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FIRE EXTINGUISHER.

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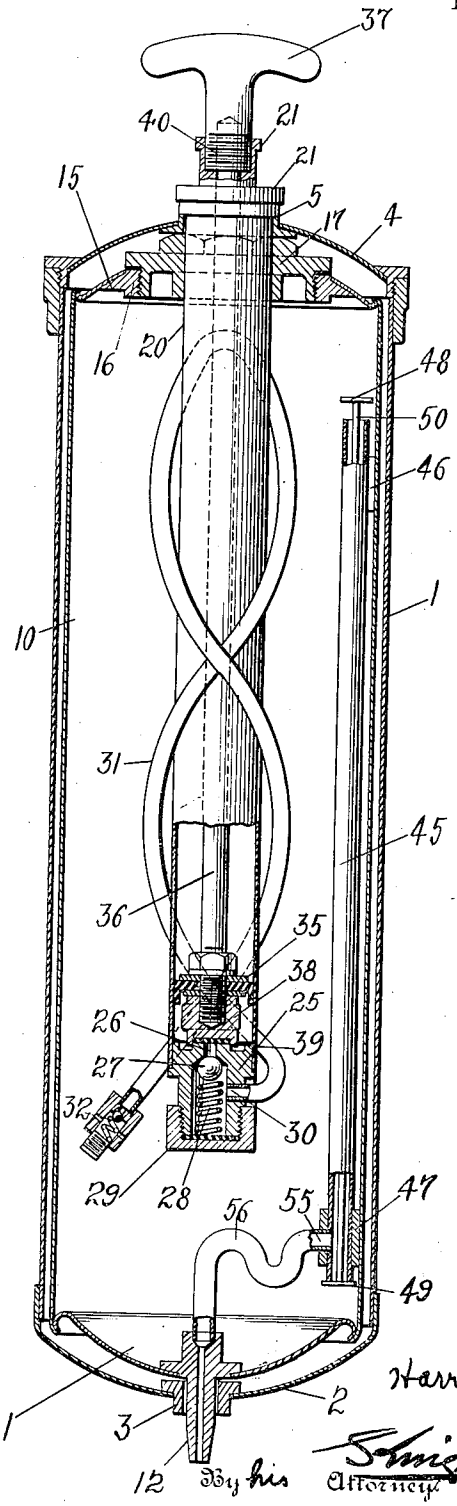

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

1,189,271. Specification of Letters Patent. Patented July 4, 1916.

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To all whom it may concern:

Be it known that I, HARRY M. McCASLIN, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a full and clear specification.

The present invention relates to improvements in fire extinguishers of the portable or hand type, in which a fire extinguishing fluid, such as carbon tetrachlorid, is carried in a suitable tank or container provided with a hand-operated pump, which causes the fluid to be projected through the discharge nozzle of the container in a thin stream, which can be conveniently directed upon a fire. With this type of extinguisher it is important to arrange the fluid discharging means to operate equally well without regard to whether the container is pointed upwardly or downwardly when operated.

The purpose of the present invention is to produce an improved form of portable extinguisher which will satisfactorily accomplish this result.

To this end the improved extinguisher comprises an outer shell or container and an inner concentric shell or container, rotatable freely in the outer shell and carrying a suitable hand operated pump and a valved liquid discharging pipe in communication with the discharge nozzle of the extinguisher. The barrel of the pump and the discharge nozzle are tightly fitted in the opposite ends of the inner shell or container and form trunnions upon which the inner container is freely journaled in suitable bearings formed in the opposite ends of the outer shell or container. The inner shell has liquid-tight joints with the pump barrel and discharge nozzle and contains the fire extinguishing fluid, such as carbon tetrachlorid, so that no packing is required between the inner and outer containers. The valved discharge pipe is fixed to the inner wall of the inner container at one side and has its open ends in communication with the opposite ends of the inner container, except for the controlling valves, which are connected by a rod or wire, so that one or the other of the valves is always open, no matter what position the extinguisher assumes when operated. The lowermost valve is the one that remains open in operation to permit the liquid contents of the container to enter the discharge tube at its lowest point, while the opposite end of the tube is closed by the other valve to prevent the entrance of air, which would interfere with the operation. This valved discharge tube has a trapped tubular connection with the discharge nozzle. The inner freely journaled shell or container is heaviest upon the side on which the valve discharge tube is mounted, so that whatever position the extinguisher is held in this heavy side of the inner container will gravitate to the lowest position, and the lower end of the discharge tube in this position will be in open communication with the extinguishing liquid in the container and be forced through said tube and the discharge nozzle by the action of the pump, which forces air into the container.

