

Aug. 27, 1957

G. JOHNSTON
FIRE FIGHTING SUITS

2,804,071

Filed Oct. 12, 1955

3 Sheets-Sheet 1

FIG. 1.

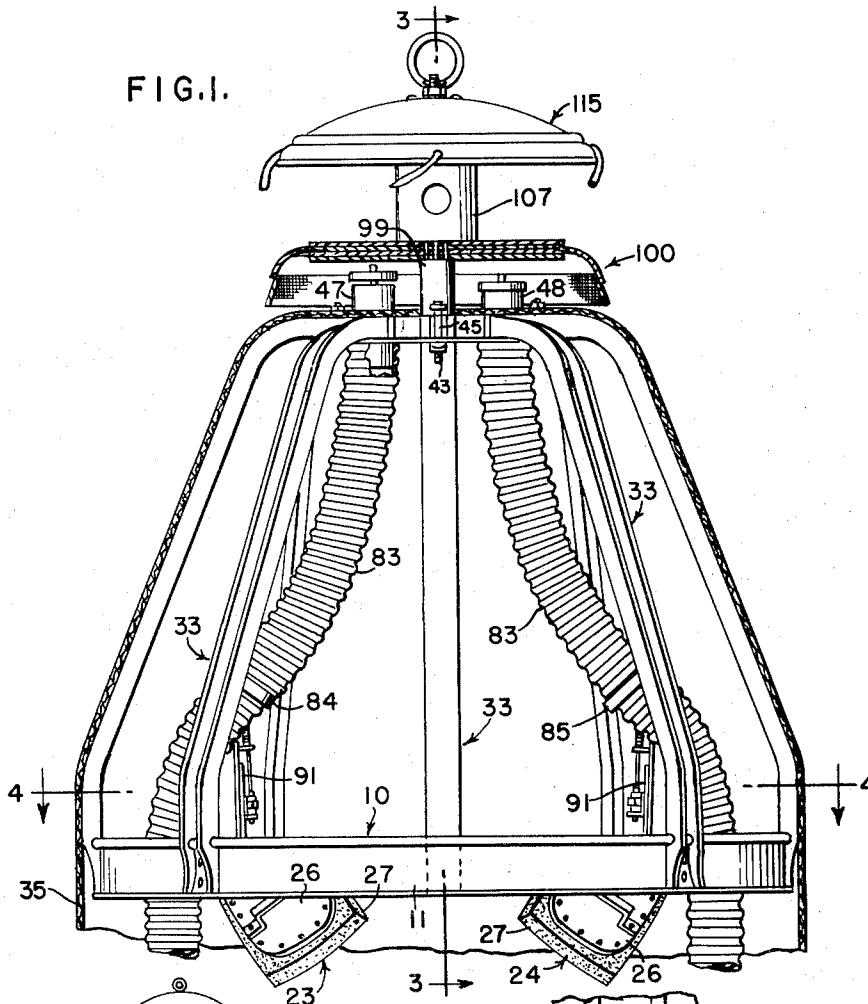


FIG. 2.

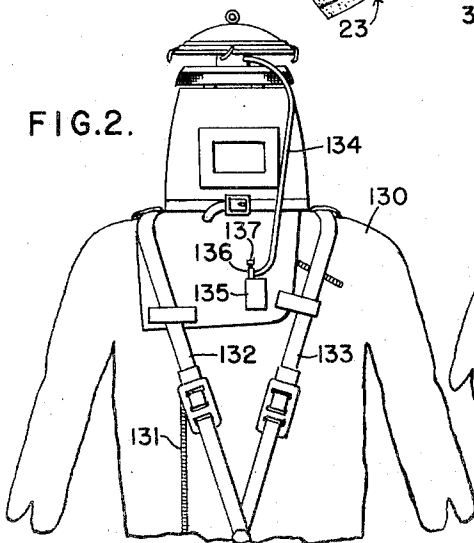
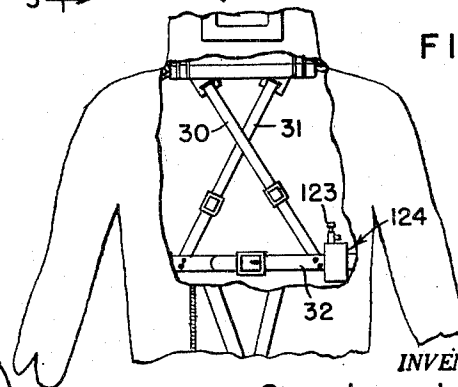


FIG. 5.



