

L. S. MEIKLE.
FIREMAN'S EQUIPMENT.
APPLICATION FILED SEPT. 30, 1908.

932,880.

Patented Aug. 31, 1909.
2 SHEETS—SHEET 1.

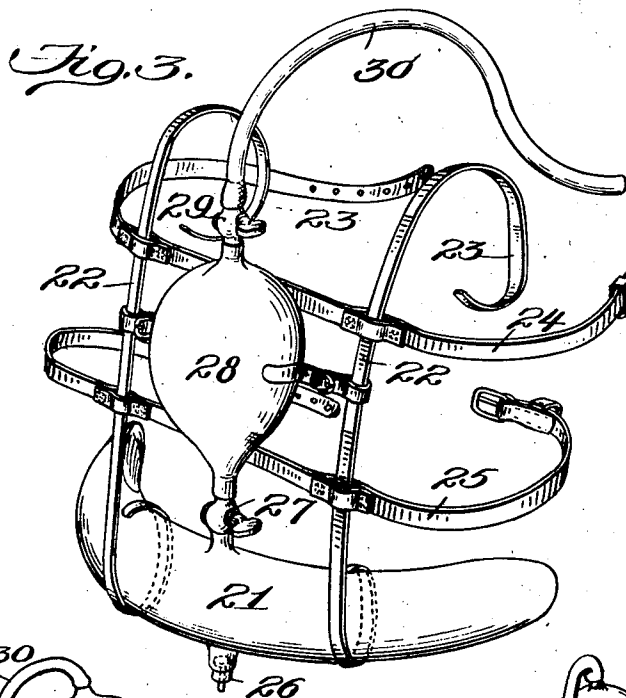
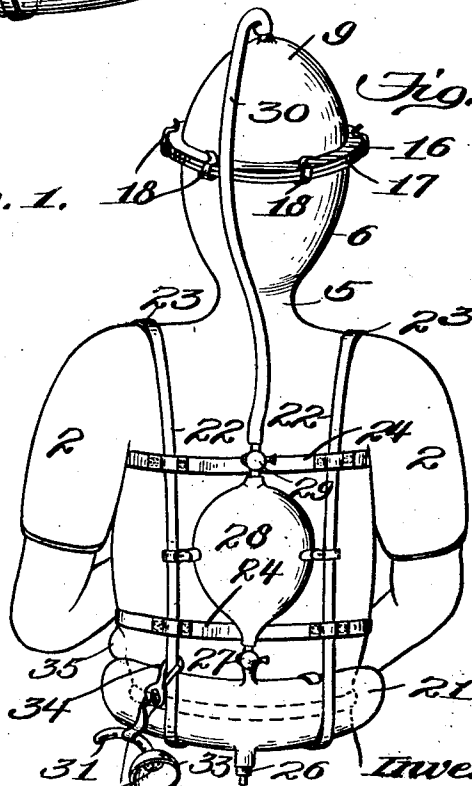
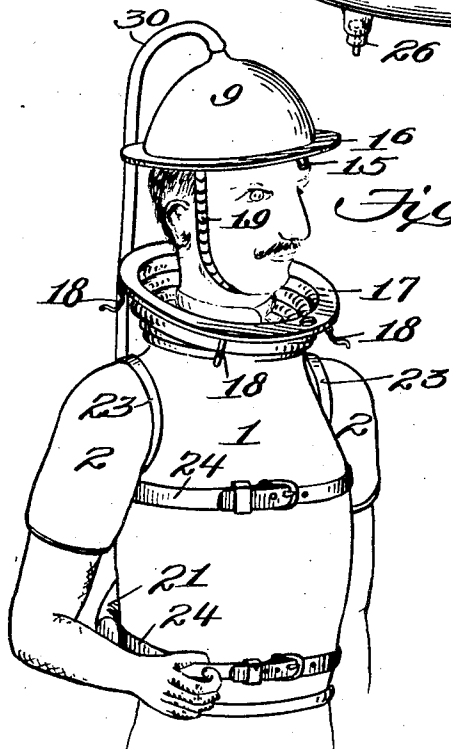
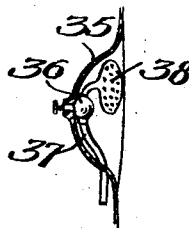


Fig. 8.



