

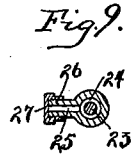
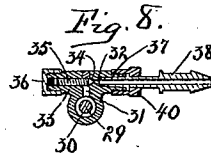
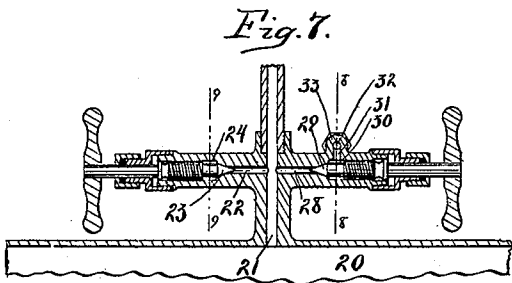
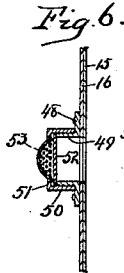
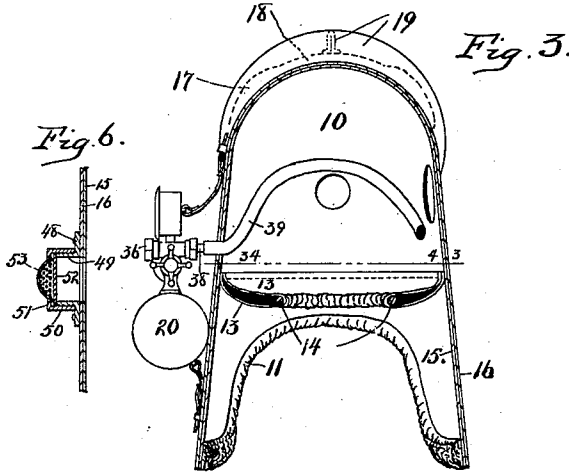
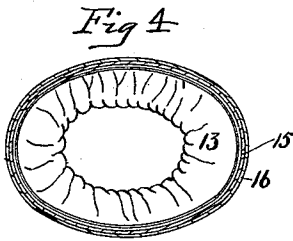
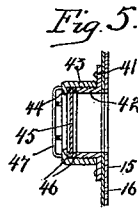
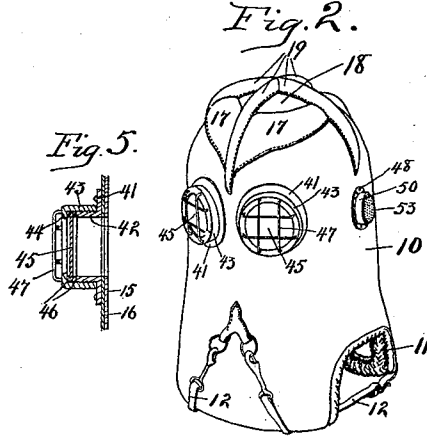
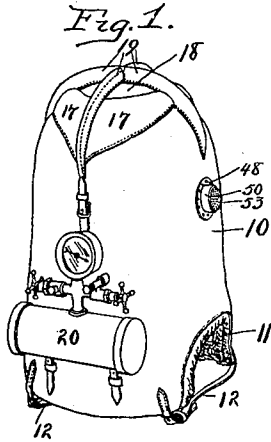
No. 645,286.

Patented Mar. 13, 1900.

W. BADER.
FIREMAN'S MASK.

(Application filed Aug. 10, 1896.)

(No Model.)



Witnesses
S. C. Ellerman.
H. S. Bass.

Inventor
William Bader

By Attorneys
J. P. Hood & Son

UNITED STATES PATENT OFFICE.

WILLIAM BADER, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO WILLIS C. VAJEN, OF SAME PLACE.

FIREMAN'S MASK.

SPECIFICATION forming part of Letters Patent No. 645,286, dated March 13, 1900.

Application filed August 10, 1896. Serial No. 602,285. (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 a new and useful Fireman's Smoke-Protector, of which the following is a specification.

My invention relates to improvements in smoke-protectors for firemen.

The object of my invention is to produce various improvements in the construction of the device for which Letters Patent were issued to me, dated July 28, 1891, and numbered 456,687.

