

E. M. LAWRENCE.
FIRE EXTINGUISHER.
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1,027,133.

Patented May 21, 1912.

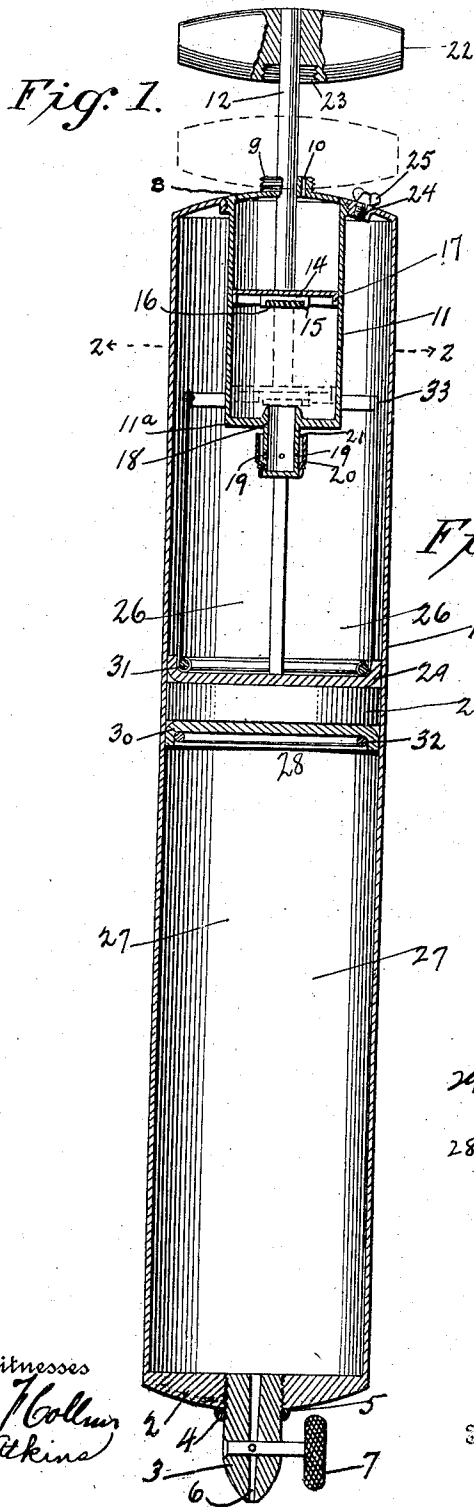


Fig. 2.

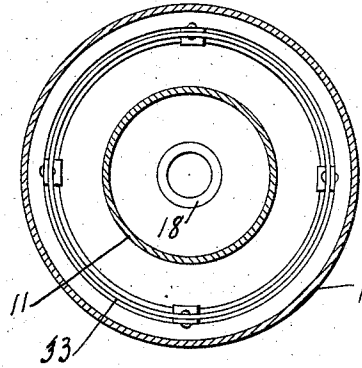
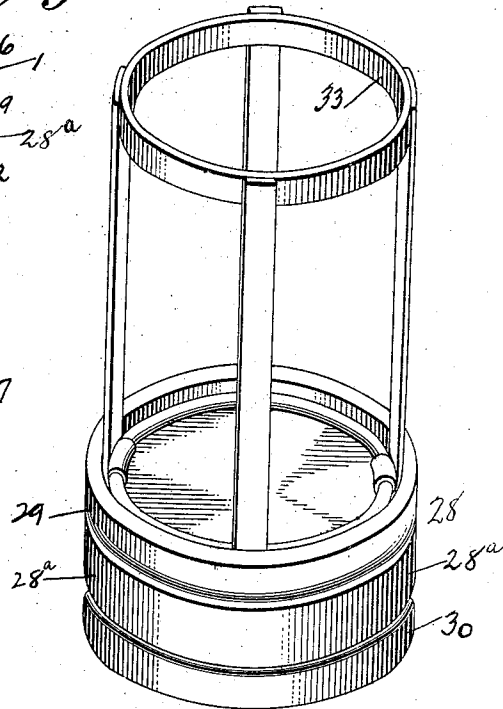


Fig. 3.



Witnesses
J. H. Collins
J. Atkins

Inventor
Ernest M. Lawrence
P. T. Dodge
Attorney

UNITED STATES PATENT OFFICE.

ERNEST M. LAWRENCE, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
THE ELECTRENE COMPANY, A CORPORATION OF NEW YORK.

