Feb. 25, 1936. W. D. SULLIVAN 2,032,101

FUME AND DUST ELIMINATOR

Filed Feb. 20, 1935

Fig. 1

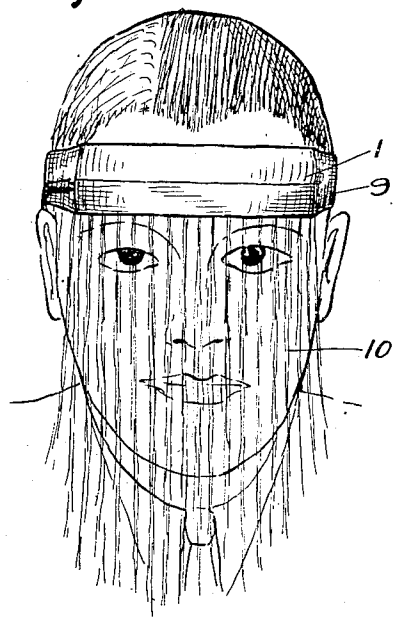


Fig. 2

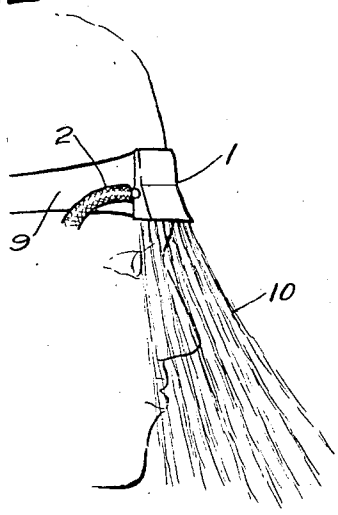


Fig. 3

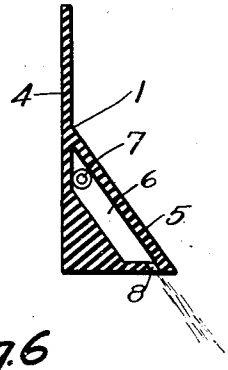
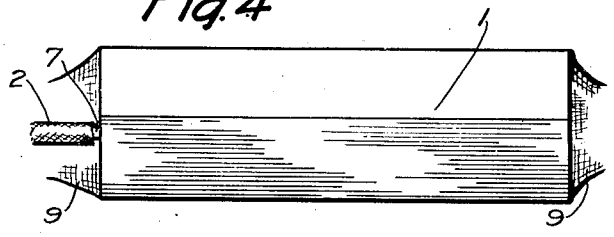


Fig. 4



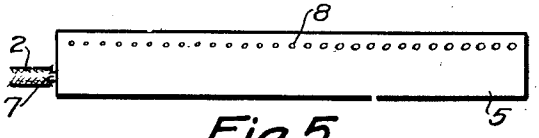


Fig. 5

Fig. 6

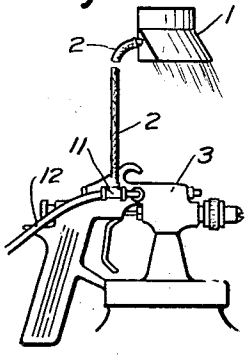


Fig. 7

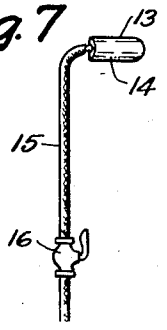
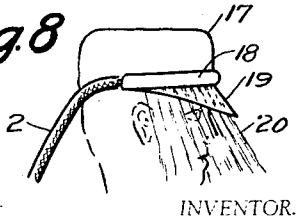


Fig. 8



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Patented Feb. 25, 1936 2,032,101

UNITED STATES PATENT OFFICE

2,032,101

FUME AND DUST ELIMINATOR

William D. Sullivan, West New York, N. J.

Application February 20, 1935, Serial No. 7,371

1 Claim. (Cl. 128—145)

The purpose of this invention is to provide a fume eliminator or air shield for protecting the face while spraying with paint or other products, and which may also be used as a protection from poisonous gases, smoke, or the like, in which the nostrils, mouth, and eyes are open and free, and also in which an abundance of fresh air is continuously provided.

The invention is a shield adapted to be placed around the forehead and connected to means for supplying air under pressure, in which a series of relatively fine holes are provided which are positioned to discharge a continuous film of air over the face and outward therefrom.

Many different forms of gas masks, or protectors, have been provided, and some of these are supplied with oxygen or air, however, substantially all of these are mechanical devices that form a covering over the nose and mouth, and thereby cause restricted breathing or choking, and very few make any attempt to protect the eyes, and when they do, they restrict the vision, therefore, it is desirable to provide a continuous screen in a form of a film of air which will completely cover the face, preventing products or fumes reaching the eyes, nose, or mouth, and at the same time supplying an abundance of fresh air.

The object of the invention is, therefore, to provide an air screen completely covering the face, spaced slightly outward therefrom and sloping outward and downward.

Another object is to provide a curtain of air over the face which may be supplied continuously, or which may be turned on or off as desired.

Another object is to provide a continuous curtain of air over the face in which the density thereof may be varied for different purposes.

A further object is to provide a device for forming a curtain of air over the face which may readily be installed on the forehead or removed therefrom.

And a still further object is to provide means for forming an air screen or curtain over the face which is comparatively simple and inexpensive.

