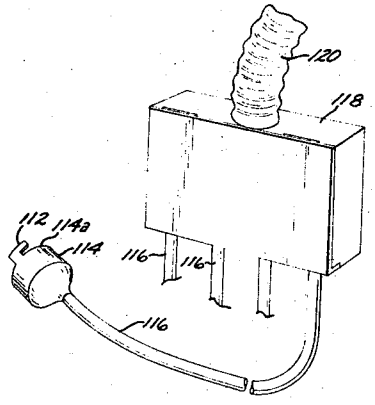
[57] **ABSTRACT**

A ventilated welder's mask assembly in which the user's head is subjected to a stream of air for cooling purposes, which air stream maintains a slightly higher pressure that that of the ambient atmosphere within the mask to minimize the possible entry of toxic fumes into the latter.

The stream of air into the mask is supplied from a supported electrically operated blower unit worm by the user, but with the unit being removably connectable to a flexible hose that extends to a source of fresh air under pressure remote from the welding area. The unit is connected to a hose in the manner described when the mask assembly is worn in a confined spaced in which toxic fumes are present.

1 Claim, 6 Drawing Figures





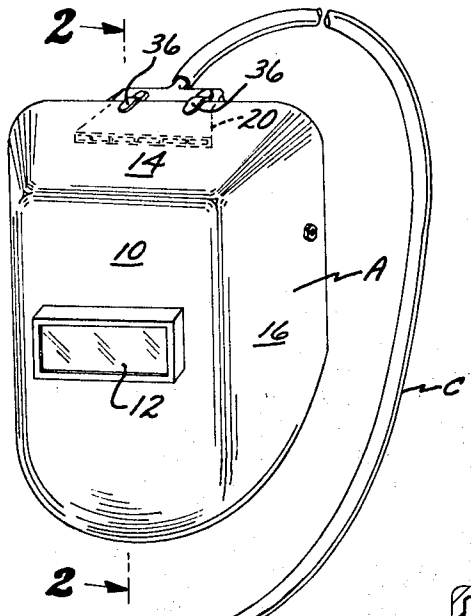


FIG. 1

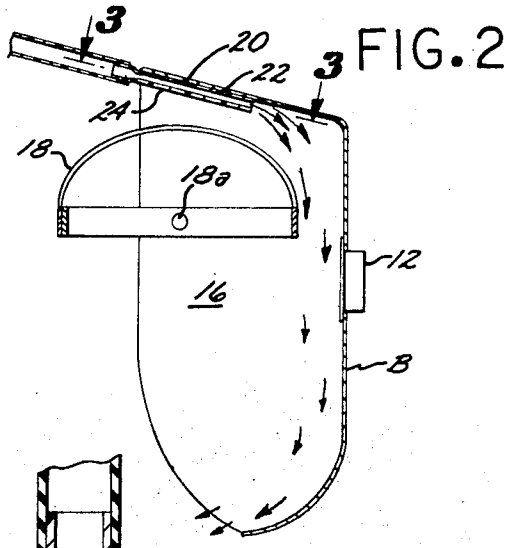


FIG. 2

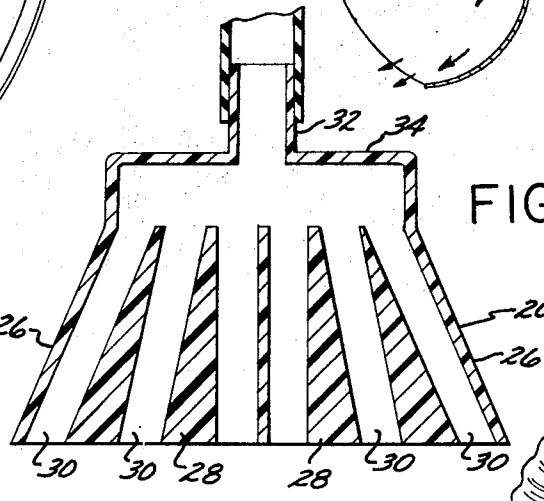
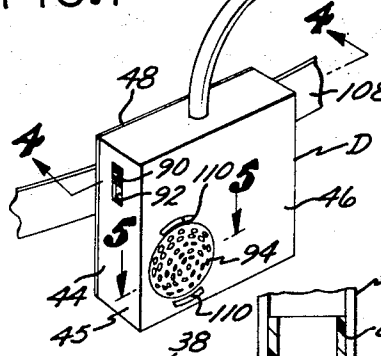