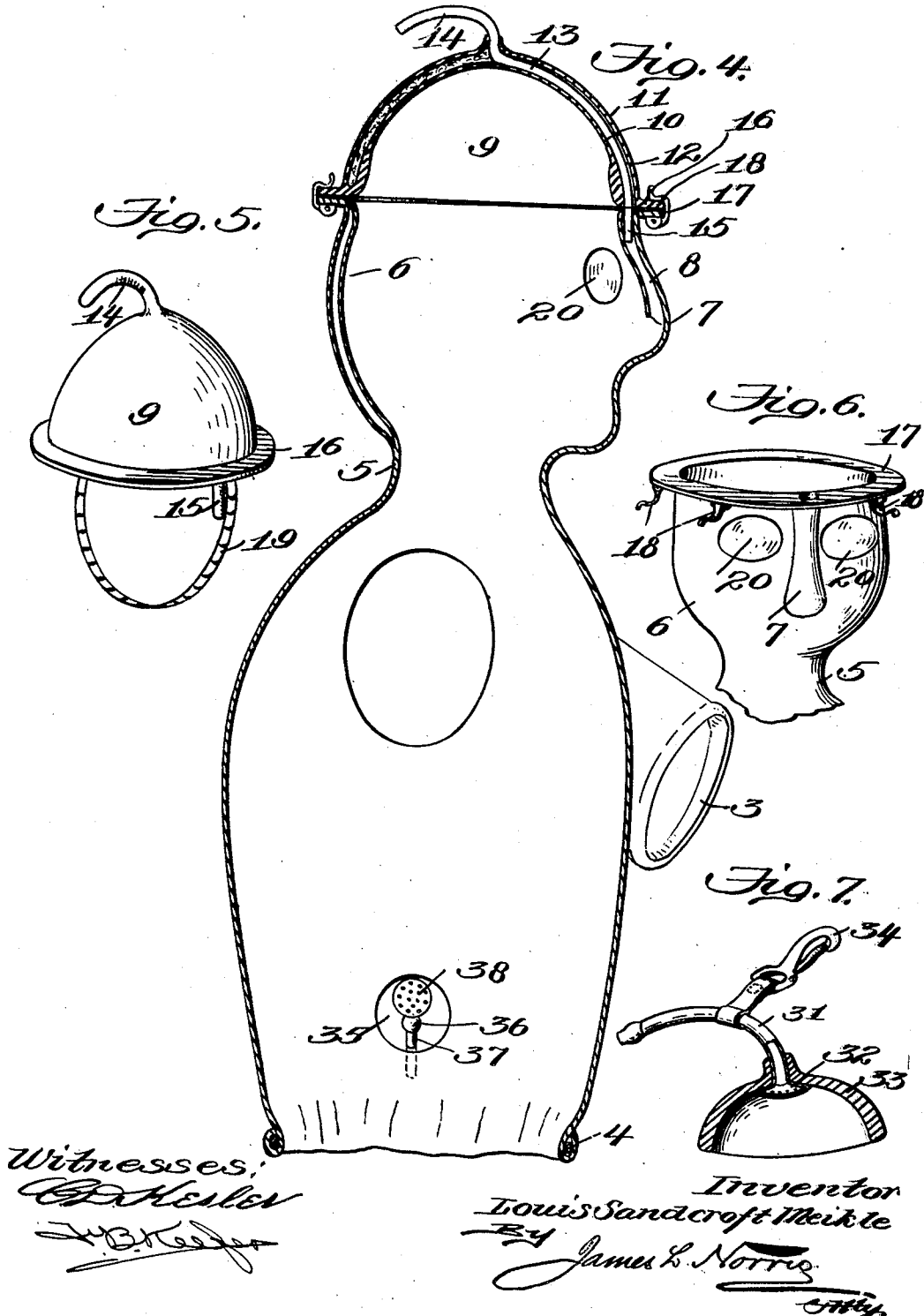
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UNITED STATES PATENT OFFICE.