With these ends in view the invention embodies a shield adapted to be placed over the forehead having an air chamber therein, and having outwardly slanting openings in the lower end of the air chamber, and means for providing air under pressure to said air chamber.

Other features and advantages of the invention will appear from the following description, taken in connection with the drawing, wherein:

Figure 1 is a view showing the device installed over the face with air currents being discharged downward, as indicated by the dotted lines.

Figure 2 is a view showing a profile of the face showing the air curtain sloping outward.

Figure 3 is a cross section through the device in the preferred form.

Figure 4 is a view showing a front elevation of the device.

Figure 5 is a view showing the under side of the device, showing openings gradually increasing in size from the air connection to the opposite side of the device.

Figure 6 is a view showing the device connected to a spray gun.

Figure 7 is a view showing an alternate arrangement in which a tube is provided with openings in the lower side in place of the shield, which is shown in Figure 3, and a valve is shown in the connection for controlling the air.

Figure 8 is a view showing another alternate design in which the device is shown incorporated in a cap with the air currents downwardly directed from the under side of the visor thereof.

In the drawing the device is shown as it may be made wherein numeral 1 indicates the shield, numeral 2 an air hose extending from the shield, and numeral 3 a spray gun, or other device in combination with which the device may be used.

The shield 1 is preferably made of rubber, however it will be understood that it may be made of any material, and may be of any shape or design. In the design shown in Figures 3, 4, and 5, this shield is made with a substantially flat back 4, having an inclined section 5 at the lower end with an opening 6 therein, and the opening 6 is provided with an inlet connection 7 to which an air hose 2 may be connected as shown. It will be understood, however, that the connection 7 may be located at any point or points, so that air may be supplied to the shield or to the chamber 6 therein, at any other point, or points, or as may be desired. In the lower outer corner of the chamber 6 is a plurality of openings 8, the size of which is graduated, as shown in Figure 5, so that the small openings are located adjacent the connection 7 as the pressure of the air will be greater at this point, and as the air is distributed around the reservoir or chamber, the size of the openings is increased as the air pressure will drop. It will be understood that any other means may be used for compensating for the change in pressure of the air, and this may be provided within the chamber or in the air hose, or at any point or points.

The shield 1 may be connected to a strap or elastic band 9 which may extend around the head, and it will be understood that this band may be made of any material, and may be arranged in any manner, and it will be understood that any other means may be used for holding the shield upon the forehead. It will be noted that with the shield arranged in this manner and mounted upon the forehead, the air through the openings 8 will be discharged downward and outward, forming a film, air screen, or curtain 10, as shown in Figures 1 and 2, and it will also be understood that the openings 8 may be located at any other point or points, or provided in any position to change the angle of the screen, or curtain, or in order to provide a curtain or screen of any type or description.

This device may be used in combination with a paint spray gun 3, as shown in Figure 6, in which the pipe 2 is connected through a connection 11 to an air supply pipe 12 of the gun. However, it will be understood that the device may be used with spray guns of different types, and the connection with the air supply line thereof may be made at any point or points. It is preferred, however, to make the connection before the hose enters the spray gun so that a continuous supply of air will be provided to the shield, thereby making it possible to provide the air screen whether or not the spray gun is in operation.

In the design shown in Figure 7, the device is formed with a tube 13 having perforations 14 in the lower side, and this is connected to an air hose 15 having a valve 16 therein, and it will be noted that the valve 16 will control the flow of air to the member 13 so that this may be turned on or off, or so that a screen of any density may be provided. It will be understood that the valve 16 may be used with the type of shield shown in Figures 3, 4, and 5, and also in the arrangement shown in Figure 6, or with a device of any type or description.

In the design shown in Figure 8, the device is incorporated in a cap 17 by providing a tube 18 around the visor 19, and connecting openings from the tube 18 through the cap, or under the visor, so that air streams will project downward and outward, as indicated by the numeral 20. The member 18 may be mounted upon the cap, as shown, or may be incorporated therein, and this may be connected to the air supply hose by any means, or in any manner.

Other changes may be made in the construction without departing from the spirit of the invention. One of which changes may be in the use of any other means for providing an air screen over the face, another may be in the use of any other means for supporting or holding the shield, another may be in the use of other means for regulating the amount of air passing through the device, and still another may be in the use of other means for supplying air to the device.

The construction will be readily understood from the foregoing description. In use the device may be provided as shown and described, and it will be noted that the shield may be placed upon the forehead and connected to any suitable means for supplying air under pressure, and as the air is supplied, it will pass out of the small openings downward and over the face, as shown in Figures 1 and 2, thereby forming a continuous film, screen, or curtain which, being formed of air, will be transparent and which will supply a continuous amount of fresh air, thereby not only protecting the face, but maintaining an abundance of clean fresh air which will make it possible to spray with paint or any other product without the product coming in contact with the face, which will also make it possible to pass through dust, smoke, gas fumes, or the like without any danger whatever, and also with an abundance of free air for breathing. This device may also be used for many other purposes.

It will also be understood that although this device is shown and described as discharging air, it may also be used for any other fluid which may be gas or liquid.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent, is:

A relatively small flat shield adapted to be placed over the forehead directly above the eyebrows having a continuous chamber therein with perforations extending through the lower edge of the device and communicating with the chamber characterized in that the lower portion of the device is of a triangular shape and the chamber therein is inclined outward toward the lower end with the perforations also inclined and adapted to eject the air in an outward and downward direction, and a connection at one end of the device adapted to extend therefrom to a means for supplying air under pressure.

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