FIG. 3



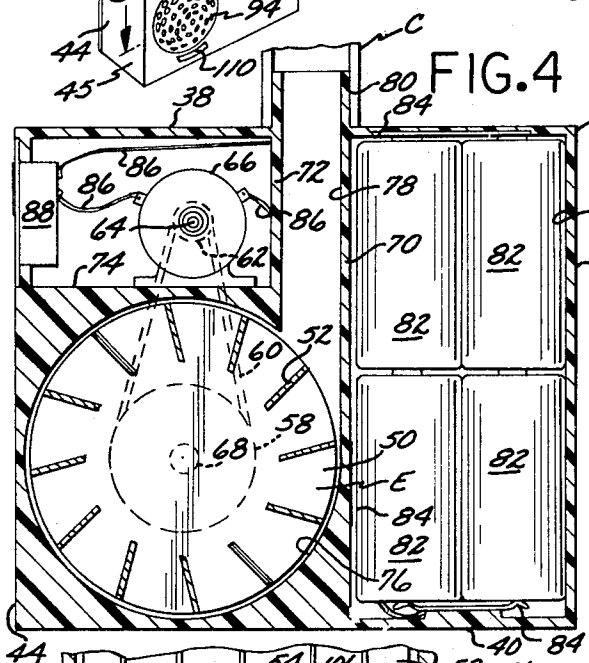


FIG. 4

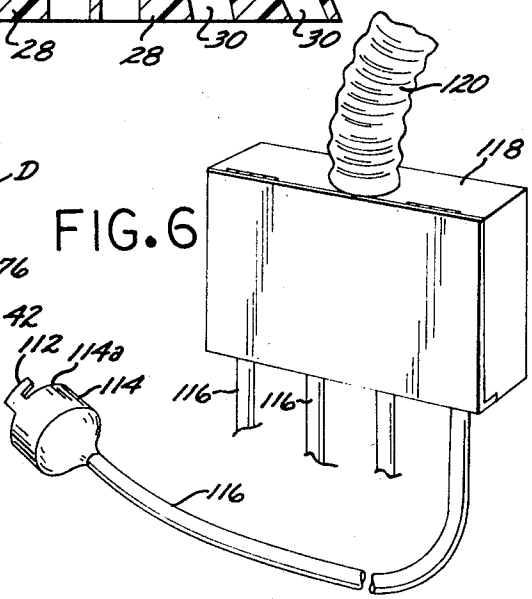


FIG. 6

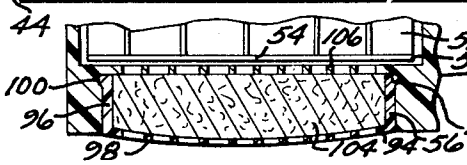


FIG. 5

INVENTOR.
ARMANDO CIALONE
BY
William G. Babcock
ATTORNEY

VENTILATED WELDER'S MASK ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

A ventilated welder's mask assembly that may be worn not only for cooling purposes, but to minimize the danger to the wearer thereof from exposure to toxic fumes.

2. Description of the Prior Art

In the past, various types of welder's masks have been devised and used in which fresh air has been fed into the interior thereof through a flexible hose to not only cool the head of the welder, but to minimize the possibility of exposing the welder to toxic fumes. Connection of an air supply hose to a welder's mask seriously impedes the movement of the welder, which is undesirable unless absolutely necessary, such as when a welder is working in a confined space with a minimum of effective vantilation. Normally, but a small percentage of a welder's time is spent working in such confined spaces.

The present invention provides a mask assembly by which a welder is supplied with a current of air for cooling purposes, without the necessity of connecting the assembly to an air supply hose that restricts the welder's movement, but with the assembly being removably connectable to such a hose when required, such as when a welder is working in a confined space, containing toxic fumes.

The present invention overcomes the operational disadvantages of prior ventilated welder's mask assemblies by providing one that may be worn without a hose connected thereto, but with the assembly being connectable to an air supply hose when necessity so requires.

SUMMARY OF THE INVENTION

The invention includes a welder's mask, which by a flexible conduit, is connected to an electrically operated blower unit that is preferably supported from a belt worn by the welder, with the blower unit when actuated, supplying a constant stream of air to the mask for cooling the welder's head. Means is provided on the blower unit for connecting a free end of a flexible hose to the interior of the unit. The flexible hose extends to a source of fresh air under pressure, and is connected to the blower unit, only when the welder wearing the mask assembly is working in a confined space having poor ventilation, such as the hold of a ship. When the welding assembly is supplied with fresh air by actuation of the blower unit, the welder wearing the same is free to move without restriction.

