(No Model.)

D. GENESE.

RESPIRATOR.

No. 346,367. Patented July 27, 1886.

Fig. 1.

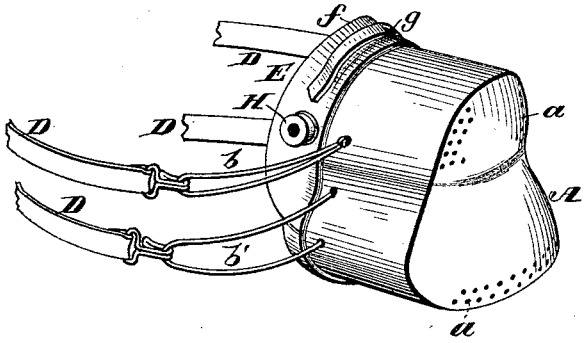


Fig. 2.

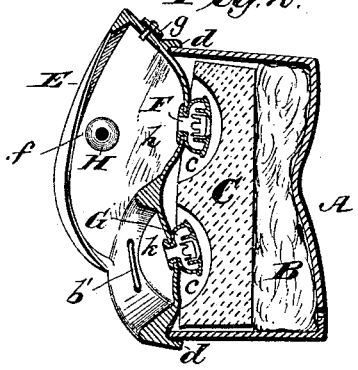


Fig. 3.

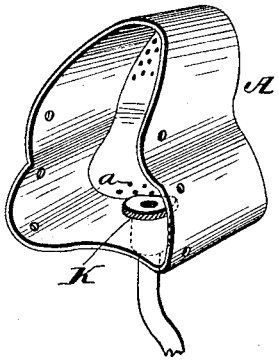


Fig. 4.

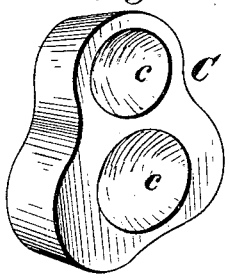
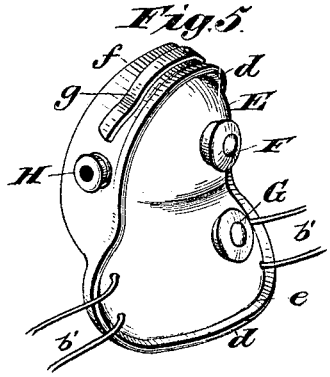


Fig. 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID GENESE, OF BALTIMORE, MARYLAND.

RESPIRATOR.

SPECIFICATION forming part of Letters Patent No. 346,367, dated July 27, 1886.

Application filed November 23, 1885. Serial No. 183,732. (No model.)

To all whom it may concern:

Be it known that I, DAVID GENESE, a subject of the Queen of Great Britain, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Respirators, of which the following is a specification.

My present invention relates to that class of respirators which are designed to be secured over the mouth and nostrils to form a barrier against the entrance of cold or foul air or smoke into the mouth and lungs, or to serve as a vehicle for the inhalation of warmed, purified, or medicated air.

The object of the invention is to improve the efficiency of such articles; and to this end it consists in the combination of devices hereinafter described and claimed, reference being made to the accompanying drawings, illustrating my invention, in which—

Figure 1 is a perspective view of my improved respirator or inhaler. Fig. 2 is a vertical section of the same from front to rear. Fig. 3 is a perspective view of the outer shell or box with a tube attached for the purpose hereinafter explained. Fig. 4 is a perspective view of the recessed carbon block. Fig. 5 is a perspective view of the soft-rubber pad as seen from the side which is fitted to the outer box or shell.

The outer section or box, A, is made somewhat deeper than usual, for the purpose of accommodating the ordinary absorbent filling, B, as well as a block of compressed carbon, C. The box or shell A can have any suitable or appropriate configuration, and is provided with perforations *a* for the inlet of atmospheric air. This box or shell may be made of vulcanized rubber, celluloid, metal, or other material, vulcanite being ordinarily preferable, though I do not confine myself to any particular substance. In constructing an apparatus for use in the inhalation of chloroform it is advisable to employ porcelain or other material not soluble in chloroform.

In each side of the shell A are openings for the passage of cords *b b'*, that carry elastic straps D D, for securing the inhaler or respirator to the face. The cords *b'* also serve for the attachment of a soft-rubber face-pad, E, which has a contour and configuration that adapts it to fit over the mouth and nostrils.