The invention is illustrated in the accompanying drawing, which is a longitudinal sectional view of a fire extinguisher.

In the drawing, 1 is an outer shell or casing having a fixed head 2 supporting a central bearing collar 3 and a removable head 4, supporting a central bearing collar 5.

10 is an inner shell or container, formed with a head 11, carrying a flanged discharge nozzle 12, which projects through and is freely journaled in the bearing collar 3 of head 2 of the outer container. A liquid-tight joint is formed between the flanged nozzle and the head 11. The inner container 10 is formed at its opposite end with an annular head 15, formed with a threaded bushing 16, in which is screwed a removable head or plug 17 that snugly fits the barrel 20 of the pump. A liquid-tight joint is formed between the plug 17 and pump barrel 20. The pump barrel 20 projects outwardly beyond the head 17 and is freely journaled in the bearing collar 5 of head 4 of the outer container, a flanged collar 21 secured upon the pump barrel confining the parts against longitudinal displacement. By this means it will be observed that the inner container 10 is freely journaled in the outer container 1 upon the nozzle 12 and pump barrel 20, which serves as trunnions upon which the inner container turns freely in the outer container.

The pump barrel 20 carries at its lower end a valve plug 25, formed with a central

opening 26, leading into the pump barrel, which opening is normally closed by the ball valve 27 held to its seat by the spring 28, supported by the screw cap 29. The air discharge from the valve end of the pump barrel is through the port 30, into the curved metal pipe 31 which may be partially coiled in the shape of a figure 8 around the pump barrel 20, as shown in the drawing. The opposite end of the pipe 31 is provided with a ball valve 32. The valves 27 and 32, together with the curved pipe 31, effectively prevent the entrance of extinguishing liquid from container 10 into the pump barrel where it would be injurious to the pump piston leather.

35 is the cupped pump piston, secured in the usual way upon the piston rod 36, which passes out through the flanged head 21 and has secured to its outer end the operating handle 37. The inner nut 38, which secures the piston in place carries a gasket or washer 39 which effectively closes the valved opening 26 when the piston is secured in its innermost position. To secure the piston in this position the hub of handle 37 is externally threaded, as shown at 40, to engage the interior threaded socket of the hub 21^a of head 21. When the handle 37 is screwed down into the socket 21^a the gasket 39 closes the opening 26.

45 is the liquid discharging tube secured at 46 and 47 to the inner wall of the inner rotatable shell 10. This discharge tube 45 has its opposite ends open and in free communication with the opposite ends of the container 10.

48 and 49 are valve disks for closing the open ends of the tube 45. These disks 48 and 49 are mounted upon opposite ends of a rod or wire 50 which extends longitudinally through the tube 45 and connects the valve disks, so that when one is closed the other is held open. These connected valves 48 and 49 operate by gravity, so that the one that is held in relatively low position will be open while the other is closed when the extinguisher is operated.

The discharge tube 45 is provided adjacent to one end with an outlet port 55, communicating through the S-shaped tube 56 which leads to the discharge nozzle 12, above referred to. The shape of tube 56 forms a more or less effective liquid trap or seal for preventing the entrance of air into the inner container through the discharge mouth. To further guard against the entrance of air into the apparatus through the discharge I may employ any of the well known expedients.