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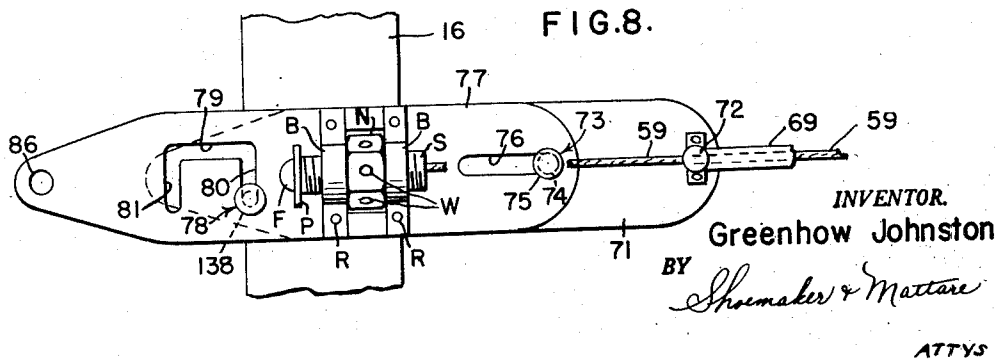
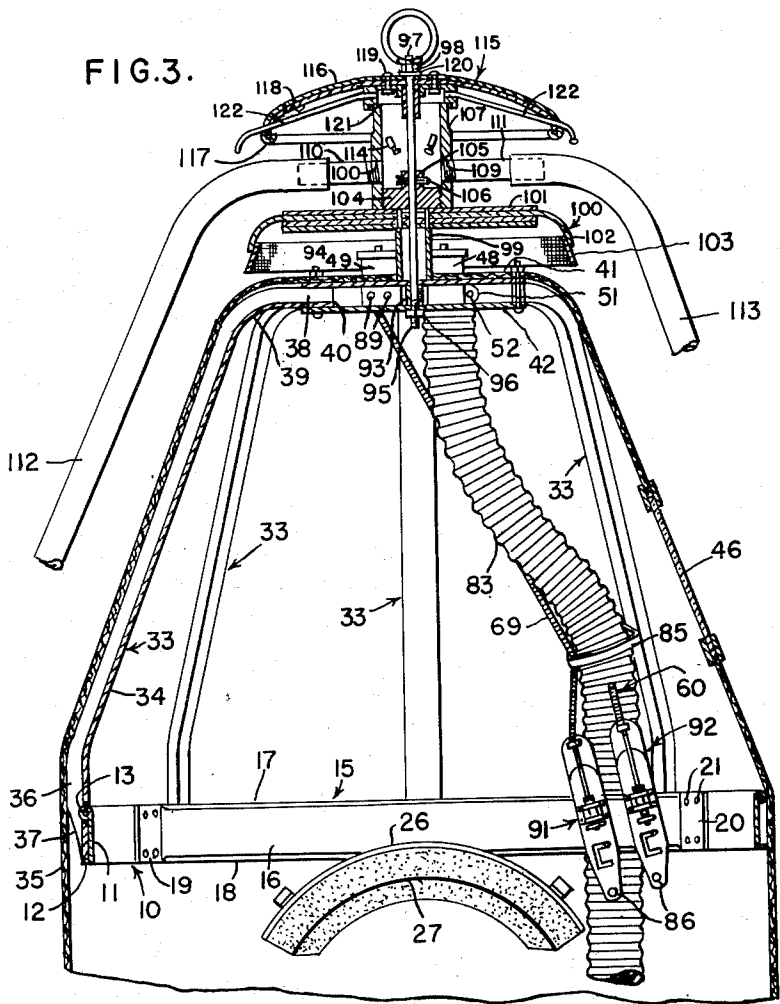
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FIG. 4.

