(No Model.)

W. BADER.

FIREMAN'S SMOKE PROTECTOR.

No. 456,687. Patented July 28, 1891.

FIG. 1.

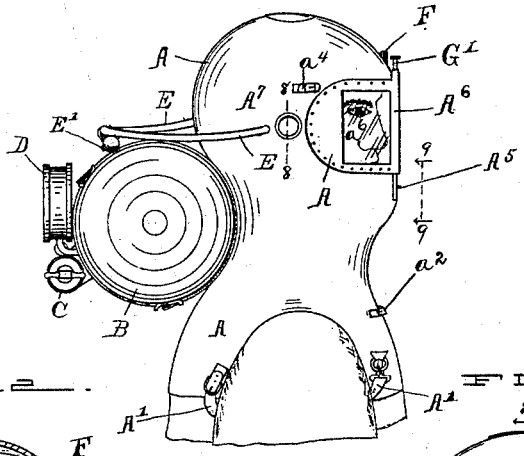


FIG. 8.

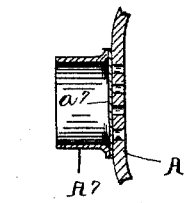


FIG. 3.

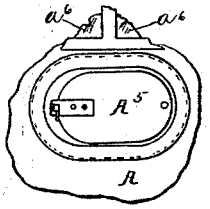


FIG. 2.

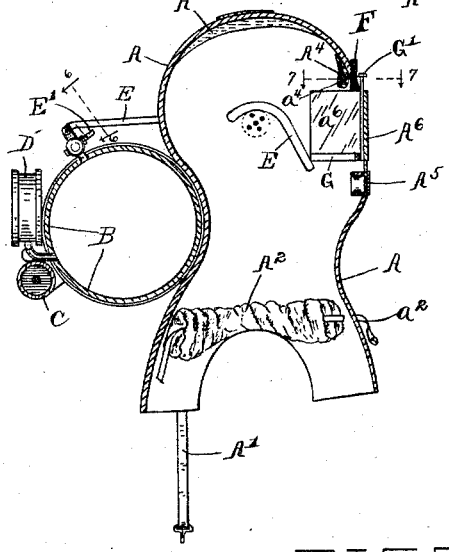


FIG. 3.

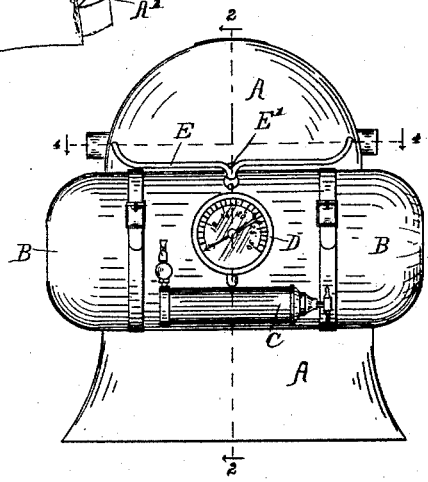


FIG. 4.

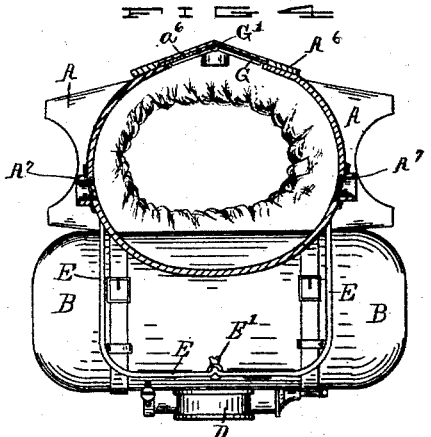


FIG. 5.

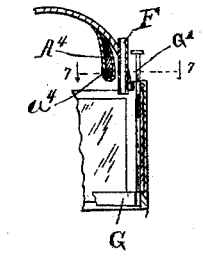


FIG. 6.

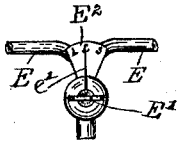
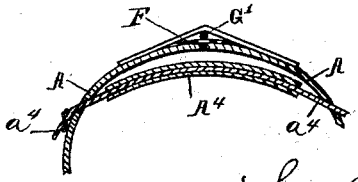


FIG. 7.



WITNESSES.

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Frank A. Hood.

INVENTOR.

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UNITED STATES PATENT OFFICE.

WILLIAM BADER, OF INDIANAPOLIS, INDIANA.

FIREMAN'S SMOKE-PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 456,687, dated July 28, 1891.

Application filed May 19, 1891. Serial No. 393,255. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BADER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Firemen's Smoke-Protectors, of which the following is a specification.

The object of my said invention is to produce a device for firemen's use to be worn over the head, which will enable the wearer to enter a place where the atmosphere is heavily charged with smoke, as is often necessary in case of conflagrations, in order to save life and property.

It consists in a shield or head-piece which completely covers the head and a tank for holding compressed air, with the various connections, appliances, and details of construction by which it is rendered convenient and efficient, all as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation illustrating the use of my device; Fig. 2, a central sectional view of the same looking toward the left from the dotted line 2 2 in Fig. 3; Fig. 3, a rear elevation; Fig. 4, a horizontal sectional view looking downwardly from the dotted line 4 4 in Fig. 3; Fig. 5, a detail view on an enlarged scale, similar to a portion of Fig. 2; Fig. 6, a detail elevation of the egress-valve to the air-cylinder and the indicator connected thereto, as seen from the dotted lines 6 6 in Fig. 2; Fig. 7, a horizontal sectional view on the dotted line 7 7 in Figs. 2 and 5; Fig. 8, a detail sectional view on an enlarged scale through one of the ear-pieces; and Fig. 9, a detail front elevation of the mouth-piece and surrounding portions.

