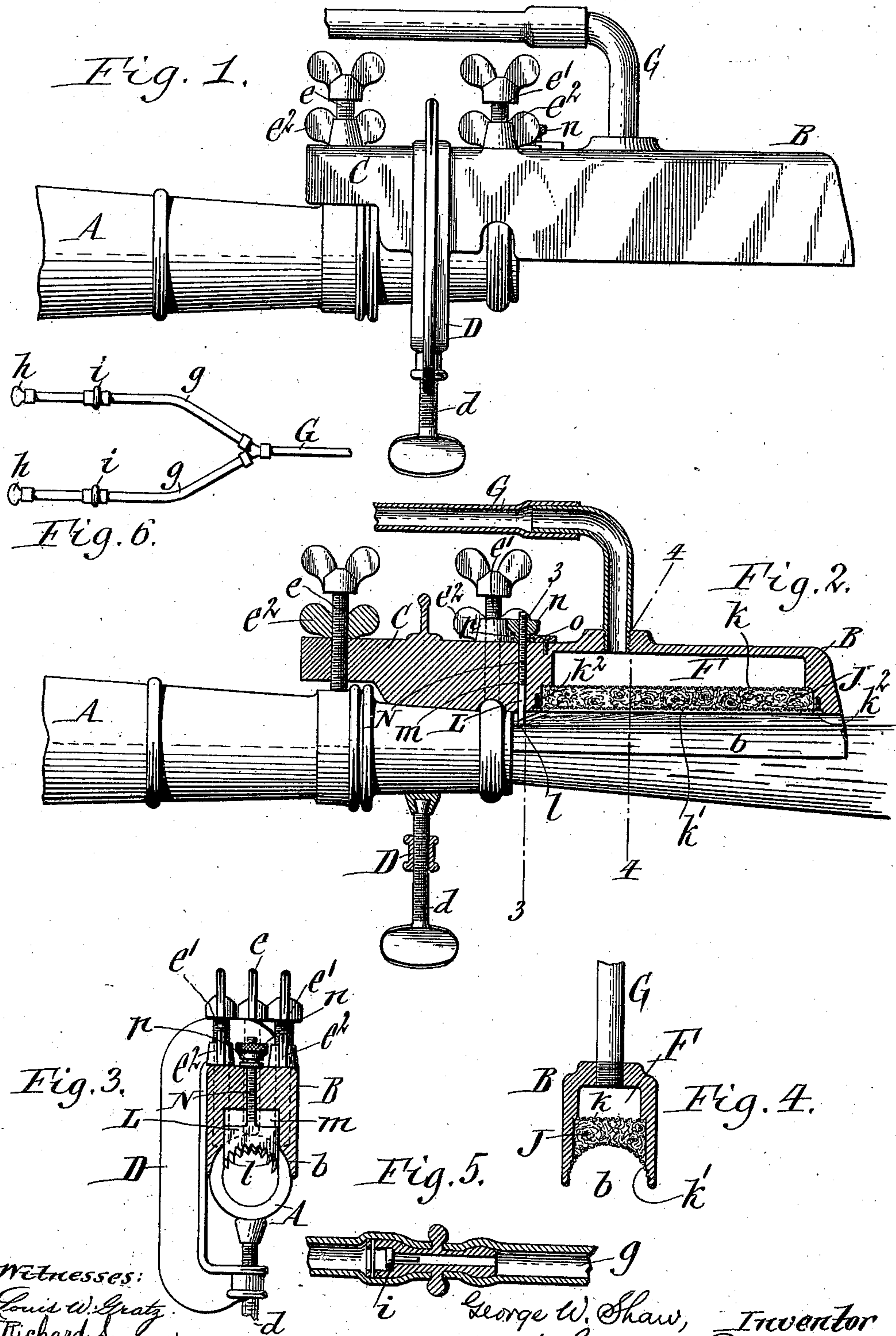


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AIR SUPPLYING DEVICE FOR FIREMEN.
APPLICATION FILED OCT. 12, 1906.

989,880.

Patented Apr. 18, 1911.