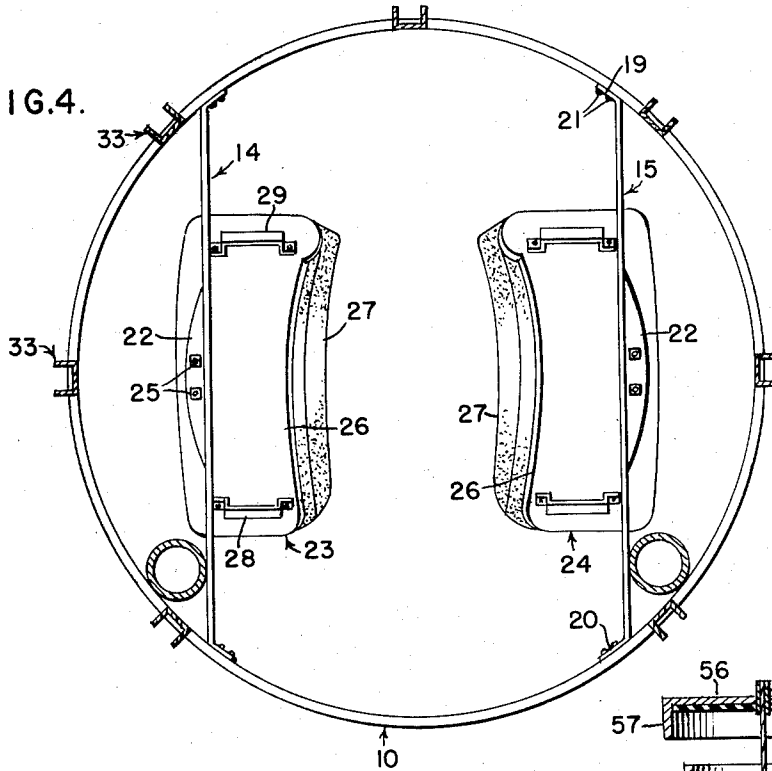


FIG. 6.

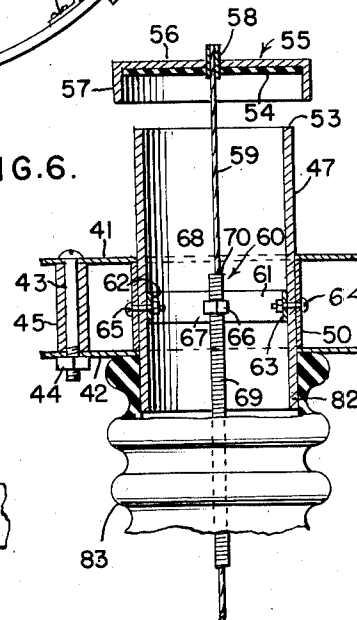
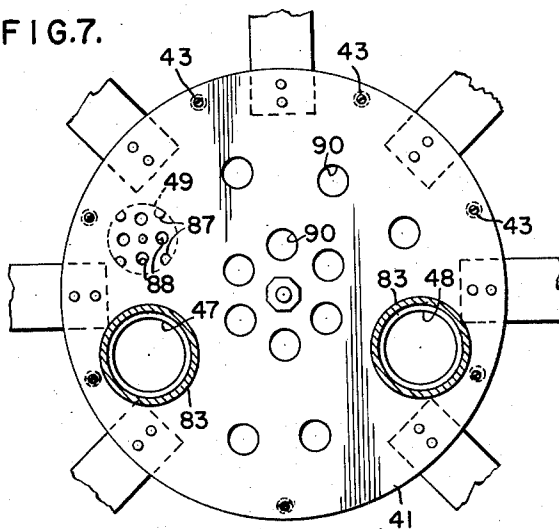


FIG. 7.



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2,804,071

FIRE FIGHTING SUITS

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Application October 12, 1955, Serial No. 540,111

9 Claims. (Cl. 128—142)

This invention relates to fire fighting equipment and more particularly relates to an improved form of helmet or hood for use with a fire fighting suit.

This invention relates to subject matter generally similar to that described in my copending application Serial No. 313,769, filed October 8, 1952, and now abandoned, and constitutes an improvement thereover in the construction of the helmet or head-piece for the fire fighting suit as generally set forth in the copending application.

Of primary importance in connection with this invention is the provision of a rigid, yet light-weight, head-piece or helmet for fire fighting suits which is so constructed as to lend rigidity to the structure while at the same time presenting improved mounting means for the various valves for admitting and exhausting air from the suit.

An object of this invention is to provide an improved helmet for fire fighting suits wherein the air intake and air exhaust means are provided with selectively operable valve mechanism whereby the operator, at will, can control the induction of air into the suit and also exhaust therefrom.

Another object of this invention is to provide an improved valve means for use in connection with a fire fighting head-piece wherein the valve means is of simple construction and is readily accessible to the operator from the interior of the suit for operation between open and closed positions.

Another object of this invention is to provide an improved fire fighting helmet which includes a base structure adapted to seat upon the shoulders of the user and which includes upright members secured at the lower ends to the base member and connected at their upper ends to a pair of spaced rigidifying plates one of which serves as an anchor to which the flexible cover of the helmet is secured and the other of which serves in part as a means for exhausting air from the suit, both plates also serving to hold the induction and eduction means in proper relationship.

Another object of this invention is to provide an improved fire fighting suit provided with valve means connected with the air intake and air exhaust means and wherein the valve means is provided with improved operating structure permitting the valve means to be readily and easily operated from the interior of the suit by the user thereof.

In the drawings:

Fig. 1 is a vertical section taken through the improved head-piece;

Fig. 2 is an elevational view showing the helmet applied in conjunction with the entire fire-fighting suit;

Fig. 3 is a vertical section taken substantially along the plane of section line 3—3 in Fig. 1;

Fig. 4 is a horizontal section taken along the plane of section line 4—4 in Fig. 1;

Fig. 5 is a view similar to Fig. 2 but showing a portion of the fire fighting suit broken away to illustrate the manner in which the head-piece is attached to the body

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of the user and also to show the location of the auxiliary oxygen supply;

Fig. 6 is an enlarged sectional view showing the details of the rigidifying plates and the manner of attaching one of the air intake conduits in conjunction therewith;

Fig. 7 is a horizontal view looking upwardly showing the upper portion of the helmet and illustrating the exhaust openings in the bottom rigidifying plate; and

Fig. 8 is an enlarged view showing details of a portion of the valve operating means.