A major object of the present invention is to provide a ventilated welder's mask assembly which when worn, supplies a constant stream of fresh air that discharges about the welder's head for cooling purposes, with this cooling effect being achieved without restriction of movement of the welder, as occurs when the mask assembly is connected to a flexible hose extending to a source of fresh air under pressure located in an area remote from that in which the welder is operating.

Another object of the invention is to supply a ventilated welder's mask assembly that may be worn as a self-contained unit to permit the welder maximum flexibility of movement, but if necessary the unit may be removably engaged by an air supply hose that provides the welder with uncontaminated air.

A still further object of the invention is to supply a ventilated welder's mask assembly of relatively simple mechanical structure which may be fabricated from standard, commercially available materials, is simple and easy to use, and may be retailed at a substantially low price as to encourage widespread use thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the ventilated welder's mask assembly of the present invention;

FIG. 2 is a longitudinal cross-sectional view of the mask shown in FIG. 1, taken on the line 2—2 thereof;

FIG. 3 is a fragmantary cross-sectional view of the mask, taken on the line 3—3 of FIG. 2;

FIG. 4 is a vertical cross-sectional view of the blower unit assembly, taken on the line 4—4 of FIG. 1;

FIG. 5 is a fragmantary cross-sectional view of the blower unit assembly, taken on the line 5—5 of FIG. 1; and

FIG. 6 is a perspective view of a central supply station for a number of flexible hose, each of which is adapted to be removably connected to one of the blower units shown in FIG. 1 to supply air under pressure to one of the welder's helmet assemblies when the welder is working in a confined space containing toxic fumes.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A ventilated mask assembly A shown in FIG. 1 includes a conventional welder's mask B formed from a hard rigid nonmetallic opaque material. The mask B includes a forward wall 10 that serves to support a dark glass insert 12 as is conventional with such devices. The forward wall 10 merges into a top wall 14 and two side walls 16. A head piece 18 (FIG. 2 is disposed within the upper confines of the mask, and is pivotally connected to the side walls 16 of the assembly A by pins 18*a*.

An air discharge member 20 is provided as may best be seen in FIGS. 1, 2, and 3, which includes upper and lower walls 22 and 24 (FIG. 2) connected on their longitudinal edges by side walls 26. A number of partitions 28, as illustrated in FIG. 3, extends between the top wall 22 and lower wall 24, and cooperate therewith to define a member of longitudinal passages 30 that are so arranged as to distribute a stream of air over a relatively wide area as it discharges from the member 20. It will be noted in FIG. 3 that at least a part of the partitions 28 are angularly disposed relative to one another.

Air is discharged into the interior of member 20 through a tubular inlet 32 that extends outwardly from a rear wall 34 thereof. The air discharge member 20 is connected to the top wall 14 by clips 36 (FIG. 1), or other conventional fastening means.

An air inlet 32 is connected to a flexible conduit C, as shown in FIG. 1, and extends downwardly from the mask B where it is connected to an electrically actuaged blower unit D. The unit D, as may best be seen in FIG. 1, includes a closed box 45 that is defined by upper and lower walls 38 and 40 (FIG. 4 that are connected at their outer extremities by end walls 42 and 44, and first and second side walls 46 and 48.

The second side wall 48 that is removably secured to box 45 (FIG. 1) by conventional fastening means (not shown) or by hinge means (also not shown). A blower E is provided (FIG. 4) that includes two circular, laterally spaced flat discs 50, and a number of transverse blades 52 extend between the outer peripheral portions of the disc. A central opening 54 is formed in one of the discs 50 that is in communication with an opening 56 formed in the first side wall 46, as illustrated in FIG. 5. A grooved pulley 58 is secured to the center of that disc 50 most remote from the first side wall 46, and this pulley 58 is rotatably supported on a stub shaft 68 that projects from the second side wall 48.

A number of spaced partitions 70, 72, 74 project from the first side wall 46, which together with the top wall 38, lower wall 40, and second side wall 48 cooperatively define a battery compartment 76, a confined space 78 of circular transverse cross section in which the blower E rotates, and an air discharge passage 78 that is in communication with the blower E. The passage 78 terminates in a tubular air outlet 80 that projects upwardly from the top wall 38, and is sealingly engaged by the lower end of the conduit C.