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UNITED STATES PATENT OFFICE.

GEORGE W. SHAW, OF BUFFALO, NEW YORK.

AIR-SUPPLYING DEVICE FOR FIREMEN.

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Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed October 12, 1906. Serial No. 338,609.

To all whom it may concern:

Be it known that I, GEORGE W. SHAW, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Air-Supplying Devices for Firemen, of which the following is a specification.

This invention relates to an air supplying device for the use of firemen whereby the same are protected against the injurious effects of smoke, gases and hot air and supplied with life sustaining air while in the act of extinguishing fires with water.

One of the objects of this invention is to provide a simple and efficient device for this purpose whereby air contained in the water used for extinguishing the fire is separated from the same and conducted to the mouth of the firemen who are in the smoke and gases.

My invention has the further object to so organize the air supplying device that smoke and gas laden air from the vicinity of the fire may be supplied to the firemen and rendered fit for breathing.

In the accompanying drawings: Figure 1 is a side elevation of my air supplying device applied to a water delivery nozzle. Fig. 2 is a vertical longitudinal section of the same. Figs. 3 and 4 are vertical cross sections of the same in lines 3—3 and 4—4 Fig. 2, respectively. Fig. 5 is a longitudinal section showing one of the check valves for preventing the passage of air from one branch delivery to another. Fig. 6 is a fragmentary view, on a reduced scale, showing the main air delivery pipe provided with a plurality of branch delivery pipes for supplying more than one fireman with air.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents the nozzle whereby water is delivered from the hose upon the fire to be extinguished and which may be of any suitable or well known construction.

In its general organization my air supplying device consists of means mounted on the front or delivery end of the nozzle so as to surround the stream more or less and constructed to draw off air from the water and conduct the same to the fireman with or

without additional air drawn from the vicinity of the fire. As shown in Figs. 1, 2, 3, and 4 the air supplying device comprises a hood B of aluminum or other suitable material which projects forwardly from the nozzle and along the side of the stream issuing therefrom and provided on its inner side with a longitudinal channel b through which the stream passes and provided with a shank C which fits over the front end of the nozzle on one side thereof and is adjustably secured thereto so as to permit of shifting the hood laterally relatively to the stream. Various means may be employed for thus connecting the hood with the nozzle, that shown in the drawings, for example, consisting of a yoke D projecting from the shank transversely toward the opposite side of the nozzle, a clamping screw d arranged on said yoke and bearing against the nozzle on the side opposite to that which is engaged by the shank, a single rear adjusting screw e arranged transversely on the shank in rear of the yoke and clamping screw and bearing against the nozzle, and two front adjusting screws e¹, e¹ arranged transversely on opposite sides of the longitudinal center of the shank in front of the yoke and clamping screw and bearing against the adjacent part of the nozzle.

By tightening the adjusting screws of the shank on one side of the yoke and loosening those on the other side of the yoke the hood may be tilted laterally relatively to the nozzle for adjusting the bore or bottom of the channel therein relatively to the side of the stream to suit different conditions and permit of obtaining the most satisfactory supply of air for the fireman. After the hood has been adjusted into the desired position the adjusting screws are firmly held in place by means of jam nuts e² applied thereto.

Some of the air contained in the water and carried forwardly from the source of supply is separated or ejected from the water upon issuing from the nozzle. The air thus separated from the water adjacent to the bore of the channel of the hood and containing oxygen, ozone and other life sustaining or beneficial properties is drawn into an air receiving chamber F formed lengthwise in this hood and conducted to the respiratory

organs of the firemen by means of a main tube, conduit or pipe G connecting at its inlet end with the air chamber and provided at its outlet end with one or more
 5 branch tubes or pipes *g*. The air tubes may be constructed of any suitable material but preferably of rubber covered with asbestos. Each of these branch pipes terminates in a tip or end piece *h* through which the fire-
 10 man draws the air from the chamber F with his mouth, his nostrils or both. A check valve *i* is also arranged in each of the branch pipes and operates to permit the air to pass from the air chamber into the mouth of the
 15 fireman, but prevents return movement of the air through the branch pipe, thereby avoiding the possibility of one fireman inhaling the dead air which is exhaled by another fireman.