Referring now more particularly to Figs. 1, 3 and 4, the reference numeral 10 indicates generally a base member which is preferably of annular configuration and which is adapted to seat upon the body of the user in the region of his shoulders. The base member, as specifically shown, includes an annular web portion 11 having a lower outwardly directed horizontal flange 12 formed at its lower edge and having an upper outwardly directed flange or bead 13 on its upper edge. Secured within the annular base member are a pair of spaced parallel rigidifying struts 14 and 15 each of which is preferably of channel shape configuration in cross section to lend a maximum of rigidity thereto, as will be seen most clearly in Fig. 3 wherein the strut 15 is specifically shown as including an intermediate web portion 16 and the upper and lower flanges 17 and 18. Each strut has its opposite end portions 19 and 20 angulated in the manner shown most clearly in Fig. 4 with such angulated portions engaging flushly against the inner side of the web 11 of the base member 10 and secured thereto by any suitable means such as the rivets 21 specifically shown. Each strut has provided substantially midway its ends an integral portion 22 thereof which is in the form of an angulated flange and which serves as a means by which the shoulder pad assemblies 23 and 24 are rigidly attached to such struts, as for example, by the threaded fasteners 25, as illustrated in Fig. 4. The flanges 22 are angulated in such a manner as to provide the angular disposition of the shoulder pads 23 and 24 illustrated in Fig. 1. It will be appreciated that the shoulder pads each constitutes a top plate member 26 which is slightly arcuate with the concave side thereof facing downwardly, this plate being rigidly attached to the flanges 22. The concave undersurface of each plate is provided with a layer of sponge rubber 27 or like material, suitably fastened thereto as by adhesive or the like, and which sponge rubber is adapted to rest upon the shoulders of the user and form a cushion for the head-piece.

Each plate 26 is also provided with a pair of guide straps 28 and 29 which are adapted to receive there-through the shoulder strap members 30 and 31 as illustrated in Fig. 5, which shoulder straps may be crossed both in the front and rear and attached at their free ends to the belt member 32 which is disposed about the waist of the wearer, thus firmly anchoring the head-piece in place upon the shoulders of the user.

Disposed in circumferentially spaced relationship around the base member 10 are a series of uprights or forming members 33. These uprights are preferably of channel shape in cross section to lend lightness thereto and yet retain a sufficient degree of rigidity. Each upright is rigidly secured at its lower end to the base member 10 and at the point of connection thereto the upper bead 13 of such base member is cut away to allow the web portion 34 of the associated upright to contact flushly with the other web surface 11 of the base member. To avoid the presentation of any sharp edges which would tend to wear or tear the flexible cloth covering 35 for the head-piece, the legs 36 of each upright are cut away as at 37 in Fig. 3 to taper downwardly and generally intersect the outer edge of the lower flange 12 of the base member. Any similar means may be provided for

securing the uprights to the base member, for example, the securing may be effected by welding or rivets or the like may be used. The upper ends of the uprights terminate in inwardly directed horizontal portions 38 and the uprights are uniformly bent in the regions 39 to provide a smooth contour. The upper ends 40 of the uprights are disposed in spaced relation to each other and are arranged to define a circular space therebetween. To rigidify the uprights at their upper ends, a pair of circular plate members 41 and 42 are provided. The web 34 of each upright is rigidly secured to the bottom plate 42 and such securement may be effected by means of welding or the like, by threaded fastening means or any equivalent thereof.

As shown most clearly in Fig. 6, the upper and lower plates 41 and 42 are secured together in spaced parallel relationship by means of the bolts 43 and their associated nuts 44, the bolt projecting through both of the plates and cooperating with the spacing washers or tubes 45 which are disposed between the plates to retain the proper spacing therebetween. Of course, the spacing tubes 45 are preferably of such length as to permit the upper portions 38 of the uprights to be securely sandwiched between such plates 41 and 42.

The head-piece thus formed is provided with the previously mentioned flexible covering 35 which may be formed of any suitable fire-proof material such as asbestos cloth and the like, and formed in such covering is an opening within which a transparent window member 46 is secured in air-tight relation with the cloth cover. The window is also disposed in the cloth covering as to lie between two adjacent uprights.