The confined space 76 serves to house a number of batteries 82 that are in electrical engagement with two resilient clips 84 supported within the box 45, as may best be seen in FIG. 2. The clips 84 serve to connect the batteries 82 to electrical conductors 86 that extend to the motor 66 and a switch 88 provided with an actuating handle 90 that projects through an opening 92 in end wall 44, as may best be seen in FIG. 1.

A filter unit 94 as seen in FIG. 5, includes a ring 96 and perforated wall 98 that is connected to a first edge portion of the ring. Ring 96 is removably held in the opening 56 by a circular projecting rib 100 that engages a recess 102 formed in first

side wall **46**, with this recess being in communication with the opening **56**.

The unit **94** has a body of filtering material **104** situated within the confines of the ring **96**, which filtering material is held between the perforated side wall **98** and a second perforated side wall **106** disposed inwardly from the opening **56**, and forms a part of the first side wall **46**. The blower unit D is preferably removably supported by conventional means (not shown) from a belt **108** that extends around the waist of the welder (not shown).

When the mask assembly A is in place on a welder in the condition shown in FIG. **1** the switch **88** is closed by movement of the handle **90**, to complete an electric circuit between the batteries **82** and the motor **66**. The motor **66** drives the blower E in a counterclockwise direction (FIG. **4**) to draw air through the filter unit **94** and discharge the same upwardly through the passage **78** into conduit C through which the air flows to discharge from the member **20**, as may be seen in FIG. **2**. Due to the angular positioning of the passages **30**, the air is distributed substantially evenly around the head for cooling purposes of the welder on which the mask A is mounted.

Two arcuate slots **110** are formed in the first side wall **46** on opposite sides of opening **56** and are adapted to be removably engaged by two J-shaped members **112** that project outwardly from a cylindrical shell **114** shown in FIG. **6**. The shell **114** is connected to a hose **116** that extends to a box **118** to which air under pressure is supplied through a conduit **120** which leads to a source of fresh air under pressure in an area remote from that in which the welding operation is taking place.

When the members **112** removably engage the slots **110**, the outer edge **114***a* of shell **114** are forced into sealing contact with the exterior surface of the first side wall **46** adjacent to the opening **56**. After the air from hose **116** enters confined space **50** it flows between blades **52** to pass upwardly through the passage **78** into conduit C and then discharges through the passages **30** into the confines of the mask B to not only cool the welder's head (not shown) when wearing the mask, but to build up a pressure within the mask that is slightly higher than the pressure of the ambient atmosphere exteriorly to the mask. Due to this positive pressure within the confines of the mask B, the welder wearing the mask may operate in a confined space containing toxic fumes without breathing the same.

The air supplied to the conduit **120** must be from an area exteriorly of the confined space in which a welder is operating if the confined space contains toxic fumes. The conduit **120** not only supplies fresh air to the interior of the box **118** for a single hose, but for a number of hoses **116**, each of which extends to an individual mask assembly A. The hose **116** will normally be used only to supply air to the unit D when the mask assembly A is being used in a confined space containing toxic fumes.

I claim:

1. In combination with a welder's mask including a forward wall that supports a dark glass panel, a top wall, and two side walls extending rearwardly from said forward wall, a device for ventilating the interior of said mask, comprising:

a. portable electrically operatable blower means;

b. a flexible air discharge conduit extending from said blower means;

c. an air discharge member located on the rear interior portion of said top wall, said air discharge member connected to said conduit, said air discharge member being provided with a plurality of laterally spaced, longitudinally extending passages for distributing air from said conduit over the head of a welder wearing said mask for cooling purposes, as well as to maintain an air pressure in said mask slightly above that of the ambient atmosphere to prevent entry of toxic fumes into said mask with at least a portion of said passages in angular relationship;

d. means for removably supporting said blower means from the user of said mask; wherein said blower means is encased in a compact box, and said first means comprises a belt worn by said welder to which said box is secured

e. means on said box for removably connecting an end of a flexible hose thereto to communicate with the interior thereof which hose extends to a source of fresh air under pressure at a location remote from the area at which a welding operation is conducted, with said hose, box, conduit, and discharge member cooperatively supplying fresh air to said mask in sufficient volume that a welder wearing said mask may operate in an atmosphere contaminated with toxic fumes without danger of breathing the latter; and

f. a tubular discharge member on the free end of said hose, with said discharge member having a plurality of circumferentially spaced, L-shaped prongs projecting forwardly therefrom, and said means comprises a plurality of arcuate slots formed in a wall of said box around said opening, which slots are capable of being removably engaged by said prongs to support said discharge member from said box in communication with said opening.

* * * * *