FIRE-EXTINGUISHER.

1,027,133.

Specification of Letters Patent.

Patented May 21, 1912.

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To all whom it may concern:

Be it known that I, ERNEST M. LAWRENCE, of New York, county of New York, and State of New York, have invented a new and
5 useful Improvement in Fire-Extinguishers, of which the following is a specification.

This invention relates to devices for distributing fire extinguishing materials and the like and, more particularly, to the class
10 thereof known as portable hand extinguishers.

The object of the invention is to provide a device in which air under pressure is utilized to force a piston against the contents
15 contained within a casing or receptacle, and whereby such contents are expelled therefrom with regulable force sufficient to carry the same to a distance, if required, and in a constant and steady stream; also,
20 to provide in such a device, means whereby the pressure-medium may be produced when it is desired or necessary to use the device, and whereby it is unnecessary normally to maintain the extinguishing fluid under
25 pressure; also, in such a device, to include means whereby evaporation and leakage of the contents are reduced to a minimum and, thus, said contents be maintained in proper condition within the casing for an
30 indefinite period; also, to eliminate complicated vent and exhaust valves which are prone to become clogged and frosted when chemicals are used; and, also to provide means to prevent escape of the contained chemicals when the device is directed
35 upwardly or at an angle.

In the accompanying drawings, I have illustrated, by way of example, one embodiment of my invention, and wherein—

40 Figure 1 is a view in sectional elevation of the device; Fig. 2 is a transverse section on the line 2—2, Fig. 1; and Fig. 3 is an enlarged view in perspective of the floating material-expelling member.

45 In the drawings, 1 designates a casing which, in this instance, is elongated, and provided at one end with a head 2, preferably integral with the casing. Into the head 2 is threaded a nozzle 3 encircled contiguous to the head by a collar 4 which
50 holds a washer 5 against the head 2. The nozzle is provided with a central discharge channel 6 which is controlled preferably by a cut-off valve 7. At the opposite end, the
55 casing is also provided with a head 8 se-

cured air-tight therein. On this head is preferably formed a threaded and channeled boss 9 having air-inlet channels or ports 10, 10, suitably valved, if necessary. Suitably secured to the head 8 within the casing is a cylinder 11, and this preferably
60 is removably mounted in the upper end of the casing, as shown.

By reason of the arrangement shown, the head with the attached cylinder may be
65 conveniently removed from the casing whenever necessary to repair or clean the same, and this also gives convenient access to the working parts of the structure. The boss 9 is bored centrally to receive a stem 12 of
70 a piston 14 positioned within said cylinder and comprising a disk or head 15 of brass recessed in its lower face to receive a washer 16, and an inverted cupped packing member 17 secured to the upper face of said
75 head, it being understood that the fit of the piston within the cylinder and the character of the piston is such that when the piston is retracted, the air in the upper part of the cylinder will pass to the lower side of the
80 piston, and when the piston is advanced, the air will be forced out of the cylinder.

The lower end 11^a of the cylinder is provided with a hollow cylindrical extension 18 which projects both into the piston-cyl-
85 nder and, also, downwardly beyond the plane of said lower end of the same. The upper end of the extension is rounded, as shown, so that the washer 16 of the piston-head may be pressed against the same, for
90 a purpose presently to be explained. The lower end of the extension is closed; but the side walls thereof are provided with a plurality of ports 19—one of which is shown. Encircling the extension is a tubular-
95 member 20 of yielding material, such as rubber or the like. This member is so formed as to firmly grip the lower end of the extension but, at its upper end, is somewhat separated from the walls of the ex-
100 tension to provide a passage 21 for air from the cylinder.

The stem 12 at its upper end is provided with a handle 22, and this is formed with a threaded recess 23 adapted to be screwed
105 onto the correspondingly threaded boss 9.

From the foregoing, it will be understood that when the piston is actuated, by means of the stem 12 and handle 22, air will be drawn into the cylinder, through the chan-
110

nels 10 in the boss, and forced into the channeled extension, out through the ports 19, and up over the upper edge of the tubular member 20.

5 The upper end of the casing is provided with an escape-port 24 which is controlled by a screw-plug 25.

The piston and cylinder, just described, constitute a pressure-producing device or
10 air-compressor housed within the casing and adapted to perform a function now to be explained.

