

(No Model.)

A. HENDERSON.
• INHALER.

No. 577,956.

Patented Mar. 2, 1897.

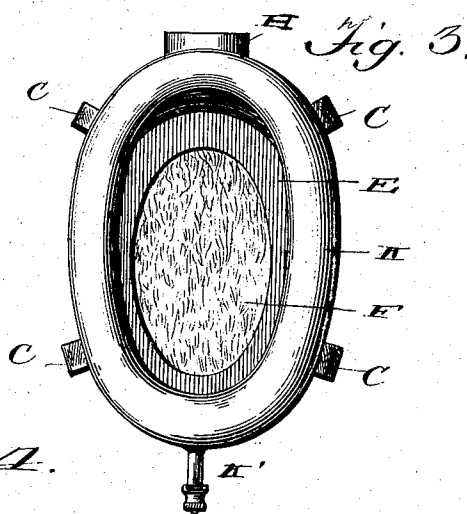
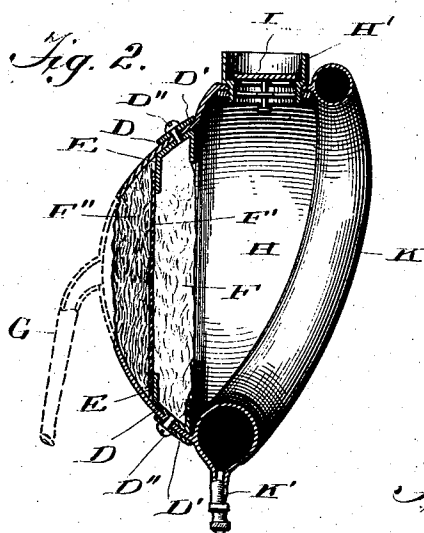
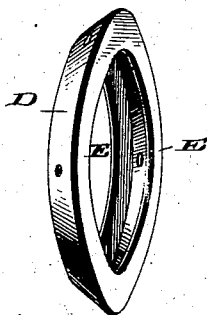


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALEXANDER HENDERSON, OF KANSAS CITY, MISSOURI.

INHALER.

SPECIFICATION forming part of Letters Patent No. 577,956, dated March 2, 1897.

Application filed June 4, 1896. Serial No. 594,257. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER HENDERSON, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Respirators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a new and useful improvement in respirators; and it consists in the construction and arrangement of parts hereinafter described, and definitely pointed out in the claims.

The aim and purpose of this invention are to construct a respirator which is to be worn over the nose and mouth to protect the wearer from smoke or other impurities in the air, such as arise in cement manufacture, working in acids, or fumes arising from ammonia when working in cold-storage and manufacturing artificial ice.

I have shown my device as applied to a fireman's helmet, although I do not desire it to be understood that I limit myself to this use. As shown, the respirator is secured to the helmet by flexible cords, and when desired to be used is drawn down over the mouth and nose and secured in place by the flexible cords, which are secured to the rim of the helmet. It is also the purpose to provide a respirator which will fit closely to the face and which is easily manipulated and cheaply manufactured. These and other objects not hereinbefore specified are accomplished by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views, and in which—

Figure 1 is a view of my respirator over the face of a fireman and secured to the rim of the helmet, the position of the respirator when not in use being shown in dotted lines. Fig. 2 is a vertical central longitudinal section through the respirator. Fig. 3 is a rear elevation of the same, and Fig. 4 is a detail perspective view of the metallic band.

In the drawings, A designates a fireman's helmet, and B the respirator. As shown in Fig. 1, the respirator is in place over the nose and mouth of a fireman and secured in position by means of flexible cords B' and B".

C designates ears on the opposite sides of the respirator, to which one end of the cords are secured. The upper cord B' is secured to the rim of the helmet in the rear of the lower cord B", which is also secured to the rim, so that when the respirator is pulled down over the face the two cords will cross and firmly hold the respirator in place. When not in use, the respirator is drawn up and rests against the front of the crown of the helmet and still held in place by the cords, as shown in dotted lines, Fig. 1. When not in use, the device is entirely out of the way and will detract but little from the appearance of the user.