In addition to the rigidifying and securing effect of the upper plates 41 and 42, these plates serve to provide a rigid support for the various air intake tubes or conduits 47 and 48 and for the exhaust conduit 49. This is illustrated most clearly in Fig. 6 wherein it will be seen that the inlet conduit 47 which is of cylindrical configuration projects entirely through aligned openings in the top and bottom plates 41 and 42. A clamp member 50 is disposed in clamped relation around the associated tube 47 and the upper and lower edges of said clamp about the opposing surfaces of the plates 41 and 42 whereby the conduit 47 is rigidly affixed in proper position and is prevented of axial movement. The clamp may be of any conventional construction and the form shown in Fig. 3 terminates at opposite ends in spaced ears 51 having projected therethrough a suitable screw-threaded fastener 52 which serves to draw the ear members together and effect a clamping action on the outer surface of the conduits.

The upper edge 53 of the inlet, conduit 47, for example, constitutes a valve seat against which the resilient gasket member 54 of the valve cap 55 is adapted to engage upon manipulation of the internal structure hereinafter described such as to seal off the inlet conduit 47 from the atmosphere. The valve cap 55 has a central disc like portion 56 and a circumferentially depending flange 57, the inner surface of which defines a diameter greater than the outside diameter of the conduit 47 so that the cap may seat upon the conduit with the gasket 54 disposed in engagement with the valve seat 53.

Projecting through the central portion of the part 56 of the valve cap is a tube 58 which receives therethrough the cap portion 59 of a conventional Bowden wire assembly 60, the cable being securely fastened by any suitable means within the tube 58 such that the two are rigidly attached together. A supporting bracket 61 is secured within the interior of the conduit 47 by means of its opposite end portions 62 and 63 being rigidly attached thereto by the fasteners 64 and 65 which project through both the clamp means 50 and the wall of the conduit 47. Alternatively, the end portions 62 and 63 may be spot welded or riveted to the conduit 47 alone.

Such bracket 61 may be provided with a struck-out

strip portion 66 which defines a loop with the adjacent opposite edge portions 67 and 68 of the bracket 61 so as to receive the sheath portion 69 of the Bowden cable therethrough after which the portion 66 may be deformed into position frictional engagement to hold the cable in place with the terminus 70 of the sheath disposed in spaced relation to the valve seat 53 to permit proper operation of the valve.

As shown most clearly in Figs. 3 and 8, the lower end 10 of the sheath 69 is rigidly affixed to the strap member 71 by means of a socket member 72, the socket member 72 permitting free passage of the cable 59 therethrough as will be readily apparent. The strap 71 is rigidly secured by any suitable means to the web 16 of the strut 15, this being effected by any suitable means.

The strap has rigidly secured thereto a stud member 73 having a shank 74 and terminating in an enlarged head 75 disposed in spaced relation to the strap 71. The shank 74 projects through a longitudinally extending slot 76 in a strap member 77 which is disposed in face-to-face contact with the strap 71. The enlarged head 75 of the stud 73 is, of course, of greater diameter than the diameter of the slot 76 to prevent disengagement of the two strap members 71 and 77. The strap 71 has a second stud member 78 rigidly secured thereto in spaced relation to the first mentioned stud 73 and formed similarly thereto, this latter stud being projected through a generally U-shaped slot 79 in the operating strap 77. By the provision of the U-shaped slot 79, the stud 78 may be either disposed within the end portion 80 or the end portion 81 of such slots 79 between which two positions the Bowden wire cable 59 has shifted the cap 55 between the open position shown in Fig. 6 and the closed position sealing off the conduit 47. There are two such identically constructed conduits 47 and 48 and operators therefor.

Each inlet conduit 47 and 48 has a lower portion 82 which projects below a substantial distance below the lower rigidifying plate 42 and serves as a nipple over which a flexible conduit 83 is engaged. As will be seen most clearly in Fig. 3, the flexible conduits extend from the members 47 and 48 a substantial distance downwardly and these flexible conduits preferably terminate below the shoulders of the user.

The end of the cable 59 is securely fastened within a bore of a screw member S which is journaled on the strap 77 by means of the spaced band members B, these band members being secured to the strap by suitable means such as the rivets R. Threaded upon the screw S and disposed between the two bands or straps B is a nut member N by means of which adjustment of the Bowden wire cable 59 may be attained. In this connection, it will be readily apparent that by rotating the nut end, the screw threaded member S will be moved axially in one direction or another to tighten or loosen the cable 59 and thus effect the proper seating of the associated valve cap 55. To prevent rotation of the screw member during the adjustment, the free end F of the screw threaded member S may be provided with a non-circular stop plate member P which is rigidly secured thereto and which is adapted, should the screw-threaded member S tend to turn, about the strap 77 and prevent such rotation.

