W. W. WALKER.

FIRE EXTINGUISHING APPARATUS.

APPLICATION FILED AUG. 11, 1916.

1,259,813. **Patented Mar. 19, 1918.**

Fig. 1.

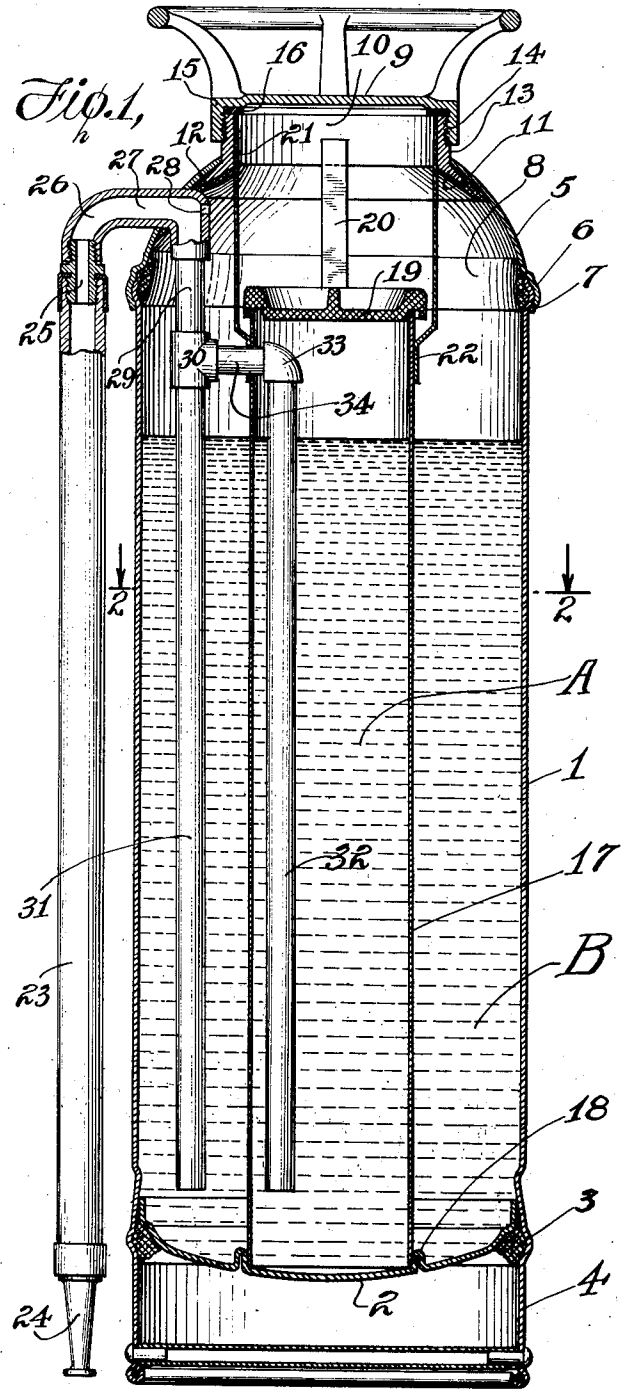
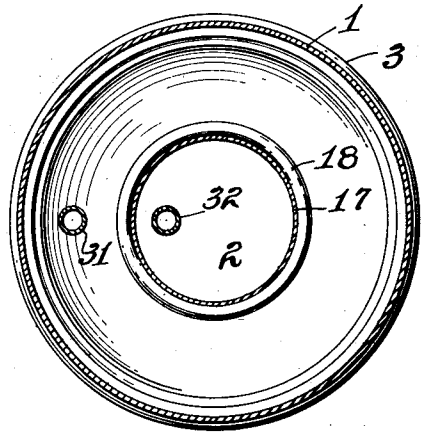


Fig. 2.



Inventor

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By his Attorneys

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHING APPARATUS.

1,259,813. Specification of Letters Patent. Patented Mar. 19, 1918.

Application filed August 11, 1916. Serial No. 114,401.

To all whom it may concern:

Be it known that WILLIAM W. WALKER, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, has invented certain new and useful Improvements in Fire-Extinguishing Apparatus, of which the following is a specification.

This invention relates to fire extinguishers and is in the nature of an improvement on the apparatus forming the subject matter of my earlier Patent 1,186,248, dated July 6, 1916.

In the present instance it is my purpose to provide a fire extinguishing apparatus embodying a pair of spaced containers wherein two chemicals or solutions are stored and maintained separate from each other when the apparatus is not in use, these chemicals or solutions being mixed by inverting the apparatus when it is desired to extinguish a fire, the mixing of the chemicals or solutions resulting in the generation of a foam and gas which is noxious to the flame.