The soft-rubber pad E is provided in its median line with an inlet-valve, F, for the admission of air to the nostrils, and with a similar valve, G, for the admission of air to the mouth. The casings of these valves project obliquely toward each other on one side, and are received in recesses *c*, formed in the carbon block. The edge of the soft pad E is surrounded by an everted flange, *d*, and groove or depression *e*, by which the pad is made to engage the edge of the box or shell A, being drawn in close contact therewith by means of the cords *b b'* and attached elastic straps D when the apparatus is adjusted upon the face. On the nose portion of the pad E is a broad inverted flange, *f*, in which are located the exit-valves H H, one on each side. In order to cause the flange *f* to fit the sides and top of the nose closely, so as not to be displaced by the force of exhalation, a clamping device, *g*, consisting of a band of soft lead or other soft metal or plastic material, is attached to the upper part of the flange *f* by any suitable means. It will thus be seen that the flange *f* can be readily molded or conformed to the nose of the wearer, and be retained in position thereon, so as to effectually exclude the entrance of air, except through the inhalation-valves F and G, that communicate with the outer box or shell.

By reference to Figs. 1, 2, and 5, it will be observed that the soft-rubber pad E is so molded on its opposite sides as to present on its face side a depression, *h*, for the nostrils, and a depression, *k*, for the lips of the person using the device. It will also be seen that the inhalation-valves F and G open into these depressions, respectively, while the exhalation-valves H H are located in the flange *f* in such position as to communicate with the nostril-receiving depression.

It is obvious that the soft-rubber pad E will readily adapt itself to a person's face without liability of irritating or abrading the skin, and also that it is capable of adhering so closely as to completely exclude smoke or foul air from the mouth and nostrils. A respirator of this construction is therefore of great value to firemen.

The recessed carbon block C not only assists in purifying the air passed through the respirator, but also serves to receive and protect

the inhalation-valves. By sinking the valves into the carbon block protection is afforded against a leak from the side should the respirator become detached by accident or otherwise, and the valves are free to work in a satisfactory manner without liability of becoming clogged with cotton or other absorbent materials, or the matters retained therein.

An important advantage incident to this respirator results from the arrangement of the inhalation-valves F and G, connecting the medicated-air chamber or air-purifying chamber A with the face side of the soft-rubber pad, and the exhalation-valves H H, connecting the nostril depression or recess *h* with the atmosphere. By this construction, in which the valves F G are only capable of opening inward or toward the mouth and nostrils, while the valves H H can only open outward, it is apparent that when the apparatus is properly adjusted to the face air can only be obtained through the inhalation-valves after it has been purified or medicated by passing through the absorbent material in the chamber or shell A, this absorbent material being protected from contamination of the breath by reason of the expired air being discharged through the exhalation-valves. The apparatus is thus protected from becoming fouled with the breath, and is thereby kept in better condition for purifying the air admitted to the lungs.

The apparatus, with its filling of absorbent material—such as cotton or other fiber—and the adjacents blocks of carbon, presents a convenient means for the inhalation of vapors for anæsthetic purposes or for the treatment of diseases of the throat and lungs. It may also be used as a protection against inflammation of the throat occasioned by exposure to foul air or excessive changes in temperature.

For the purpose of connecting the respirator to any auxiliary purifying cylinder or apparatus, (not shown,) thereby giving an increased capacity, a short tube or union, K, of any suitable kind can be attached to the lower part of the shell A, as shown in Fig. 3, and this tube or union, or the opening that receives it, can be fitted with a plug when the shell A is detached.

What I claim is—

1. An inhaler and respirator consisting of the perforated shell A, the soft pad E, engaging the edge of the shell and provided with the inverted soft flange *f*, to fit the nose, and with the nostril-receiving depression *h* and lip-receiving depression *k*, the inlet and outlet valves F and H, communicating with the nostril-receiving depression, and the inlet-valve G, communicating with the lip-receiving depression, substantially as and for the purpose described.

2. An inhaler and respirator composed of an outer perforated box or shell, a recessed carbon block placed in said shell, and a soft-rubber face-pad having inhalation-valves, the casings of which are received in the recesses of said carbon block, and exhalation-valves that communicate directly with the atmosphere, substantially as described.

3. An inhaler and respirator composed of an outer perforated box or shell, a soft-rubber face-pad having inhalation and exhalation valves, a band attached to the upper part of said pad for clamping it to the top and sides of the nose, and cords and elastic bands for connecting and securing them to the mouth and nostrils, substantially as described.

4. The combination, in an inhaler and respirator, of the perforated shell A, containing an absorbent material, B, the soft pad E, connected with the shell and fitting the nostrils and mouth, and provided with inlet and outlet valves, and the carbon block C, located in the shell between the absorbent material and the inlet-valves carried by the soft pad, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID GENESE.

Witnesses:
G. E. REARDON,
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