As will be seen in Fig. 1, the two adjacent uprights 33 between which the transparent window 46 is disposed, carry guide straps 85 through which the flexible conduits 83 are projected to hold them on opposite sides of the outer face so as to prevent interference with the user's vision. It is to be understood that there is one control assembly as shown in Fig. 8 associated with each of the inlet conduits 47 and 48 and it might be mentioned that the lower end of each of the operating straps 77 is provided with a laterally projecting handle 36 so as to aid in manipulation thereof.

The exhaust conduit 49 is disposed relative to the plate members 41 and 42 generally similarly to the inlet

conduits 47 and 48 with the exception that the exhaust conduit does not in its entirety project through the lower plate 42. The lower edge of the exhaust conduit 49 is provided with the downwardly projecting tongues 87 which are projected through slots in the lower plate 42 and which are subsequently bent over to firmly attach the exhaust conduit to the lower plate. Registering with the axial opening in the conduit 49 are a series of openings 88 formed in the lower plate 42 to permit the passage of air outwardly of the helmet structure. Also, as seen most clearly in Fig. 3, the region of the exhaust conduit 49 which is disposed between the upper and lower plates 41 and 42 is provided with a series of circumferentially spaced openings 89 which, taken in conjunction with the several openings 90 formed in the lower plate 42, present additional means by means of which air can be exhausted from within the helmet and suit. The exhaust conduit is provided with a valve cap identical to that described in conjunction with Fig. 6 and is also provided with an identically constructed operating means, such operating means including straps corresponding to the previously described straps 71 and 72, such operating control mechanism being indicated generally by the reference character 91 in Fig. 3, whereas the operating structure for the inlet conduit 48 is indicated generally by the reference character 92 in Fig. 3 and in respect thereto, it will be noted that the Bowden wire 60 projects through the wall of the flexible conduit 83 at a point disposed somewhat beyond the upper edge of the strap member 71.

The upper portion of the helmet is constructed generally along the lines of my aforementioned co-pending application. In this respect, it will be seen that the plates 41 and 42 are provided with aligned center openings through which is projected a spacer tube 93 which serves as a guide through which is projected an elongated stud 94 which is used to secure the various component parts of the upper portion of the helmet in place. The stud is treaded at its lower end 95 and has secured thereon a nut 96 and is also threaded at its upper end 97 for cooperation with the nut 98. A second spacer tube 99 is disposed between the upper plate 41 and the undersurface of an umbrella-like shield 100. The shield 100 has a more or less rigid central portion 101 which is formed from laminations as will be evident from Fig. 3, one of the laminations being of a flexible nature and projecting beyond such central portion as shown by the reference character 102 to droop downwardly in protective fashion around the various inlet and outlet conduits 47, 48 and 49, the outer edge of said portion 102 being provided with a band of wire mesh 103.

Disposed in the upper surface of the shield 100 is a filling plug or block 104 which has a central bore there-through receiving the stud 94 and a central boss 105 which is rigidly secured to the stud 94 as by means of the cotter pin 106 or similar suitable structure. Thus, when the nut 96 is tightened, the plug 104 is forced downwardly to sandwich the shield 100 and the spacer 99 between such plug and the upper plate 41. The stud 94 projects upwardly beyond the plug 104 through a distributing head 107 which is of hollow cylindrical configuration and which is internally threaded to receive external threads on the plug 105.

The distributing member 107 has a pair of diametrically opposed internally threaded openings 108 and 109 into which the nipples 110 and 111 are received, these nipples being in turn connected to flexible water conduits 112 and 113 leading to a suitable source of water supply. Thus, when the water supply is turned on, water will enter into the interior of the distributing head 107 from whence a portion of such water will be projected outwardly thereof through a series of circumferentially spaced nozzles 114 which project upwardly through the distributing head to spray the undersurface of the top piece deflecting assembly 115. The top piece 115 may be in the

form of an outer disc 116 of metallic construction which has a peripheral bead 117 embracing the outer periphery of an underlying layer of mesh or fabric 118. The construction is such that the nozzle 114 projects water against the undersurface of the cover 115 with sufficient force to form a mist which is deflected outwardly between the cover 115 and the shield 100 to generally envelop the helmet or headpiece structure. The cover 115 is rotatably received on the stud 94 by means of a centrally disposed bushing 119, the previously mentioned nut 98 being disposed immediately above such bushing although it may be preferred that an intervening washer 120 be provided to permit the cover to rotate in the manner hereinafter described.

Secured centrally of the cover 115 on the undersurface thereof in surrounding relation to the bushing 119 is a thrust boss 120 having a stepped circular edge receiving a thrust washer 121 which bears against the upper edge of the distributing head 107 in water-tight relation therewith. Projecting through the outer wall of such thrust boss 120 are a series of nozzles 122 whose outer ends project through the cover 115 and are tangentially angulated in the manner shown most clearly in Fig. 1 so that when water is projected therethrough, they will effect a spinning action on the cover 115 to form an outer spray or curtain of water enveloping the head-piece.

