M. L. DUNBAR.

FIRE EXTINGUISHER.

APPLICATION FILED SEPT. 18, 1918.

1,314,468.

Patented Aug. 26, 1919.

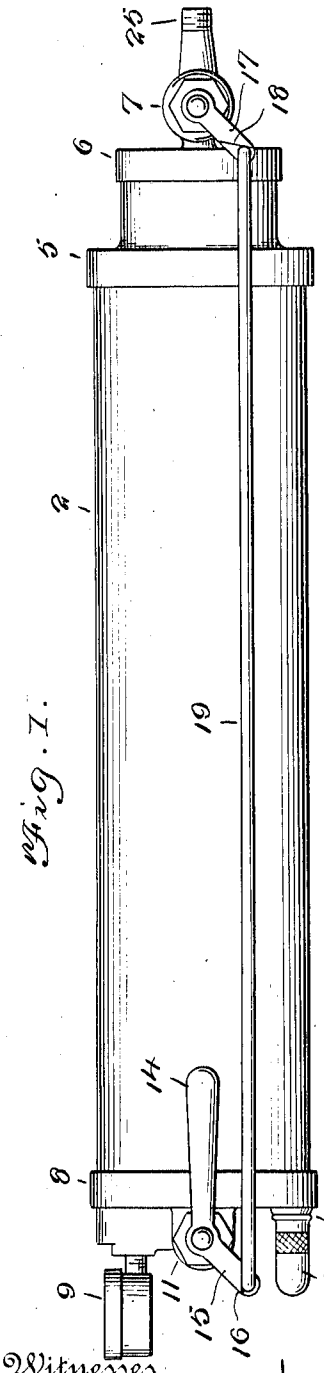


Fig. 1.

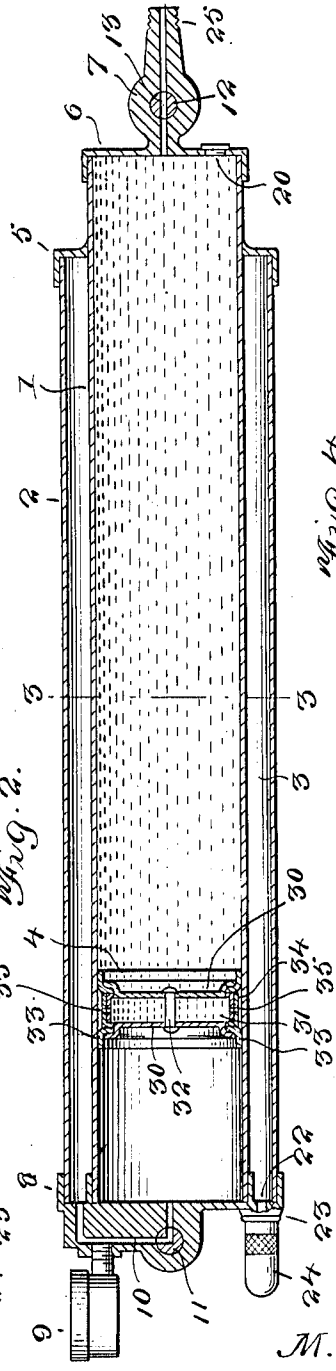


Fig. 2.

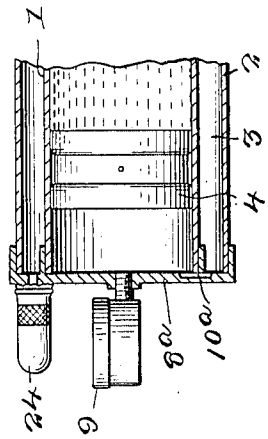


Fig. 4.

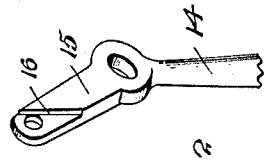


Fig. 5.

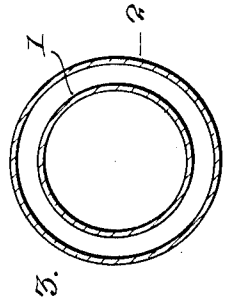


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

1,314,468. Specification of Letters Patent. Patented Aug. 26, 1919.