One feature of my invention consists in constructing the casing of the helmet of two thicknesses or casings, one within the other, the outer being impermeable to smoke and gas and substantially fireproof and the inner thickness being porous or absorbent. One of the objects of this construction is to cause the absorption by the inner thickness of the moisture from the breath and perspiration from the wearer, so that it will not dim the eyeglasses. Another object is to stiffen the casing or helmet, so that it will stand and keep its form without being required to use stiff material for either the outer or inner thickness.

The full nature of my invention will appear from the accompanying drawings and the description and claims following.

In the drawings, Figure 1 is a rear perspective view of the protector. Fig. 2 is a front perspective view thereof. Fig. 3 is a central vertical section. Fig. 4 is a horizontal section on line 4 4 of Fig. 3. Fig. 5 is a central section of one of the eyepieces. Fig. 6 is a central section of one of the earpieces. Fig. 7 is a central vertical section showing the arrangement of the valves connected with the air-chamber. Fig. 8 is a section on line 8 8 of Fig. 7. Fig. 9 is a section on the line 9 9 of Fig. 7.

The casing 10 of the helmet is formed of an inner thickness or casing 15 and an outer thickness or casing 16. Said inner thickness or casing is made of soft and porous or absorbent leather or similar material, while the outer thickness or casing is made of leather asbestos-tanned or otherwise treated, so as to

be impermeable to gas and smoke and substantially fireproof. Each thickness or casing is preferably separately formed, and they are placed one within the other and secured together at suitable places by stitching or other suitable means. This construction enables the helmet to stand erect without the use of stiff material, resist the heat, and absorb the moisture from the breath and perspiration of the wearer while it is in use. Said casing or helmet is adapted to fit over the head and rest upon the shoulders and against the breast and back of the wearer. For that purpose the lower end of the helmet has a front and rear extension with places for the shoulders cut out between them, as shown. In order to prevent the ingress of gas or smoke, a smoke-proof bearing is formed between the lower portion of the casing and the body of the wearer of such character as to enable it to conform to the irregularities of the body and clothing better than the mere leather. To that end a strip of lamb's wool or other suitable fibrous or yielding material 11 is placed just inside along the lower edge of the casing, so that it will bear against the body of the wearer. To bring this bearing in the casing tightly against the body, a pair of straps 12 are secured to the lower end of the rear extension of the casing and extend under the arms and over the lower front extension to a common point on the front of the casing somewhat above the lower end thereof, as shown in Fig. 2. Said straps have buckles for adjusting their length, as is shown in said Fig. 2, so that when the helmet is on the wearer it will be drawn tightly down on his shoulders, the back extension will be drawn against his back, and the front extension tightly against his breast, as said straps draw said rear and front extensions toward each other, as will appear in said Fig. 2.

Coöperating with the smoke-proof bearing along the lower edge of the casing for preventing the ingress of gas or smoke I provide about the neck of the wearer a double strip of flexible material, such as lamb's wool 13 in circular form, with its outer edge or periphery secured to the interior of the casing, as shown in Figs. 3 and 4, and having a central opening capable of distension large enough to admit the head of the wearer. Be-

tween the folds of said double strip an elastic band 14 is placed for the purpose of drawing the strip tightly around the neck of the wearer after the helmet has been put on. This arrangement without any attention from the wearer enables him to put on the helmet without any inconvenience or difficulty and also closes tightly about his neck after the helmet is on. The strip 13 about the neck has the further and chief function of preventing the escape of the fresh air that enters the upper part of the helmet from the reservoir to be described hereinafter. Any escape of this fresh air would tend to shorten the period of time during which the helmet could be used. The lamb's-wool bearing 11 at the lower end of the helmet also cooperates with the strip 13 in preventing the escape of this fresh air.

In order to prevent the protector from being crushed by falling material, I secure upon the top thereof a cushion 17, the outer portion of said cushion being of considerable thickness, while the center 18 thereof is preferably somewhat thinner. In order to further stiffen the top of the casing 10, I secure thereto a series of radiating vertical ribs 19, which may be formed of any suitable material, such as arc-shaped pieces of sheet metal, or may be formed, as shown in the drawings, of a double strip of leather stitched into an arc-shaped rib and secured to the casing by rows of stitches. By this means the top of the casing is made very stiff, and the portions lying between the ends of the ribs are further strengthened by the thickened portions of the cushion 17.