The purpose of the valves utilized in conjunction with the various conduits 47, 48 and 49 is to absolutely prevent the entrance of the surrounding atmosphere into the interior of the suit when the same is in use, for example, in the presence of a great deal of smoke or noxious fumes. Under such circumstances, all of the valves may be controlled and the control valve 123 of an oxygen supply tank 124 may be opened to provide a substantially pure supply of oxygen into the interior of the suit, such supply tank being preferably carried on the previously mentioned belt 32 as will be evident from Fig. 5.

The upper plate 41 is imperforate except where provision is made for the projecting conduits 47, 48 and 49 and for the reception of the various fastening elements 43 which secure the two plates together so that no outside air may enter the interior of the suit when the various valves associated with the inlets and the outlet are closed. Under some conditions wherein the atmosphere is not so noxious or the smoke so dense, only the inlet conduit valves may be operated to the closed position with the oxygen supply 124 turned on so that air is discharged outwardly of the suit through the exit conduit 49.

Referring now more particularly to Fig. 2, the device is shown as applied to the fire fighting suit 130. The suit is provided with a zipper 131 of sufficient length to permit access into the suit and to accommodate the size of the particular wearer, the suit being provided with shoulder strap assemblies 132 and 133.

One of the previously mentioned water inlet conduits 112, 113 may be replaced by the fire fighting chemical conduit 134 shown in Fig. 2 which leads to a source or reservoir 135 containing suitable liquid or gaseous fire fighting chemical, the reservoir being provided with an outlet nipple 136 and associated release valve 137 so that the operator can introduce the chemical solution into the distributing head 107 as desired.

It is preferred that the end portion 80 of the U-shaped slot 79 be provided at its terminus with an offset locking notch 138 as indicated in Fig. 8. This locking notch serves not only the purpose of positively retaining the associated valve assembly in its closed position but also serves as a means for aiding and adjustment of the valve mechanism. That is, with the stud 78 disposed within the notch 138, the nut N is tightened to tension the cable 59 and thus force the valve into sealed or closed position. It is thus assured that when the stud 78 is received in the locking notch 138 the valve will be in properly closed position.

The nut N, see Fig. 8, is provided on its flats with a plurality of openings or recesses W to facilitate turning

of this nut when such as necessary. The nut may be turned in the desired direction by inserting the point of a screw driver or any object which may be projected into the recesses W and utilizing the same to turn the nut.

I claim:

1. A helmet for a fire fighting suit comprising, an open base member, a series of uprights secured at their lower ends to the base member, means rigidly securing together the upper ends of all of said uprights, there being a non-inflammable flexible covering extending over said means and around said uprights to create an isolated atmosphere about a user's head, air intake and air exhaust means carried by the first mentioned means for providing communication between the interior of the helmet and the ambient atmosphere, an umbrella-like shield carried by said first means and disposed in spaced relation above said intake and exhaust means, and means carried by the first means above said shield for providing a protective curtain of liquid about the helmet.
2. A helmet for a fire fighting suit comprising, an open base member, a series of uprights secured at their lower ends to the base member, means rigidly securing together the upper ends of all of said uprights, there being a non-inflammable flexible covering extending over said means and around said uprights to create an isolated atmosphere about a user's head, air intake and air exhaust means carried by the first mentioned means for providing communication between the interior of the helmet and the ambient atmosphere, an umbrella-like shield carried by said first means and disposed in spaced relation above said intake and exhaust means, and means carried by the first means above said shield for providing a protective curtain of liquid about the helmet, said intake and exhaust means including valve mechanisms for controlling the induction and eduction of air.
3. In a protective helmet for fire fighters, a substantially annular base member, a plurality of uprights having their lower ends spaced circumferentially around and secured to said base member, each upright having a laterally bent, inwardly directed upper end with all of such upper ends being disposed in a common plane, an upper plate overlying said upper ends, a lower plate underlying said upper ends, means securing said plates together whereby said upper ends of the uprights are sandwiched therebetween and rigidly secured together thereby, a cylindrical exhaust conduit projecting through said upper plate and secured at its lower end to said lower plate, said conduit having a plurality of apertures therein in that region disposed between the plates, and said lower plate being perforate to communicate with said apertures.
4. In a protective helmet for fire fighters, a substantially annular base member, a plurality of uprights having their lower ends spaced circumferentially around and secured to said base member, each upright having a laterally bent, inwardly directed upper end with all of such upper ends being disposed in a common plane, an upper plate overlying said upper ends, a lower plate underlying said upper ends, means securing said plates together whereby said upper ends of the uprights are sandwiched therebetween and rigidly secured together thereby, a pair of spaced, parallel strut members secured at opposite ends to and disposed within said base member, and cushion means secured to said struts for supporting the helmet upon the shoulders of a user.
5. A helmet for a fire fighting suit comprising, an open base member, a series of uprights secured at their lower ends to the base member, means rigidly securing together the upper ends of all of said uprights, there being a non-inflammable flexible covering extending over said means and around said uprights to create an isolated atmosphere about a user's head, air intake and air exhaust means carried by the first mentioned means for providing communication between the interior of the helmet and the ambient atmosphere, an umbrella-like shield carried by said first means and disposed in spaced relation above said intake