Application filed September 18, 1918. Serial No. 254,612.

To all whom it may concern:

Be it known that I, MAHLON L. DUNBAR, a citizen of the United States, residing at Norwalk, in the county of Huron and State of Ohio, have invented new and useful Improvements in Fire-Extinguishers, of which the following is a specification.

My present invention pertains to chemical fire extinguishers and is designed more particularly as an improvement upon the extinguisher constituting the subject of my Letters Patent, #1,158,904 of November 2, 1915.

Ease of operation and certainty in action are important factors in the practical use of chemical fire extinguishers, and, therefore, the general object of my present invention is the provision of a chemical fire extinguisher constructed and arranged to fully meet both of said requirements.

Another object of the invention is the provision in a chemical fire extinguisher of a chemical container, a follower movable therein, and a wall surrounding and spaced from the chemical container and serving to form about the chemical container a chamber for the reception of fluid under pressure; the said arrangement being practically advantageous because the outer wall precludes indentational or other injury to the wall of the chemical container, thereby assuring free movement of the follower at all times, and also because it lends increased stiffness and strength to the body of the extinguisher and at the same time increases the fluid pressure containing capacity of the extinguisher in proportion to the size thereof.

Another object of the invention is the provision of efficient means whereby when the extinguisher is to be operated fluid under pressure may be allowed to pass from the fluid pressure container into the chemical container with the certainty that such fluid pressure will promptly and adequately act against the follower to move the same and thereby displace the chemical in efficient manner from the chemical container.

Another object of the invention is the provision of a follower which by virtue of its construction is adapted to effectually confine the extinguishing agent and at the same time is certain under all conditions to move freely when subjected to the action of fluid under pressure or other moving means.

Other objects and advantageous features of the invention will be fully understood from the following description and claims when the same are read in connection with the drawing, accompanying and forming part of this specification, in which:

Figure 1 is a side elevation showing one embodiment of my invention in horizontal position.

Fig. 2 is a longitudinal diametrical section of the same, with parts in elevation.

Fig. 3 is a transverse section taken on the plane indicated by the line 3—3 of Fig. 2.

Fig. 4 is a detail section of a modification of the invention designed to be employed when but one valve is utilized and that for the discharge nozzle of the device.

Fig. 5 is a detail view showing the rear shouldered arm 15.

Referring by numerals to the said drawings and more particularly to Figs. 1 to 3 thereof, 1 is the chemical container of my novel extinguisher, and 2 is the wall surrounding and spaced from the side wall of the container 1 in order to form between the walls a fluid pressure container 3. Manifestly, by virtue of the arrangement described, the wall 2 is adapted to prevent denting or other injury to the wall of the container 1 in the event of the extinguisher being dropped or struck against another object, and, hence, the said wall of the chemical container will be preserved in its normal smooth and straight state with the result that at all times the piston 4 will be enabled to freely move within and against said wall. At the same time the wall 2 lends increased stiffness and strength to the extinguisher, and by reason of its surrounding the wall of the chemical container the extinguisher is rendered compact and susceptible of being easily handled, and this while affording to the extinguisher a large fluid pressure containing capacity in proportion to the size of the extinguisher.