In said drawings the portions marked A represent the outer wall or casing of the head-piece of the device; B, the air-cylinder; C, an air-pump; D, a gage; E, the pipes or tubes running from the air-cylinder to the interior of the protector; F, an exit-pipe to the protector, and G a swab for cleaning the glass of the lookouts.

The casing A of the device is usually and preferably formed of leather. Other fabrics, however, may of course be used which are smoke-tight and sufficiently flexible. It is made to entirely cover the head and fit down over the shoulders, as shown, and is preferably secured under the arms of the wearer by straps A′. Inside, just above the shoulders, is preferably secured a fold of thin flexible material A^2, (see Fig. 2,) which may be drawn in around the neck by straps a^2. The top should be provided with a padded lining A^3. Inside, in position to come against the forehead, is a flexible curtain-like portion A^4, which is adapted to be adjusted to position by straps a^4, and the device is thus capable of adjustment to fit the head of the wearer perfectly or to be varied in adjustment for different wearers. A mouth-piece having a pivoted door A^5 is provided, which may be opened to enable the wearer to breathe the air from the outside when he is not in smoke-laden air, and also to enable him to call to others when desired, being formed trumpet-shaped to better throw the sound of the voice therefrom. In the front a lookout is formed, consisting of a metal frame-work A^6 and panes of glass a^6, as shown. At the sides perforations are formed through the leather, as shown in Fig. 2, and over these perforations are secured ear-pieces A^7, and under them, next the leather, directly over the perforations, are secured parchment or other resonant disks or diaphragms a^7.

The air-cylinder B, the air-pump C, and the gage D are or may be each of an ordinary and well-known construction, and need no special description, except incidentally in connection with the description of the other parts.

The pipes or tubes E connect the air-cylinder with the interior of the head-piece. Their inner ends are open and extend to in the vicinity of the mouth and nostrils of the wearer, so as to discharge the air at the proper point for breathing. They are flexible for the greater part of their length, but unite at the extreme outer ends in a short piece of metal pipe which enters the air-cylinder, and in which is a valve E′, as shown most plainly in Fig. 6. This valve carries a finger e' on its stem, and an indicator-plate E^2 is secured to its seat, and by means of gage-marks which

may be provided on said indicator-plate the extent of the opening of said valve may be clearly shown. This is so that the discharge of air from the cylinder into the head-piece may be regulated and determined accurately by inspection.

The pipe F is a small upwardly-extending pipe, located, preferably, in the front of the device and above the nose of the wearer, for the escape of the exhalations. Being quite small and discharging in an upward direction, smoke is not liable to enter it, particularly as the discharge of the air from the cylinder B occasions some pressure inside the head-piece.

The swab G consists of two arms extending out from a central shaft G′, alongside the glass panes of the lookout, and are adapted to be moved up and down in front of said panes by means of said shaft, and thus remove from said panes the mists likely to be occasioned by the breath of the wearer without the necessity of removing the device from position. Said shaft is mounted in a bearing in the upper portion of the frame-work A^6.

The operation is as follows: The several parts of the device being assembled, as shown, it is placed upon the head and shoulders of the user and there secured, as has been described. The air-cylinder having been filled by means of the air-pump to the desired extent, which is indicated by the gage, the wearer, after closing the mouth-piece and having the valve E′ opened to a sufficient extent to discharge sufficient air inside the head-piece to enable him to breathe easily, may enter a room heavily charged with smoke without any of the inconvenience, usually arising therefrom. A cylinder of such a size as to be easily carried in the position shown may contain air enough to permit the wearer to remain without other air for in the vicinity of half an hour—considerably longer than is usually necessary to effect any purpose commonly required to be performed under such conditions.

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

1. The combination, in a smoke-protector, of a head-piece, an air-cylinder, pipes leading from said air-cylinder to the interior of said head-piece, a lookout, and a swab mounted inside of said lookout and adapted to clean the same, substantially as set forth.

2. In a head-piece for a smoke-protector, a curtain-like piece A^4, provided with an adjustable strap whereby the device may be accurately fitted to the head of the wearer, substantially as set forth.

3. In a smoke-protector, the combination of the head-piece, the air-cylinder, pipes leading from said cylinder to said head-piece, a valve having a finger on its stem, and an indicator-plate adjacent thereto, whereby the discharge of air into the head-piece may be determined, substantially as set forth.

4. In a smoke-protector, in combination with the outside casing covering the head and shoulders, a fold of thin flexible material secured inside of said casing in position to come around the neck of the wearer, and adjusting-straps arranged to draw said fold closely about the neck, the ends whereof extend to the outside of the casing, substantially as set forth.

5. The combination, with a smoke-protector, of ear-pieces, perforations through the structure under the ear-pieces, and resonant disks or diaphragms secured therein.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 15th day of May, A. D. 1891.

WILLIAM BADER. [L. S.]

Witnesses:
E. W. BRADFORD,
FRANK W. WOOD.