20 When sufficient air is not obtainable from the water for sustaining the fireman or firemen which are handling the delivery nozzle in the smoke and fire, the hood may be so adjusted relatively to the stream that a
 25 space is left between the latter and the bore of the channel whereby some of the air from the vicinity of the fire may pass between the water and hood and enter the air chamber together with the air derived from
 30 the water. The air drawn from the vicinity of the fire is unfit for breathing inasmuch as the same is usually very hot and laden with smoke, gases or other injurious properties particularly when the fire is among chemi-
 35 cals. The space between the body of the stream and the hood is constantly traversed or swept by that part of the spray at the periphery of the stream which moves lengthwise through the channel whereby the air
 40 drawn from the vicinity of the fire is compelled to pass through the spray before entering the air chamber, thereby washing out or filtering the impurities contained in this air and carrying the same away while
 45 the purified air is delivered to the firemen. In order to further purify the air before the same reaches the firemen a filter J consisting of a sponge, or pad of fibrous material is arranged lengthwise at the inner side of the
 50 air chamber so as to form a partition between the same and the external atmosphere. The filtering sponge or medium is held in position between an outer wire screen *k* permanently secured to the hood and bear-
 55 ing against the outer side of the filter and an inner screen *k*¹ detachably secured to the hood by screws *k*² or otherwise and bearing against the inner side of the filter. Part of the stream issuing from the nozzle
 60 strikes the inner side of the filtering sponge, thereby washing the same and keeping it cool. By this means the external air drawn from the vicinity of the fire while passing through the sponge is cooled and any re-

maining impurities are removed therefrom 65 so that the same is fit for breathing by the firemen. Inasmuch as the sponge is being washed or cleansed continually by the stream from the nozzle the impurities which are separated from the external air by the
 70 filter are removed therefrom as fast as they are separated, thereby maintaining the filter always in perfect working condition.

L represents a deflector which is adapted to cause part of the stream of water issuing
 75 from the nozzle to be delivered against the inner side of the sponge or filter in the form of a spray. This deflector is preferably constructed in the form of a comb the teeth *l* of which are arranged in the form of a cres-
 80 cent and engage with the peripheral portion of the stream adjacent to the outlet of the nozzle. As the stream strikes the teeth of this deflector a portion thereof is torn, spread or divided thereby into a spray which
 85 is deflected laterally against the inner side of the filter. By thus intercepting the stream the air contained therein is caused to separate therefrom more readily and pass
 90 through the filter into the air chamber and through the delivery tubes to the fireman. By thus spraying the water against the filter the same is also saturated more uniformly with water throughout its entire area there-
 95 by increasing the cooling and cleansing effect thereof.

In order to adapt the deflector to different nozzles and different pressures of water the same is adjustably mounted on the hood so that the same may be projected a greater or
 100 less extent into a stream of water. The means for this purpose shown in the drawings consists in providing the hood with a guideway *m* in which the deflector moves laterally or radially, an adjusting screw *n*
 105 projecting from the deflector outwardly through an opening in the hood and adjusting screw nut *n*¹ arranged at the outer end of the adjusting screw, and a stop *o* arranged on the hood and engaging with an annular
 110 groove *p* in the screw nut. By this means the screw nut may be turned for moving the deflector inwardly or outwardly but the nut is prevented from moving with the screw and the deflector. 115

My improved air supplying device furnishes an ample supply of air to the firemen who are handling the hose and nozzle and enables them to get closer to the fire and in a better position and is particularly effective
 120 when the fire is hot and smoky or when the firemen have to work among noxious gases given off by burning chemicals or acids.

I claim as my invention:

1. An air supplying device comprising a 125 hood having a shank adapted to be attached to a water delivery nozzle and having an air receiving chamber adapted to be ar-

ranged at the side of the stream issuing therefrom, a delivery conduit connected with said chamber, and a filter arranged in the path of the air, substantially as set forth.