For the purpose of furnishing the interior of the casing 10 with a suitable supply of air an air-chamber 20 is secured in any suitable manner to the back of the casing. Leading from the chamber 20 is an air-conduit 21, and leading into said conduit is a supply-conduit 22, the outer end of which may be closed by means of an ordinary pin or other suitable valve 23. The outer end of the supply-conduit 22 communicates with a chamber 24, from which leads at substantially a right angle thereto a conduit 25, which passes through the valve-casing and through a nipple 26, to which may be secured the discharge-pipe of any suitable air-compressor. A cap 27 is provided to normally close the outer end of the nipple 26. Leading from the conduit 21 is an outlet 28, the outer end of which may be closed by means of a suitable valve 29. The outer end of the outlet 28 communicates with a chamber 30, from which leads a conduit 31. The conduit 31 lies at substantially a right angle to the outlet 28 and leads to a transverse conduit 32, which is formed through a casing 33, which lies substantially at a right angle to the casing of the valve 29. Near the point of juncture of conduit 31 conduit 32 is reduced, so as to form a valve-seat 34, and mounted in one end of said conduit is an adjustable pin-valve 35, one end of which is adapted to take into said seat,

and thus regulate the overflow of air from conduit 31 into conduit 32. Valve 35 is preferably a screw-threaded pin, the outer end of which is provided with a slot adapted to be engaged by a screw-driver. The outer end of said valve-pin is preferably protected by means of a cap 36, which is screwed upon one end of casing 33. The opposite end of conduit 32 is tapered, as at 37, and is adapted to receive the tapered end of a nipple 38, over which the outer end of the supply-tube 39 may be forced. Nipple 38 is held in position by means of a nut 40, which engages suitable threads formed upon the inner end of casing 33. A suitable pressure-gage is connected with conduit 21.

The casing 10 is provided with a pair of eyepieces or lookouts, each of which is formed on an annular plate 41, provided with a screw-threaded annular flange 42. Screwed upon flange 42 is a ring 43, provided at its outer end with an inturned flange 44, and mounted and secured between the outer end of flange 42 and the flange 44 is a transparent plate 45, of any suitable material, such as mica. In order to prevent a sudden jar from rupturing plate 45, it is advisable to place between said plate and flanges 42 and 44 an annulus 46, of rubber or other similar substance. Plate 45 is further protected by means of a grating 47, secured to ring 43. Casing 10 is also provided with a pair of earpieces, each of which consists of an annular plate 48, provided with a screw-threaded annular flange 49. Screwed upon flange 49 is a ring 50, provided at its outer end with an inturned flange 51, and a resonant disk 52 is secured between the outer end of flange 49 and the inturned flange 51. For the purpose of protecting disk 52 and preventing a rupture thereof I provide a guard 53, formed of a perforated metal sheet having a flange which is adapted to be held between disk 52 and flange 51, the central portion of said guard being formed so as to project out through the opening formed by said flange, and thus leave the central or vibrating portion of disk 52 perfectly free.

In operation valve 35 is so adjusted as to admit air into casing 10 at any desired velocity, cap 36 being then replaced and not disturbed under any ordinary circumstances. In order to charge the air-chamber, valve 29 is closed, cap 27 removed, and valve 23 opened. Air is then forced through passages 22 and 21 into chamber 20 until the desired pressure, as indicated by the gage, is attained. Valve 23 is then closed and cap 27 replaced. The device is then ready for operation and may be stored away until needed. In case of need the protector is placed upon the head of a fireman and valve 29 is opened to its full extent, the flow of air into the casing being entirely regulated by valve 35, which has been previously set. By this arrangement of valves there is no delay in the hurry and excitement of a fire to adjust the flow of air

into the casing, and the wearer is at the same time insured a proper supply of air.

What I claim as my invention, and desire to secure by Letters Patent, is—

- 5 1. A fireman's smoke-protector in which the casing is composed of two thicknesses, the outer thickness being substantially fire-proof and impermeable to smoke and gas, and the inner thickness being porous or ab-
10 sorbent.
2. A fireman's smoke-protector having a

helmet formed of two casings one within the other, the outer casing being substantially fireproof and impermeable to smoke and gas and the inner casing being porous or absorb- 15 ent, and means for securing said casings together.

WILLIAM BADER.

Witnesses:

A. A. VANSICKLE,

A. M. HOOD.