The respirator B consists, preferably, of a cup-shaped piece of rubber having its front and rear portions open. The rubber is strengthened by a cylindrical metallic band D, (shown in Fig. 4,) which is secured within the rubber near its forward portion. Surrounding the metallic band D, but on the outside of the rubber, is a second metallic band D'. The two bands are secured together by screws D", which pass through the rubber. By forming the respirator of rubber or other flexible material I make an article which is extremely light and durable, which can be easily carried and packed away, and which will not be disagreeable to wear.

The band D is provided with the inwardly-extending annular flanges E. Between the flanges E is secured a piece of felt F, and on the outer face of the felt is secured a piece of silk F'. Beyond the silk is a layer of wool F", which is secured in place by the rubber. The outer opening in the rubber is adapted to be located directly opposite the mouth when the respirator is in place.

I place chemicals on the silk for additional purification of the inhaling atmosphere. The felt and wool may be of any thickness and consistency suitable to the purpose for the complete arresting of the foreign substances when used with the silk and chemicals. The chemicals are put on occasionally, and what I preferably use are glycerin, vinegar, or

ammonia. In working in smoke I use glycerin, in acids I use ammonia, and in ammonia vinegar. The silk is in itself hard for fumes to pass through and would perform its purpose without the aid of chemicals in many cases.

In Fig. 2 I show a modification in dotted lines, wherein the wool is covered by a continuation of the rubber from which a tube G leads down under the shirt-bosom or any place under the clothing which is not already filled with smoke or fumes.

In the rear of the felt is formed an air-chamber H. The top of this chamber is formed with an opening in which is fitted a cylinder H'. This cylinder is open at both ends and is provided with a gravity check-valve I. It will thus be seen that when the respirator is in place the air drawn in through the opening in the front of the respirator is purified by the wool, silk, felt, and chemical, inhaled by the operator, and exhaled through the gravity-valve at the top.

To prevent any leakage of air to the mouth and to form a cushion for the face, I provide the inner edge of the respirator with a tube K, which is filled with air through the tube K'. By this means the respirator can be drawn tightly to the face without any irritation or chafing and which will effectually shut out all exterior air from the chamber H. By forming the respirator of rubber and using but little metal I provide a device which is extremely light and useful.

I am aware that many minor changes can be made in the construction and arrangement of parts without in the least departing from the nature and principles of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A respirator, consisting of a body portion of flexible material adapted to be secured to the face and having its front and rear por-

tions open, an annular metallic band secured within the body portion and adapted to strengthen the same, annular flanges extending inwardly from the band, filtering material for closing the opening in the front and secured in position by the flanges on the band, a band on the outside of the body portion and over the band on the inside, securing means passing through the body portion for securing the bands together, and an exhaust-valve located in the body portion and in the rear of the filtering material, substantially as described.

2. A respirator, consisting of a body portion of flexible material adapted to be secured to the face and having its front and rear parts open, a metallic band secured within the body portion and adapted to strengthen the same, a band on the outside of the body portion and over the band on the inside, securing means passing through the body portion for securing the bands together, filtering material within the body portion and located between the bands and closing the opening in the front, and an exhaust-valve located in the body portion and in the rear of the filtering material, substantially as described.

3. A respirator, consisting of a body portion adapted to be secured to the face and having its front and rear parts open, a metallic band secured within the body portion and adapted to strengthen the same, an annular flange extending inwardly from the band, filtering material secured to the flange and closing the opening in the front, and an exhaust-valve located in the body portion and in the rear of the purifying material, substantially as described.

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

ALEXANDER HENDERSON.

Witnesses:

LILLIE M. HORN,
KITTEE REES.