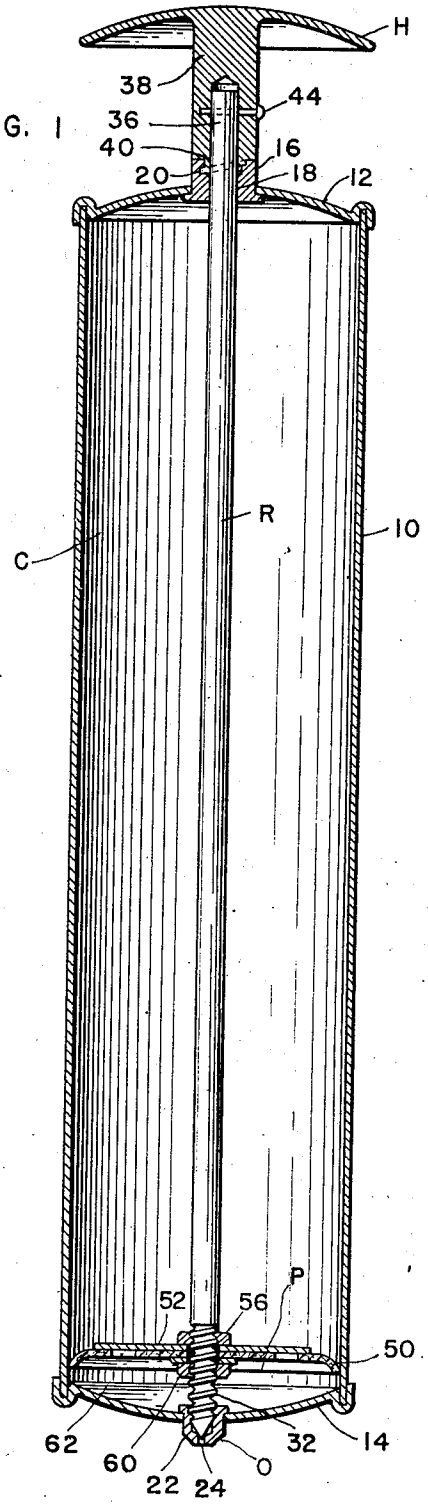
June 15, 1948. C. L. ZABRISKIE 2,443,549

FIRE EXTINGUISHER

Filed Jan. 17, 1946

FIG. 1



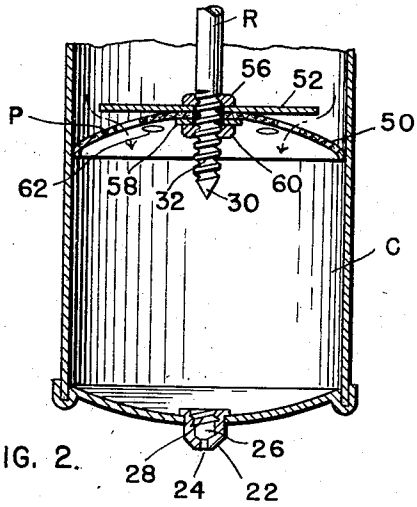


FIG. 2.

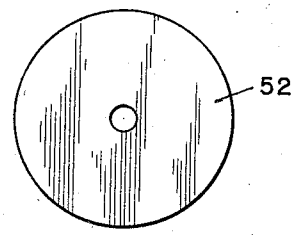


FIG. 3.

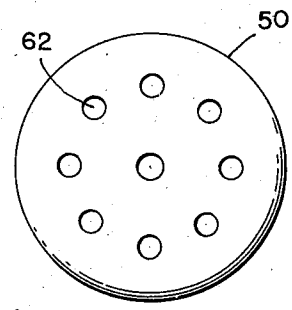


FIG. 4.

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Patented June 15, 1948 2,443,549

UNITED STATES PATENT OFFICE

2,443,549

FIRE EXTINGUISHER

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Application January 17, 1946, Serial No. 641,774

1 Claim. (Cl. 299—92)

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The present invention relates to fire extinguishers of the type having a container filled with extinguishing fluid, such as carbon-tetrachloride, and wherein there is an operating plunger adapted to be reciprocated in the container first to arm the extinguisher and then to discharge the contents into and around the flames through an outlet in one end of the container.

The principal object of the invention is to provide such a fire extinguisher having a plunger of novel construction which permits free flow of fluid from above to below the plunger on the arming stroke but which will be sealed on the operating stroke in order to forcefully discharge fluid through the outlet.