A further object of the invention is the provision of an apparatus of this class which is so constructed as to obviate the liability of the chemicals or solutions leaking out or escaping from the containers when the apparatus is not in use.

I also propose to provide a fire extinguisher wherein the fire extinguishing foam and gas may be readily conducted from the container to a discharge pipe and thence projected on to the fire without actually discharging any of the liquid itself upon such fire.

Another object of the invention is the provision of a fire extinguishing apparatus which will embody the desired features of simplicity, efficiency and convenience, and which may be manufactured and marketed at a relatively low cost.

With the above recited objects and others of a similar nature in view, my invention consists in the construction, combination and arrangement of parts set forth and falling within the scope of the appended claims.

In the accompanying drawings:

Figure 1 is a sectional view taken through an apparatus embodying my invention, certain parts being shown in elevation.

Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows.

Referring now to the accompanying drawings in detail the numeral 1 indicates an outer container which is preferably tubular or cylindrical in form and is provided with a dished bottom 2 brazed or otherwise permanently secured as at 3, to the base 4 of the container. The upper end of this container is provided with a dome 5 having its lower edge formed with a circumferential bead 6 which interlocks with a similar bead 7 at the upper end of the cylinder 1. Brazed or otherwise secured to the inner face of this cylinder 1, at the upper end thereof is a ring 8 which at its upper end forms a tight joint with the dome 5 when the latter is assembled on the cylinder 1. To provide means for attaching the outer cover 9 with the dome I prefer to employ a thimble 10 having its lower portion terminating in the curved flange 11, which is brazed to the inner face of the upper portion of the dome as at 12. The neck 13 of this thimble is threaded as at 14 to receive the correspondingly threaded neck 15 of the main cover 9, a gasket 16 being preferably interposed between the top edge of the thimble neck and the cover to form a tight joint.

The numeral 17 designates the inner container of the apparatus which is also in the nature of a cylindrical or tubular shell. The lower end of this container 17 is connected with the bottom 2 by means of a resilient flange 18 struck up from the metal of such bottom. By means of this flange the inner container is stationarily supported within and in spaced relation to the cylindrical wall of the outer container. The top end of the inner container 17 is adapted to be closed by a cap 19 which is of relatively heavy material and possesses considerable weight so that when the apparatus is inverted it will drop or fall from that end of the inner container which it normally closes and thereby permit the liquid in the container to flow through the end thus opened. In order to guide this cap toward and from the end of the container on which it seats and which it closes, I prefer to employ a series of spaced guide bars 20, the upper ends of which are secured to the thimble as at 21, while the lower ends of these bars are bent inward and secured to the adjacent

end portion of the inner container as shown at 22.

When not in use the fire extinguisher is intended to stand upright or in the position in Fig. 1, with the inner container holding a solution A, and the outer container holding a solution shown at B. These two solutions preferably have substantially the following composition:

Solution No. A.

Sodium bi-carbonate	8	parts.
Water	89	"
Foamite (secondary extract of licorice root)	3	"

Solution No. B.

Aluminum sulfate	11	parts.
Water	89	"

The function of the licorice root extract is to produce foam when the two solutions are brought together and this foam of course deters the escape of the gases generated by the mixture, which are principally carbon dioxid, and hence when this foam is thrown upon the fire, it excludes the air by forming a "blanket" of foam, and consequently extinguishes the fire.

It will of course be evident that when it is desired to use the extinguisher, as in case of a fire, the apparatus is inverted, and this act of inversion will cause the loosely fitting, weighted cover 19 to drop or fall from the end of the inner container so that the two solutions will come together and mix in the dome section of the apparatus. This will result in the generation of considerable gas consisting principally of carbon dioxid (CO_2) and above the surface of the mixed liquids or in the bottom section of the apparatus, which is now uppermost, there is generated a large quantity of foam. The gas is generated so rapidly and there is such a quantity of foam also generated that the gas and foam escape at a high velocity from the apparatus. In order to conduct the gas and foam from the containers I provide a suitable flexible discharge pipe or hose 23 having at its free end a suitable nozzle 24 while the opposite end of this hose is connected by a threaded union or coupling 25 with the elbow 26, the latter projecting through the dome of the apparatus and into the interior thereof. The straight section 27 of this elbow 26 which lies within the dome is provided with a port or air-bleeding opening 28 and is also connected by the T-coupling 30 with a long pipe section or tube 31 which projects longitudinally into the outer container and terminates adjacent the bottom 2. Similarly a second long pipe section 32 projects into the inner container and is connected by an elbow 33 and a lateral pipe section 34 with the T-coupling 30. It will be seen that the pipe section 31 is to all intents and purposes a continuation of the pipe section 29.