2. An air supplying device comprising a hood adapted to be attached to a water delivery nozzle and having an air receiving chamber which opens inwardly adjacent to the side of the stream issuing from the nozzle, and a filter arranged in the path of the air, substantially as set forth.

3. An air supplying device comprising a hood adapted to be attached to a water delivery nozzle and having an air receiving chamber which opens inwardly adjacent to the side of the stream issuing from the nozzle, and a filter arranged at the inner side of said chamber, substantially as set forth.

4. An air supplying device comprising a hood adapted to be attached to a water delivery nozzle and having an air receiving chamber which opens inwardly adjacent to the side of the stream issuing from the nozzle, a filter arranged at the inner side of said chamber, and screws for supporting said filter secured to the hood on opposite sides of the filter, substantially as set forth.

5. An air supplying device comprising a hood adapted to be attached to a water delivery nozzle and having an air receiving chamber which opens inwardly adjacent to the side of the stream issuing from the nozzle, a filter arranged at the inner side of said chamber, an outer screen arranged on the outer side of said filter and permanently secured to the hood, and an inner screen arranged on the inner side of said filter and detachably secured to the hood, substantially as set forth.

6. An air supplying device adapted to be attached to a water delivery nozzle and comprising a hood projecting forwardly from said nozzle and having a longitudinal channel on its inner side, and an air receiving chamber opening into said channel, substantially as set forth.

7. An air supplying device adapted to be attached to a water delivery nozzle and comprising a hood projecting forwardly along the side of the stream issuing from said nozzle and having an air receiving chamber opening toward the stream, and means for adjusting the hood relatively to the stream, substantially as set forth.

8. An air supplying device adapted to be attached to a water delivery nozzle and comprising a hood projecting forwardly along the side of the stream issuing from said nozzle and having an air receiving chamber opening toward the stream, and means for adjusting the hood relatively to the stream consisting of a shank connected with the hood and adapted to be arranged along one

side of the nozzle, a yoke connected with the shank and provided with a clamping screw adapted to bear against the opposite side of the nozzle, and adjusting screws arranged on the shank in front and in rear of said yoke and adapted to bear against said nozzle, substantially as set forth.

9. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to be arranged alongside of the stream issuing from the nozzle and having an inwardly opening air receiving chamber, and a water spreader mounted on the hood in rear of said chamber and adapted to deflect part of the stream laterally, substantially as set forth.

10. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to be arranged alongside of the stream issuing from the nozzle and having an inwardly opening air receiving chamber and a comb shaped water spreader mounted on said hood in rear of said chamber, substantially as set forth.

11. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to be arranged alongside of the stream issuing from the nozzle and having an inwardly opening air receiving chamber, a water spreader arranged in rear of said chamber and adapted to deflect part of the stream laterally, and means for adjusting the spreader laterally so as to vary the depth of water which it intercepts, substantially as set forth.

12. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to project forwardly from the nozzle along the side of the stream issuing from the nozzle and having an air receiving chamber opening toward the stream, a filter arranged at the inner side of said chamber, and a water deflector mounted on the hood in rear of said chamber and filter, substantially as set forth.

13. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to project forwardly from the nozzle along the side of the stream issuing from the nozzle and having an air receiving chamber opening toward the stream, a filter arranged at the inner side of said chamber, a water deflector arranged in rear of the air chamber and filter and having the form of a crescent-shaped comb, the teeth of which are adapted to intercept part of the stream of water, and adjusting means for varying the extent which the teeth project into the stream consisting of a transverse way in which the deflector is guided, an adjusting screw connected with said deflector and a screw nut engaging with said adjusting screw, substantially as set forth.

14. An air supplying device adapted to be attached to a water delivery nozzle comprising a hood adapted to project forwardly from the nozzle along the side of
5 the stream issuing from the nozzle and having an air receiving chamber opening toward the stream, a main delivery tube connected with said air chamber, and branch tubes connected with the main tube and

each containing a check valve, substantially 10 as set forth.

Witness my hand this 10th day of October, 1906.

GEORGE W. SHAW.

Witnesses:

THEO. L. POPP,
E. M. GRAHAM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