Another feature of the invention is a fire extinguisher wherein the parts are locked against operation when the extinguisher is not in use, but which is capable of being rapidly unlocked for use by a simple turn of the operating handle.

Another object of the invention is to provide such a fire extinguisher having a plunger with valves therein formed from parts which are easily and cheaply formed, as by stamping.

A further object of the invention is to provide a fire extinguisher characterized by the simplicity and cheapness of its construction, but which is effective and durable in use.

Various other features and advantages of the invention will become apparent as the description thereof progresses. In the drawings, which are illustrative of several preferred forms of the invention, and which are not intended to restrict its scope to the precise forms shown:

Figure 1 is a longitudinal sectional view through the extinguisher, showing the parts in the position they occupy when the extinguisher is not in use, for instance, when it is hanging on the wall of a building or at any other point where needed.

Figure 2 is a partial longitudinal sectional view of the embodiment of Figure 1, showing the parts in the position they occupy when the plunger is being armed.

Figure 3 is a plan view of the plunger plate.

Figure 4 is a plan view of the plunger cup.

Throughout the specification and claim, such words as upper, lower, above, and beneath are used merely to define relation of the parts in the position of the extinguisher in Figure 1. The words lower and beneath are used with respect to proximity to the outlet of the extinguisher, whereas the words upper and above are used with similar relation to the handle end of the extinguisher.

The main parts of the extinguisher comprise a container body C shown in the form of a cylinder, an operating rod R which extends through the upper end of the cylinder and which is equipped with a suitable handle member H, a plunger or piston P secured to the operating rod R and an outlet O in the bottom or discharge end of the cylinder.

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It will be understood that when the operating rod is moved upwardly, fluid passes the plunger P from above to below the same, this being termed the arming stroke of the plunger. When the plunger is subsequently moved downwardly, in what is termed its operating stroke, the plunger prevents passage of fluid from below to above the same, and the fluid is thereby discharged through the outlet O onto or around the fire.

The container may be made of any suitable material such as glass, plastic, or metal, and may have end walls of the same or similar material secured to the cylindrical body in any conventional manner well known in the container art. In Figure 1 the container is shown in the form of a metal cylinder 10 having a top 12 and a bottom 14 seamed thereto forming a pressure gas-tight body. The top 12 has a central opening therein, and secured in said opening in any suitable gas-tight manner as by welding, soldering or the like, is a bushing 16. The top bushing has a central passage 18 therethrough, the upper portion of which is formed with relatively heavy screw threads 20.

The bottom 14 of the container also has a central opening therein, in alignment with the opening in the top 12, and an outlet bushing 22 is secured in a gas-tight manner in this opening. The lower end of the collar 22 has a central nozzle discharge opening 24 leading from a wider passage 26 (Figure 2) equipped with a short flight of relatively heavy screw threads 28.

The lower end of the operating rod R terminates in a conical point 30 and above this point there is a length of relatively heavy threads 32 on the rod of form to mesh with the threads 28. When the plunger is in its lower position as shown in Figure 1, a single right turn of between 180 to 360 degrees of the operating rod forces the pointed end 30 into the inner end of the opening 24, thus closing the chamber, and the engagement of the lower portion of the threads 32 with the threads 28 of the bottom bushing 22 locks the operating rod in this position.

As indicated in Figure 1, the upper end 36 of the operating rod extends beyond the top plate 12 of the container, and the handle H is provided having a depending sleeve portion 38 which is reduced at its lower end 40 and formed with relatively heavy exterior threads adapted to engage with the interior threads 20 in the bushing 16. The threads on the depending portion 40 and the threads 20 in the bushing 16 correspond in form and length with those on the lower end of the operating rod and in the lower bushing 22, so that one left turn of between 180 to 360 degrees of the handle 14 will simultaneously release both sets of threads to permit the oper-

ating rod R to be pulled upwardly during the arming stroke of the plunger. In assemblying the extinguisher for use, the container with its bottom end attached is placed in upright position and the operating rod and plunger are inserted to the full length of the container. The lower end of the operating rod is then screwed firmly into the bushing 22 closing the outlet 24. The extinguishing fluid is now poured into the container, after which the top 12 is positioned thereon with its bushing 16 passed over the extending end 36 of the operating rod. The top 12 is thereafter secured to the body of the container as by seaming, screw threading or by any other operation depending on the type of joint between the top and body employed. The handle H is then attached by slipping the sleeve 38 over the end of the rod, and the sleeve 38 is threaded firmly into the bushing 18. A hole may then be drilled laterally through the sleeve 38 and the upper end of the rod R and these two parts may then be secured together by a pin or rivet 44. It will be evident that the extinguisher is now in condition for operation, and by a single turn of the handle H, the threads at the upper and lower ends of the operating rod may be disengaged, at which time the plunger can be pulled upwardly on its arming stroke with the fluid by-passing the plunger P in a manner hereinafter described. On the operating or downward structure, the plunger P prevents by-passing of the fluid as later described, and forces the fluid under pressure in a stream through the discharge opening 24.