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FIREMAN'S EQUIPMENT.

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Specification of Letters Patent.

Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that I, LOUIS SANDCROFT MEIKLE, a subject of Great Britain, residing at Colon, Republic of Panama, have invented certain new and useful Improvements in Firemen's Equipment, of which the following is a specification.

My present invention relates to improvements in an equipment of the character adapted to be worn by firemen in entering burning buildings whereby the fireman is protected from suffocation by smoke, fumes and other gases, and it has for its object primarily to provide an improved apparatus of this character which may be readily applied over the ordinary wearing apparel and which embodies a helmet and mask which, when in fastened relation, effectually inclose the head of the fireman and are provided with means for feeding oxygen from a supply tank which is also carried by the fireman so that the danger of suffocation by the smoke or fumes within a burning building is minimized or prevented.

Another object of the invention is to provide an improved equipment of this character wherein the head-gear is composed of two sections one of which is in the form of a mask which, when not in use, may be lowered and collapsed upon the shoulders of the wearer so as to expose the face, and the other section consists of a helmet which is held upon the head of the wearer by a curved strap or chain, these sections being provided with cooperating flanges and suitable locking devices whereby they may be firmly clamped together so as to exclude smoke or fumes.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described; the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 is a perspective view of a fireman's equipment showing the manner in which the uniform is applied to the body, the mask or lower section of the head-gear being collapsed; Fig. 2 is a rear view of the apparatus as shown in Fig. 1; Fig. 3 is a perspective view of the oxygen tank and the straps for supporting the same upon the body; Fig. 4 represents a longitudinal section of the uniform; Fig. 5 is a perspective view of the helmet detached; Fig. 6 is a perspective view of

the mask; Fig. 7 is a detail sectional view of the resuscitator; and Fig. 8 is a detail sectional view of a vent valve for permitting the escape of air after it has been used.

Similar parts are designated by the same reference characters in the several views.

I have shown in the accompanying drawing one specific embodiment of the equipment which will serve in practice to protect the fireman from suffocation by smoke, fumes and other gases which may be encountered in fighting the flames within a burning building, but it will be understood, of course, that the invention is not limited to the specific construction shown and that certain modifications or changes in the arrangement of the parts may be made, which changes will be within the scope of the appended claims.

In the present instance, the equipment comprises a garment 1 which may be composed of rubber or other material which is impervious to air or gas and is of a sufficient fullness to enable it to be applied over the usual wearing apparel in order that the equipment may be applied quickly and with the greatest convenience. This garment is provided with a pair of short sleeve sections 2 and the lower edges of the sleeves and body portion of the garment are provided preferably with elastic bands 3 and 4 which serve to closely bind or cling to the corresponding portions of the body and thus form an air-tight chamber to inclose the upper portion of the body of the fireman. The upper portion of this garment is provided with a neck portion 5 and a mask section 6, the latter being composed preferably of the same material composing the body portion of the garment and therefore is flexible so as to enable it to be collapsed when not in use, thereby exposing the face of the fireman. The forward side of this mask is provided with a nose 7 within which is arranged an oxygen feeding tube 8 which has a feed opening arranged in immediate proximity to the nostrils of the wearer when the mask is in operative position.