In operation the extinguisher is held in the hands of the operator with the nozzle end directed toward the point of application of the fire extinguishing stream. The inner cylinder being freely journaled in the outer cylinder, and weighted at one side, by reason of the mounting of the valve discharge tube 45, this side of the inner container will assume the lowest position and the end of the discharge tube 45 which is held at the lowest point will be open to the extinguishing fluid, by reason of the gravity action of the connected valves 48 and 49. With the extinguisher held in this manner the pump is operated to force air into the inner container with the result that the extinguishing liquid will be forced through discharge tube 45 and out through the nozzle 12, by which it is directed upon the fire. The inner container and connected parts being free to rotate will always place the discharge tube in free communication with the lowest point of the inner container, so that the extinguishing fluid can be all forced out of the extinguisher by the operation of the air pump.

It will be obvious to those skilled in the art that the essence of the portable extinguisher, above described, is the fluid container provided with the pump, the discharge nozzle and the liquid discharging tube suitably communicating with the discharge nozzle, said container being freely journaled in an outer shell or support, so that it will gravitate in its support, when operated, to place the heaviest side in low position and the open end of the discharge tube in communication with the extinguishing fluid. The outer shell is shown in cylindrical form for compactness and convenience of handling, but the form of this outer support in which the inner container can freely rotate is not essential. It will, further, be obvious to those skilled in the art, that while the invention has been described and illustrated as provided with a single acting pump, which causes the discharge of the extinguishing fluid by forcing air into the container above the body of fluid, the invention in its broadest aspect is not limited to the form of the pump since the important principle of the invention can readily be carried out with other well known forms of pumps.

The pipe 31, shown in the drawing, is not essential to the operation of the apparatus and may be omitted, if preferred.

The improved extinguisher will be found convenient to handle and efficient in operation. The fact that the inner fluid container is free to rotate in the supporting outer shell and has tight joints with the pump barrel and the discharge nozzle obviates all necessity for packing between the inner and outer shells.

I claim:

1. A fire extinguisher comprising an outer shell, an inner fluid container freely journaled in the outer shell and carrying a discharge nozzle and a fluid expelling pump.

2. A fire extinguisher comprising an outer shell, an inner elongated fluid container freely journaled upon its longitudinal axis in the outer shell, and the axially arranged discharge nozzle and fluid expelling pump fixed and sealed in the opposite ends of the container and communicating with the interior of the container.

3. A fire extinguisher comprising an outer support, an inner fluid container weighted at one side and freely journaled in the support, and a discharge nozzle and a fluid expelling pump carried by said container.

4. A fire extinguisher comprising an outer supporting shell, an inner fluid container freely journaled in said shell and carrying a discharge nozzle and a fluid expelling pump, and a fluid discharging pipe secured upon one side of said container and in communication with the opposite ends thereof and with said nozzle.

5. An extinguisher comprising an outer supporting shell, an inner fluid container carrying a discharge nozzle at one end and a fluid expelling pump at the other end, the nozzle and pump projecting outwardly from the inner container and forming trunnions which are freely journaled in the ends of the outer shell, a fluid discharging pipe secured upon one wall of said inner container with its opposite ends in open communication with the container, and suitable means of communication between said discharge pipe and said discharge nozzle.

6. An extinguisher comprising an outer cylindrical shell, an inner cylindrical fluid container carrying a discharge nozzle at one end and a fluid expelling pump at the other end, said inner container being freely journaled in the ends of the outer shell, a fluid discharging pipe secured upon said inner container at one side with its opposite ends in open communication with the container, coupled valves adapted to alternately close the ends of said discharge pipe, and suitable means of communication between said discharge pipe and said discharge nozzle.

7. An extinguisher comprising an outer shell, an inner fluid container carrying a discharge nozzle and a fluid expelling pump, and freely journaled in the outer shell, a fluid discharging pipe secured upon the inner container with its opposite ends in open communication with the container, coupled valves adapted to alternately close the ends of said discharge pipe, and a pipe connecting said discharging pipe and said discharge nozzle.

HARRY M. McCASLIN.