The plunger comprises a circular cup 50 (Figure 4) of flexible material such as leather and a rigid plunger disk 52 (Figure 3) of metal or the like. These members are each provided with a central opening of diameter to permit slipping them over the lower threaded end of the operating rod, and they are held rigidly on the rod and centrally against one another by an upper nut 56, a lower washer 58, and a lower nut 60, all secured on the threaded portion of the operating rod, the nuts 56 and 60 engaging the relatively heavy threads 32 of the rod at points spaced above the lower end thereof.

The leather cup 50 has a plurality of openings or apertures 62 therein which constitute fluid ports. These apertures are preferably arranged circularly approximately half-way between the center of the cup leather 50 and its outer periphery, as shown in Figure 4. The openings 62 should be of such size and number as to permit free flow of fluid through the plunger on the arming stroke thereof, as later described.

With the parts positioned as in Figure 1, and after disengagement of the operating rod from the threads of the upper and lower bushings, the plunger is pulled upwardly on its arming stroke. The pressure exerted by the fluid above the plunger bends the cup leather from the position of Figure 1 to the downwardly turned position shown in Figure 2. The downward bending of the cup leather moves its central portion where the openings 62 are located downwardly from contact with the plunger plate 52. Fluid ports are thus opened so that fluid may flow downwardly from above to below the plunger. The downward release of fluid continues throughout the arming stroke of the plunger until it is in position for operation adjacent the upper end of the container C. On the reverse or operating stroke, the pressure of fluid below the plunger

forces the cup leather upwardly into contact with the plunger plate 52 as shown in Figure 1. In view of the fact that the outer edges of openings 62 in the cup leather are within the outside diameter of the plunger plate 52, the lower face of the latter will close the openings 62 so that no fluid may pass the plunger, pressure thus exerted on the fluid discharges it through the bottom opening 24.

It will be apparent from the above description that I have provided a fire extinguisher with a plunger construction characterized by simplicity and durability, and one which can be easily fabricated as by simple stamping and cutting operations. On the other hand, the parts are so constructed and arranged that the plunger will freely pass fluid on the arming stroke, yet will provide a complete seal on the operating stroke to forcefully eject fluid through the outlet.

I claim:

In a fire extinguisher a cylindrical container having a top and bottom with longitudinally aligned openings therein, a bushing in the bottom opening having a discharge orifice, and a threaded chamber above the same, a bushing in the top opening having a bore therethrough and a threaded chamber around said bore, the threads in said bushings being relatively heavy, an operating rod in said cylinder having a plunger thereon for discharge of the extinguishing fluid through said outlet, said operating rod having a lower end formed to close said discharge orifice and having relatively heavy threads adjacent its lower end to engage the threads in said bottom bushing, the upper end of said rod extending through the bore of said top bushing and having a handle secured thereto, said handle having a threaded extension which engages the threads in said top bushing, all of said threads being of similar heavy construction, the engagement of said threads locking said operating rod against longitudinal movement with the discharge orifice closed and with said plunger positioned adjacent the bottom of said cylinder, said threads being of such form and size that said operating rod may be released for upward movement of said plunger by a single turn of said handle.

CHARLES L. ZABRISKIE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
336,658	Monroe	Feb. 23, 1886
385,477	Pitney	July 3, 1888
475,812	Seymour	May 31, 1892
558,959	Johnston	Apr. 28, 1896
560,004	Merrill	May 12, 1896
655,954	Brooks	Aug. 14, 1900
1,076,787	Rowe	Oct. 28, 1913
1,110,189	Dodge	Sept. 8, 1914
1,231,442	Smith	June 26, 1917
1,254,024	Bryan	Jan. 22, 1918
1,309,987	Kelley	July 15, 1919
1,347,082	Davis	July 20, 1920
1,430,723	Chilson	Oct. 3, 1922

FOREIGN PATENTS

Number	Country	Date
24,279	Great Britain	Dec. 18, 1914