and exhaust means, and means carried by the first means above said shield for providing a protective curtain of liquid about the helmet, said intake and exhaust means including valve mechanisms for controlling the induction and eduction of air, and means for operating said valve mechanism interiorly of the helmet.

6. A protective helmet for firefighters comprising, an annular base having a plurality of uprights secured thereto to form the contour of the helmet, each upright being rigidly secured at its lower end to the base and the uprights being disposed therearound in circumferentially spaced relation, said uprights being disposed in upwardly tapering relation and each terminating in an inwardly directed upper end portion with all such portions lying in a common plane, a lower plate underlying said end portions and to which the same are all rigidly secured, an upper plate overlying said end portions, means rigidly securing said plates together with said end portions sandwiched therebetween, an intake conduit projecting through both of said plates, an exhaust conduit projecting through said upper plate, valve means associated with each conduit, each valve means including a cap for seating upon and closing off its associated conduit, a Bowden wire having its sheath fixed to the helmet and its cable attached to said cap, and means for operating said cable to seat and unseat the cap.

7. A protective helmet for firefighters comprising, an annular base having a plurality of uprights secured thereto to form the contour of the helmet, each upright being rigidly secured at its lower end to the base and the uprights being disposed therearound in circumferentially spaced relation, said uprights being disposed in upwardly tapering relation and each terminating in an upwardly directed upper end portion with all such portions lying in a common plane, a lower plate underlying said end portions and to which the same are all rigidly secured, an upper plate overlying said end portions, means rigidly securing said plates together said end portions sandwiched therebetween, an intake conduit projecting through both of said plates, an exhaust conduit projecting through said upper plate, valve means associated with each conduit, each valve means including a cap for seating upon and closing off its associated conduit, a Bowden wire having its sheath fixed to the helmet and its cable attached to said cap, and means for operating said cable to seat and unseat the cap, the last means including a pair of strip members disposed in overlying relation, one of said strip members being secured to said helmet and the other being attached to said cable, a pair of spaced pins secured to said one strip member, the other strip member having a pair of spaced slots therein receiving said pins, one slot being elongate and the other of U-shaped configuration with the bight of the U disposed parallel with the said one slot, whereby said other strip member is slidable between two locked positions in which the legs of its U-shaped slot receives its associated pin.

8. A protective helmet for firefighters comprising, an annular base having a plurality of uprights secured thereto to form the contour of the helmet, each upright being rigidly secured at its lower end to the base and the uprights being disposed therearound in circumferentially spaced relation, said uprights being disposed in upwardly tapering relation and each terminating in an inwardly directed upper end portion with all such portions lying in a common plane, a lower plate underlying said end portions and to which the same are all rigidly secured, an upper plate overlying said end portions, means rigidly securing said plates together with said end portions sandwiched therebetween, an intake conduit projecting through both of said plates, an exhaust conduit projecting through said upper plate, valve means associated with each conduit, each valve means including a cap for seating upon and closing off its associated conduit, a Bowden wire having its sheath fixed to the helmet and its cable attached to said cap, and means for operating said cable to seat

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and unseat the cap, an umbrella-like shield carried by said plates and disposed in spaced relation above said conduits, and means carried by said plates above said shield for providing a protective curtain of liquid about the helmet.

9. A protective helmet for firefighters comprising, an annular base heaving a plurality of uprights secured thereto to form the contour of the helmet, each upright being rigidly secured at its lower end to the base and the uprights being disposed therearound in circumferentially spaced relation, said uprights being disposed in upwardly tapering relation and each terminating in an inwardly directed upper end portion with all such portions lying in a common plane, a lower plate underlying said end portions and to which the same are all rigidly secured, an upper plate overlying said end portions, means rigidly securing said plates together with said end portions sandwiched therebetween, an intake conduit projecting

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through both of said plates, an exhaust conduit projecting through said upper plate, valve means associated with each conduit, each valve means including a cap for seating upon and closing off its associated conduit, a Bowden wire having its sheath fixed to the helmet and its cable attached to said cap, and means for operating said cable to seat and unseat the cap, there being a covering of flexible material about the helmet and through which said conduits project, said lower plate being perforate to communicate exteriorly of said helmet through the exhaust conduit.

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