Obviously, section 34 will act as a connection between pipe section 31 and the inner container such as will tend to provide a mutual supporting relation between the pipe and container in relieving the parts from strains, etc.

From the above description taken in connection with the accompanying drawings it will be evident that when the apparatus is inverted the discharge hose 23 with its nozzle 24 will hang down in such position as to enable the gas and foam generated by the mixture of the solution to flow through these pipes 31 and 32 into and through this discharge pipe 23 so that such gas and foam may be projected upon the fire.

If desired, instead of employing two pipes 31 and 32, that is one for each container, I may omit one of said pipes, preferably the inner pipe 32, and use the pipe 31 as the means for conducting the foam and gas from the highest portions of the inverted apparatus to the hose 23. In order to obviate the possibility of the chemicals or solutions being forced out of the containers and into the hose 23 by compression, I provide the small orifice or bleed opening 28 which while large enough to allow the air to escape will be too small to have any appreciable injurious effect on the action of the extinguisher. By employing two pipes 31 and 32, one for each container, I insure that foam and gas will be conducted from the inner container as well as the outer container, but as above mentioned, I may, if desired, employ but one of these pipe sections.

One distinct advantage incident to this invention is that when the apparatus is in its normal upright position, as shown in Fig. 1, the discharge hose 23 may hang down along side the outer container, yet no solution can escape therethrough, as the point of connection of the hose with the pipe or pipes leading from the containers is, in the upright position of the container, above the level of the solutions.

Furthermore this discharge hose 23 is, as usual, composed of rubber or a composition of rubber and fabric and as I connect the hose with the dome section of the apparatus instead of with the bottom section thereof, I obviate the objection of having any part of the solution or solutions remain standing in the hose when the apparatus is not in use. This construction also enables me to avoid the use of clips and similar fastening devices which are necessary to hold the nozzle end of the hose in an upright position when such hose is connected with the bottom of the apparatus, and consequently I insure against the escape of the contents from the apparatus which might result from acci-

dental disengagement of the hose and dropping down of the same from such clips.

While I have herein shown and described one particular embodiment of my invention I wish it to be understood that I do not confine myself to all the precise details of construction herein set forth by way of illustration as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the appended claims.

What I claim is—

1. A fire extinguisher comprising an outer container and an inner container spaced apart from the outer container, both adapted to hold solutions to be mixed, a pipe projecting through the top portion of the outer container and extending longitudinally within the latter and terminating in an open end adjacent to the bottom of said container, said pipe having a connection with the inner container, whereby the pipe and inner container will have a mutually supporting relation, and a discharge hose connected with the upper end of said pipe above the level of the contained solution.

2. A fire extinguisher comprising an outer container and an inner container spaced apart from the outer container, a loose displaceable cover for the inner container, a dome covering the top of the outer container, a pipe projecting through said dome and extending downward within the outer container and terminating in an open end adjacent to the bottom of the outer container, a hose connected with the upper end of said pipe and normally adapted to hang downward alongside of the outer container, and a second pipe connected with the first mentioned pipe and projecting through the upper portion of the inner container and extending longitudinally of said inner container and terminating in an open end adjacent to the bottom of said inner container.

3. A fire extinguisher comprising an outer container and an inner container spaced apart therefrom and both adapted to hold solutions to be mixed, a closure for the outer container, and a closure for the inner container communicating pipes for the two containers, one of said conducting pipes terminating in a section projecting through the cover of the outer container, and a discharge hose connected to said projecting section.

4. A fire extinguisher comprising an outer container having a bottom formed with a flange and a dome constituting the top of the container, an inner container spaced apart from the outer container and gaged at its lower end by the flange at the bottom, a loose displaceable cover for the inner container, a pipe extending longitudinally of the inner container from a point adjacent the bottom to a point adjacent the top thereof, a second pipe within the outer container extending from a point adjacent to the bottom of the outer container to a point adjacent to the top thereof, a connection between the two pipes, an angular pipe section connected with the upper portion of the pipe of the outer container and projecting through the dome, such angular pipe section having an air port therein, and a discharge pipe connected with the outer end of said angular pipe section and adapted to be suspended therefrom when the apparatus is in its normal upright position.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM W. WALKER.

Witnesses:
FRANK J. MAGINNIS,
ANDREW KETER.