Any suitable closure means may be em-

ployed at the opposite ends of the chemical container and the fluid pressure container without involving departure from the scope of my invention. I prefer, however, to close the lower end of the container 3 by a flanged annulus 5, sweated on the walls 1 and 2, and I also prefer to close the lower end of the container 1 through the medium of a flanged cap 6 shrunk upon or otherwise attached to the lower end of the wall 1 and equipped with a discharge nozzle 7. The upper ends of the two containers I prefer to close through the medium of a cap 8 flanged and shrunk upon or otherwise connected to the upper ends of the walls 1 and 2; the said cap 8 being in the preferred embodiment of the invention, utilized for the connection of the pressure gage 9 which is always in communication with the fluid pressure containing portion of the extinguisher. Intermediate of the containers 3 and 1 and at the opposite side of the follower 4, with reference to the chemical employed, is a conduit 10 for the passage of the fluid under pressure from the container 3 to the point where it is enabled to adequately operate against the rear side of the follower 4. I prefer to form the said conduit in the cap 8, and it may be arranged as shown in Fig. 2 or may be provided by forming a channel 10^a in the inner side of the cap 8^a as clearly shown in Fig. 4; the said channel extending at opposite sides of the wall between the compartments and being advantageous because of the facility with which it may be produced and also because its inner portion cannot be closed by the follower 4 when said follower 4 is in its uppermost position. The conduit 10 lends itself readily to the employment of a taper-plug valve 11 and is preferable when use is made of such valve.

When, however, the valve is to be omitted as is sometimes the case, I prefer to have the conduit 10^a in channel form and disposed as shown in Fig. 4.

In the discharge nozzle 7, I provide a valve 12, preferably of taper-plug type, and having a diametrical aperture adapted to be registered with the spaced and alined apertures in the nozzle, this being advantageous inasmuch as such valve offers but an infinitesimal surface to the action of the extinguishing chemical when the valve is closed so that there is no liability of the valve being set in position by the action of the chemical. The chemical or extinguishing agent is preferably, though not necessarily, carbon tetrachlorid.

The stem of the valve 11 is equipped, Fig. 1, with a handle 14 on which is an arm 15 having at one side a shoulder or abutment 16, and the stem of the valve 12 is equipped with an arm 17, having at one side a shoulder or abutment 18. This construction is best shown in Fig. 5. The arms 15, 17 are extended beyond their shoulders and are apertured for the reception of lateral terminals on a connecting rod 19. Thus, when the handle 14 is manipulated, the valves 11 and 12 will be synchronously opened and closed. It will also be noticed that the coöperating shoulders of the arms and the lateral terminals on the rod 19 will coöperate to prevent the valves being moved beyond their closed position when the handle 14 is moved to the position shown in Fig. 1, and when said handle is moved to open the valves, the said coöperating shoulders and rod terminals will operate to prevent the valves being moved beyond their fully open positions.

At 20, the container 1 is provided with a normally closed filling opening, and at 22 the container 3 is provided with an inlet orifice in communication with a nipple 23 that contains an outwardly seating non-return valve (not shown) and is adapted to be normally closed by a removable cap 24. The fire extinguishing agent is introduced to the container 1 through the opening 20 when the closure thereof is removed, and the container 3 is charged with compressed air or other fluid under pressure through the medium of a pump or the like which may be attached in conventional manner to the nipple 23.

The discharge nozzle 7 is preferably threaded as indicated by 25 for the convenient connection of an air pump subsequent to an operation of the extinguisher, this, in order that the follower 4 may be readily forced to its uppermost position in the container 1 when it is desired to recharge the said container 1 with extinguishing agent.

When the construction shown in Fig. 4 is employed at the top of the extinguisher the valve 11 will be omitted and a single valve, such as 12, will be employed in the nozzle 7 of the extinguisher; the said valve being equipped with a handle disposed like the arm 17 in Fig. 1.

Manifestly, when the construction shown in Fig. 4 is employed, the extinguisher must be charged with extinguishing agent prior to the placing of fluid under pressure in the compartment 3. When, however, the construction disclosed in Figs. 1, 2 and 3 is made use of, either extinguishing agent or fluid under pressure may be placed in the extinguisher in the discretion of the party marketing the device.

Incidental to the practical use of the extinguisher the pressure gage is highly advantageous inasmuch as it is calculated to inform a prospective user of the device of the pressure available in the extinguisher.