Slidably disposed within the casing and adapted to divide the same into a compression-chamber 26 and a material-storage
15 chamber 27, is a floating member 28 comprising, in this instance, a central disk 28^a to which is secured above and below, in any preferred manner, cup-shaped packing
20 members 29 and 30. The extending portions of these packing members are held in engagement with the inside wall of the casing by rings 31 and 32.

In some instances, I may secure to the
25 floating member 28, in any appropriate manner, a guard 33 which would project into the compression-chamber 26, the function of which would be to prevent the floating member from impinging against the lower
30 valved end of the cylinder 11.

The operation of the device will now be obvious: It being assumed that the material-storage chamber 27 has been filled with the desired contents, and that the floating
35 material-expelling member 28 is in the position shown in Fig. 1, and that the nozzle 3 has been securely screwed into the head 2, the pressure-producing device, already described, is operated to fill the compression-
40 chamber 26 with the pressure medium, which may be air or any other aeriform fluid. Then, the valve 7 being opened, the contents will, under the influence of the floating member 28—which is forced by the
45 pressure medium in the chamber 26—be forced through the nozzle in a uniform stream sufficient to carry the contents to a considerable distance. The outflow of the material may be regulated by the valve 7.

50 In the event that it is desired to permit escape of the pressure medium the screw-plug 25 may be removed. The port 24, which is normally closed by this screw-plug, also permits the introduction of oil or the like into the casing to lubricate the movable parts. To refill the casing, the threaded
55 nozzle 3 is removed from the head 2, and the screw-plug 25 removed, whereupon the floating material-expelling member 28 may be, in any convenient manner, returned to its normal position, as shown in Fig. 1. Then, the extinguishing material or the like may be introduced into the storage chamber 27, whereupon the screw-plug 25 is re-inserted
60 and similarly the nozzle 3. Obviously, by a

few strokes of the piston of the air compressor, the compression chamber 26 may be filled with the necessary quantity of pressure medium to actuate the floating member 28 to expel the contents from the chamber 27.

70 It is to be understood that, after air under pressure has been forced into the compression-chamber 26, it will tend to exert pressure against the outside of the rubber member 20 and force the same against the walls of the extension 18 and somewhat into the
75 ports 19, thereby providing a serviceable valve which is useful while the compression-chamber is being charged with the pressure-medium. When the compression-chamber
80 26 is pumped full of the pressure medium, the handle 22 is screwed onto the boss 9, and thereby the piston head is forced against the extension 18 so that the washer 16 will engage the upper end of said extension and
85 provide an air-tight valve.

It is to be understood that, while I have described the invention in detail, it is nevertheless not restricted to such details except
90 in so far as these may be specified in the claims.

Obvious modifications of the form and arrangement of the parts may be made without departing from the spirit of the invention.

What I claim is:

1. A device of the character specified, including in combination, an elongated casing, an air-compressor mounted at one end of
100 said casing and including a compression-chamber within said casing, a piston working in said chamber, and valves communicating therewith, and a floating material-expelling member slidably disposed in said
105 casing independently of said air-compressor and movable under the influence of the compressed medium produced by the said compressor.

2. A device of the character specified, including in combination, an elongated casing, an air-compressor mounted at one end of
110 said casing and including a compression-chamber within said casing, a piston working in said chamber, valves communicating therewith, a floating material-expelling member slidably disposed in said casing independently of said air-compressor and
115 movable under the influence of the compressed medium produced by the said compressor, a nozzle at the discharge end of said casing, and a cut-off valve in said nozzle.

3. A device of the character specified, including in combination, an elongated casing, an air-compressor mounted at one end of
120 said casing and including a compression-chamber within said casing, a piston working in said chamber, valves communicating therewith, a floating material-expelling member slidably disposed in said casing in- 125

dependently of said air-compressor and movable under the influence of the compressed medium produced by the said compressor, a nozzle at the discharge end of said casing, a cut-off valve in said nozzle, and means communicating with the interior of said casing for permitting escape therefrom of the compressed medium.

4. A device of the character specified including in combination, a casing, a floating material-expelling member movably supported within said casing and dividing the same into a material storage-chamber and a compression chamber, a cylinder mounted

within the compression chamber, a piston working in said cylinder, valved-channels communicating with said compression-chamber and cylinder, and a discharge nozzle mounted on the end of said casing opposite to the compression chamber.

In testimony whereof I hereunto set my hand this 24th day of February, 1911, in the presence of two attesting witnesses.

ERNEST M. LAWRENCE.

Witnesses:

EDWIN A. BECK,
J. W. BRECHERY.

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