The upper section of the head-gear is composed of a helmet 9 which may be of metal or other suitable material and in the present instance is composed of spaced inner and outer walls 10 and 11 which form an annular space 12 which serves to insulate the head of the wearer from the heat, this space also providing a passage for the oxygen

conducting tube 13 which is provided with an attaching end 14 projecting exteriorly of the helmet and has its lower end 15 adapted to enter the oxygen feeding tube 8 of the mask when the latter is lifted so as to cover the face. In order to detachably lock the helmet and mask in operative relation so as to cover the head and face of the wearer, these parts are provided in the present instance with a pair of cooperating flanges 16 and 17 which are arranged to abut against one another so as to form a gas-tight joint and suitable fastening devices 18 are provided for detachably locking these flanges in engagement with one another. Ordinarily, that is to say, before the fireman enters the building, the hood may be lowered into a collapsed condition so as to enable the fireman to breathe atmospheric air, and this may be accomplished by unfastening the devices 18 and allowing the mask to fall upon the shoulders. The helmet, however, may remain upon the head and in order to prevent its displacement, a curb strap or chain 19 may be provided which has its ends attached to the opposite sides of the ring 16 and is adapted to pass beneath the chin of the wearer.

In order to protect the face of the fireman from heat which might be transmitted through the mask, the face portion of the mask is preferably made of a double thickness of material as shown, the intervening air space providing a heat insulating medium and the face of the mask is also provided with suitable glasses or lenses 20 which may be set in metal frames and are adapted to permit vision.

Oxygen is supplied to the fireman while within the burning building through the oxygen conducting tube 13 and the feed tube 8, and this oxygen is supplied from a tank 21 which is preferably carried by the fireman. This tank in the present instance is curved so as to fit around the back or waist of the wearer and is provided with a pair of flexible steel hoops 22 which are welded or otherwise fastened to the tank at their lower ends and are extended upwardly so as to pass over the shoulders of the wearer and are provided with flexible hoops 23 which pass under the arms so as to prevent accidental displacement of the tank. In order to further insure security of the apparatus, a pair of horizontal straps 24 and 25 are preferably attached to the bands 22 and are adapted to encircle the body, buckles being arranged at the forward sides of these straps so as to enable the equipment to be readily applied. The tank is provided with a charging valve 26 and with a discharge valve 27, the latter conducting the oxygen from the tank into an expansion chamber 28 and from the latter the oxygen passes through a regulating valve

29 into the supply tube 30, the latter being composed preferably of rubber or flexible material and is adapted to be removably attached at its upper end to the nipple or attaching end 14 of the oxygen supply pipe 13. The oxygen tank may be composed of aluminum or other suitable material so as to enable it to be highly charged with oxygen, while the expansion chamber 28 may be composed of a rubber or other expansible bag which will contain an ample charge of oxygen for the wearer, the valve 27 serving to reduce the oxygen in passing from the tank into the expansion-chamber or bag 28 and the latter serves to equalize the pressure of the oxygen before it passes into the helmet so that a constant and uniform flow of oxygen is insured. When the supply of oxygen is not needed, as for instance when the mask is lowered or collapsed, the flow of oxygen from the tank may be cut off by the valve 27 or the flow of oxygen may be interrupted by shutting off the valve 29.

In order to enable the equipment to be used for the purpose of supplying oxygen to persons overcome with smoke, fumes or other gases, a resuscitator may be provided as a part of the equipment, such an appliance being shown in Fig. 7, it consisting of a tube 31 which is provided with a perforated distributing head 32 and a soft rubber cup 33, the latter being adapted to fit over the nose or mouth. This device may be attached to the equipment by means of a snap hook or other suitable device 34 and in using this device, the tube 30 may be detached from the nipple 14 upon the helmet and connected to the tube of the resuscitator whereby the latter may receive a supply of oxygen from the tank carried by the fireman.

A firefighting equipment constructed in accordance with my present invention is well adapted for the use of firemen and others likely to be exposed to smoke, fumes and other suffocating or poisonous gases, it serving to effectually seal the respiratory organs from such smoke or gases, and providing a chamber within which the head of the wearer is inclosed, oxygen being supplied to this chamber and to the nostrils by means of the oxygen tank and the supply and feed tubes, all of which are carried by and form part of the equipment.

While the equipment serves to effectually protect the fireman while within a burning building, it may be used without inconvenience to the wearer, as ordinarily the collapsible mask may be lowered so as to fully expose the fireman's face, and the helmet will be held in proper position to receive and support the mask preparatory to the entrance into the building, and moreover, the equipment may be readily applied and worn without discomfort over the ordinary wearing apparel.