It is highly important for the follower

employed to be adapted to move freely in the container 1 when the extinguisher is to be put into action and I, therefore, prefer to employ a follower of the construction clearly shown in Fig. 2. The said follower comprises spaced and flanged heads 30 between which is formed a glycerin chamber 31, central means 32 connecting said heads, annular gaskets 33, preferably of leather, disposed in the flanges of the heads 30 and lapped over and beyond the perimeters of the heads and opposed to the inner surface of the container wall and annular members 34 flanged and reversely arranged and seated in the flanged peripheries of the heads 30 and forming the circumferential wall of the glycerin chamber 31. It will be noticed that the flange of the outer annular member 34 laps the edge of the inner member and that both flanges of the members 34 bear against the heads 30; also that the annular members 34 are provided with apertures 35 in registration, as shown. The said apertures 35 permit of the ready charging of the chamber 31 with the glycerin precedent to the placing of the follower in the container 1, and while the follower is in use the registered apertures enable the glycerin to exude from the chamber 31 with the result that the gaskets 33 will at all times be thoroughly impregnated with glycerin. I prefer to employ glycerin for the purpose stated inasmuch as the same is not subject to mixture with carbon tetrachlorid.

It will be gathered from the foregoing that when my novel fire extinguisher is properly charged with extinguishing agent and fluid under pressure, all that is necessary to put the same in operation is to manipulate the handle 14 whereupon the fluid under pressure will act against the follower and by moving the same will displace the extinguishing agent and eject a powerful stream from the extinguisher. In this connection, it will be appreciated that the handle 14 is susceptible of being easily actuated and that this coupled with the ease of movement of the follower 4 will enable the operator to accurately aim the stream with the result that the stream will be caused to play directly upon the fire instead of points adjacent to the fire as is the case when ordinary hand fire extinguishers are employed.

When the embodiment shown in Fig. 4 is employed with a single valve such as 12 it is simply necessary in putting the extinguisher into use for the operator to open the single valve by manipulation of the handle thereof.

While I prefer to employ the specific follower shown and described, I would have it understood that the said follower specifically considered is not of the essence of my present invention, and, therefore, a follower of any other suitable construction may be employed without affecting my present invention.

Having described my invention, what I desire to claim and secure by Letters Patent, is:

1. A fire extinguisher comprising a container for a fire extinguishing agent; said container having a valved eduction orifice, a follower movable in said container and a container for fluid under pressure surrounding the extinguishing agent container and connected with the latter container at one side of the follower therein.

2. A fire extinguisher comprising a cylindrical container having a valved discharge nozzle at its forward end, a flanged annulus fixed to and surrounding the forward portion of said container, a flanged head fixed to the rear end of the container and having a conduit in communication with the container, a follower movable in said container, and a wall surrounding and spaced from the wall of the container to form a container for fluid under pressure in communication with the said conduit and secured at its ends to the annulus and the head.

3. A fire extinguisher comprising a cylindrical container adapted to receive an extinguishing agent and having a closure at its forward end and a valved discharge nozzle carried by said closure, a flanged annulus secured upon the forward portion of said container, a head secured to the rear portion of said container and having a conduit in communication with the container, a wall surrounding and spaced from the wall of the container and secured to the annulus and head to form a container in communication with said conduit, a non-return valve carried by the head and connected with the second named container, a follower movable in the first named container, and a pressure gage in connection with the first named container at the opposite side of the follower with reference to the discharge nozzle.

4. The combination in a fire extinguisher of concentric containers adapted to hold an extinguishing agent and fluid under pressure, respectively; the container for extinguishing agent having a discharge nozzle, a follower in said container and the two containers being connected through an interposed conduit in communication with the container for the extinguishing agent at the opposite side of the follower in said container with reference to the discharge nozzle, taper-plug valves for controlling the discharge nozzle and the interposed conduit, respectively, arms connected to said valves and having shoulders and apertured extremities, and a valve connecting rod hav-

ing lateral terminals disposed in said apertured extremities and adjacent said shoulders of the arms.

5. The combination in a fire extinguisher of concentric containers for extinguishing agent, and fluid under pressure, respectively; the container for extinguishing agent having a discharge nozzle and a valve controlling said nozzle and provided with a handle, a head closing the opposite ends of the containers and having a channel in its inner side effecting connection between the containers, and a follower movable in the container for extinguishing agent.

In testimony whereof I affix my signature.

MAHLON L. DUNBAR.