No. 667,481. Patented Feb. 5, 1901.

C. H. WOOD.

RESPIRATORY MASK OR HELMET.

(Application filed Nov. 6, 1899.)

(No Model.)

Fig. 1.

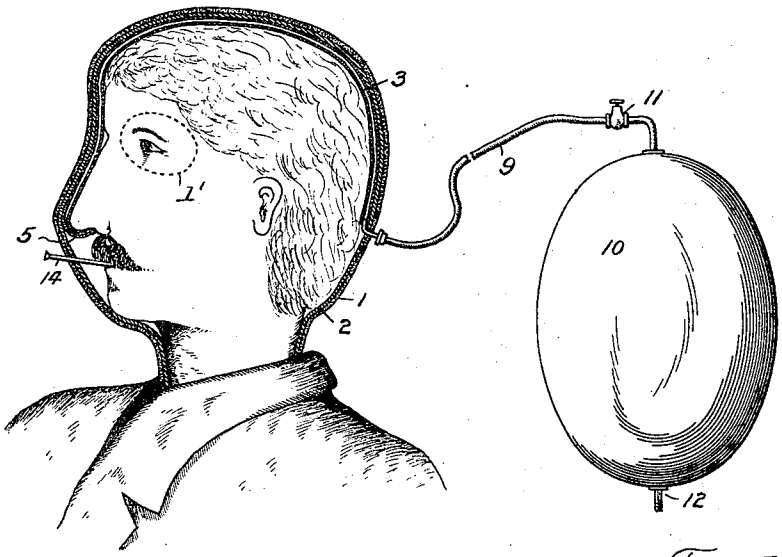


Fig. 2.

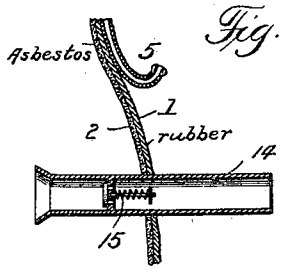


Fig. 4.

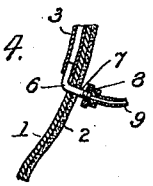


Fig. 5.

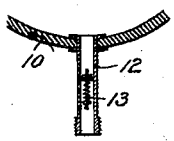


Fig. 3.

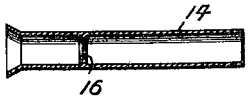


Fig. 8.

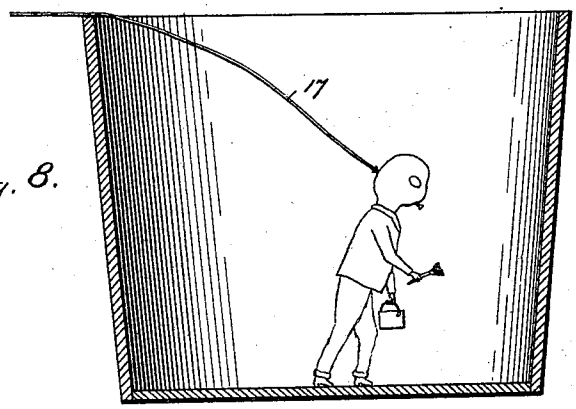


Fig. 6.

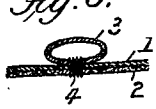
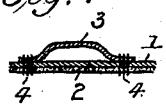


Fig. 7.



WITNESSES:

John Enders Jr.

Ralph S. Warfield.

INVENTOR:

Charles H. Wood

by Geo. R. Hamlin

his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES H. WOOD, OF TRENTON, NEW JERSEY.

RESPIRATORY MASK OR HELMET.

SPECIFICATION forming part of Letters Patent No. 667,481, dated February 5, 1901.

Application filed November 6, 1899. Serial No. 736,005. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WOOD, a citizen of the United States, residing at Trenton, county of Mercer, and State of New Jersey, have invented certain new and useful Improvements in Respiratory Masks or Helmets, of which the following is a specification.

This invention relates to respiratory masks or helmets, and has for its object generally the provision of an improved fireproof mask or helmet of light weight and simple and inexpensive construction which can be easily applied to and removed from the head of the wearer and will be perfectly comfortable when in position.

My object more particularly is to provide a respiratory mask or helmet having its air-supply pipe entering at such a suitable position as to be entirely out of the way of the wearer and to provide an independent air-conduit on or in the helmet leading from the supply-pipe to a position adjacent the nostrils of the wearer, so that the air is conveyed direct and without entirely filling the helmet and passing in all directions around the head of the person. This improved manner of conveying the air permits the utilization of the entire supply without waste and without the disagreeable pressure on all parts of the wearer's head, which is a defect incident to respiratory helmets as generally constructed. In connection with the foregoing improved air-supplying means I aim to provide a suitable independent exhaling tube or mouthpiece, an improved air-reservoir, and other details of construction, all of which will be more fully described hereinafter and the novel features thereof recited in the appended claims.