In order to insure a tight fitting of the flanges of the helmet, a gasket or lining of cork or soft vulcanite may be interposed between them. In order to permit air to escape from the uniform after use, a cup-shaped body 35 is secured to the body portion below one of the arms, a valve 36 being inclosed therein with its handle operable from the exterior, and a vent tube 37 leads from the interior of the part 35 and has a perforated head 38 through which air may enter the vent tube.

I claim as my invention:—

1. An equipment for firemen comprising a garment portion adapted to fit over the body of the wearer and having a collapsible mask connected to the neck portion thereof, a helmet adapted to be arranged over the head of the wearer, outwardly projecting cooperating flanges on the helmet and mask having means for detachably fastening the helmet and mask to inclose the wearer's head; and means for supplying oxygen to the helmet and mask.

2. An equipment for firemen embodying a helmet adapted to be arranged over the upper section of the wearer's head, a collapsible mask having a reduced neck portion and adapted when raised to inclose the face and to engage the helmet and capable of a collapsing movement to expose the wearer's face; and means for detachably fastening the helmet and mask so as to inclose the wearer's head.

3. An equipment for firemen comprising a garment portion adapted to fit over the upper portion of the body, a mask composed of flexible material and having a reduced lower end connected to the neck portion of the garment, the mask being capable of collapsing so as to rest upon the shoulders of the wearer and expose the face, and means for supporting the mask in operative position to inclose the head of the wearer.

4. An equipment for firemen comprising a helmet adapted to be arranged upon the upper portion of the wearer's head and provided with an attaching ring, a mask adapted to be raised so as to cover the wearer's face and capable of collapsing to expose the face, the mask being provided with a ring to cooperate with that on the helmet, and means for detachably fastening the rings of the helmet and mask in cooperative relation.

5. An equipment of the character described comprising a mask composed of flexible material and capable of covering the lower portion of the wearer's head, the mask being flexible to enable it to be collapsed when lowered, means for inclosing the upper

portion of the wearer's head and for supporting the mask in operative position, an oxygen feeding tube arranged in the face portion of the mask and having a feed opening arranged to discharge in immediate proximity to the nostrils, and an oxygen supply tank having a conducting tube adapted to communicate with the feeding tube of the mask.

6. An equipment of the class described comprising a garment adapted to fit the upper portion of the body and provided with a collapsible mask of flexible material adapted to cover the lower portion of the wearer's head, an oxygen feeding tube arranged in the face portion of the mask, a helmet adapted to rest upon the top of the wearer's head, means for detachably securing the helmet and mask in cooperative relation, and an oxygen feeding tube entering the helmet and having its discharge end communicating with the feeding tube of the mask.

7. An equipment of the class described comprising a garment portion adapted to cover the upper portion of the body and provided with a collapsible mask adapted to cover the lower portion of the wearer's head, a helmet adapted to fit the top of the wearer's head, a curb device attached to the helmet for supporting the latter in position when the mask is in a collapsed condition, and devices for detachably securing the helmet and mask in cooperative relation.

8. An equipment of the class described comprising a helmet and mask detachably connected and serving to inclose the wearer's head, an oxygen supply tank adapted to be carried by the wearer, a gas expansion chamber connected to the supply tank, and a tube leading from the said expansion chamber for conducting the oxygen to the space inclosed by the helmet and mask.

9. An equipment for firemen comprising means for inclosing the head of the wearer, an oxygen supply tank adapted to be carried by the wearer, a pair of bands composed of resilient material attached to the tank and adapted to extend over the shoulders of the wearer and provided with hooped portions to engage beneath the wearer's arms; and means for conducting oxygen from the tank to the space within which the head of the wearer is inclosed.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS SANDCROFT MEIKLE.

Witnesses:

EDWARD LOPEZ,
ST. CLAIR BLACKMAN.