In the accompanying drawings, Figure 1 is a view showing the device in use, the helmet being in section; Fig. 2, a sectional detail of the exhalation-tube and terminal of inhalation tube or conduit; Fig. 3, a detail of a modified form of exhalation-tube; Fig. 4, a detail sectional view of the pipe-coupling at the back of the helmet; Fig. 5, a detail sectional view of the charging-valve of the air-reservoir; Fig. 6, a detail cross-section of the air-conduit of the helmet; Fig. 7, a modified form of the same, and Fig. 8 a view illustrating the use of the invention in a vat when the reservoir is dispensed with.

The helmet is made of rubber 1, adapted to properly fit the head, and an asbestos covering 2, suitably attached thereto, which renders it completely fireproof, while allowing it the proper amount of flexibility to lightly and easily incase the head and neck of the wearer. Glass eyepieces 1′ are set in the helmet at proper points.

Inside the helmet is an air-conduit made in the form of a flat tube 3, extending up the front and over the top and down the back thereof and having one side stitched to the helmet at 4. At the front of the helmet this conduit terminates in the nostril-piece 5, which is properly shaped and positioned to deliver the air directly to the nostrils of the person wearing the helmet. The tube is preferably of rubber or other flexible material, so as to be perfectly comfortable to the wearer. This conduit can be formed as shown in Fig. 7, if preferred, and can be cemented or otherwise suitably secured to the helmet instead of being stitched thereto. It is also obvious that the conduit could be on the outside of the helmet if preferred.

At the back of the helmet is an angle-tube 6, Fig. 4, one leg of which fits into the end of conduit 3 and the other leg passing through the helmet at 7 and being screw-threaded for engagement with the detachable coupling 8 of a flexible air-supply pipe 9, which is connected to a distendible air-reservoir 10. This reservoir is of proper size for convenient disposal about the person using the device and is adapted to hold a suitable supply of air. Interposed in pipe 9 is a needle-valve 11, by which the person using the helmet can regulate the supply of air to it. The reservoir can be charged by using an ordinary hand air-pump through the nipple 12, containing induction-valve 13, Fig. 5.

In Fig. 2 is shown the exhalation tube or mouthpiece 14, which passes through the helmet air-tight in position for its inner end to be held by the lips of the user, and it is provided with a spring-actuated eduction-valve 15.

In Fig. 3 is shown a mouthpiece having an eduction flap-valve 16, which can be substituted for valve 15, if desired. In fact, any

preferred type of valve can be employed in the exhalation-tube, provided it is adapted to open easily by ordinary exhalation and to remain tightly closed at other times.

In Fig. 8 I have illustrated the application of the invention when it is desired to varnish brewers' vats, &c. Here the pipe 9 and reservoir 10 are dispensed with and a pipe 17 is coupled to the helmet and lead directly to the air outside the vat. The operative can then remain in the vat as long as desired without breathing the poisonous air therein and will have a fresh-air supply during all his movements without having the air-reservoir to carry about.

My invention can be used in any situation where there is smoke, fire, poisonous air or gases, &c., and the user will have perfect immunity therefrom at all times.

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

1. The herein-described respiratory mask or helmet, comprising a flexible helmet or head-covering adapted to fit over the head of the wearer, a flexible air-tube secured on the inside of the helmet and extending from the back to the front thereof and conforming to whatever contour the helmet may assume on the head of the wearer, and terminating at its forward end in a breathing-piece which protrudes freely into the interior of the helmet in position to be located immediately adjacent the nostrils of the wearer so as to deliver the air directly thereto, and an exhalation-tube extending through the helmet at the front thereof and provided with a valve which prevents the entrance of air through said exhalation-tube to the helmet, said exhalation-tube being independent of the inlet air-tube and affording means for egress of the air from the person or wearer, whereby the air supplied to the person is kept free from contamination with the air exhaled.

2. The herein-described respiratory mask or helmet, comprising a flexible helmet or head-covering adapted to fit the head of the wearer and provided with a covering of fireproof material, a flexible air-tube secured on the inside of the helmet and extending from the back to the front thereof and conforming to whatever contour the helmet may assume on the head of the wearer, and terminating at its front in a free, inwardly projecting or protruding breathing-piece which is located immediately adjacent the nostrils of the wearer and is adapted to deliver air directly thereto, uncontaminated by the air exhaled from the person, a portable air-reservoir having a valve-charging nipple and a flexible delivery-tube connected to the rear end of the helmet air-tube, a hand-operated regulating-valve in said delivery-tube, and an independent exhalation-tube extending through the front of the helmet with its inner end projecting thereinto in position for reception in the mouth of the wearer, and a valve in said exhalation-tube which prevents access of air to the helmet through the said tube.

In testimony whereof I have signed my name in presence of two witnesses.

CHARLES H. WOOD.

Witnesses:
J. L. COUARD,
EDWIN C. LONG.