

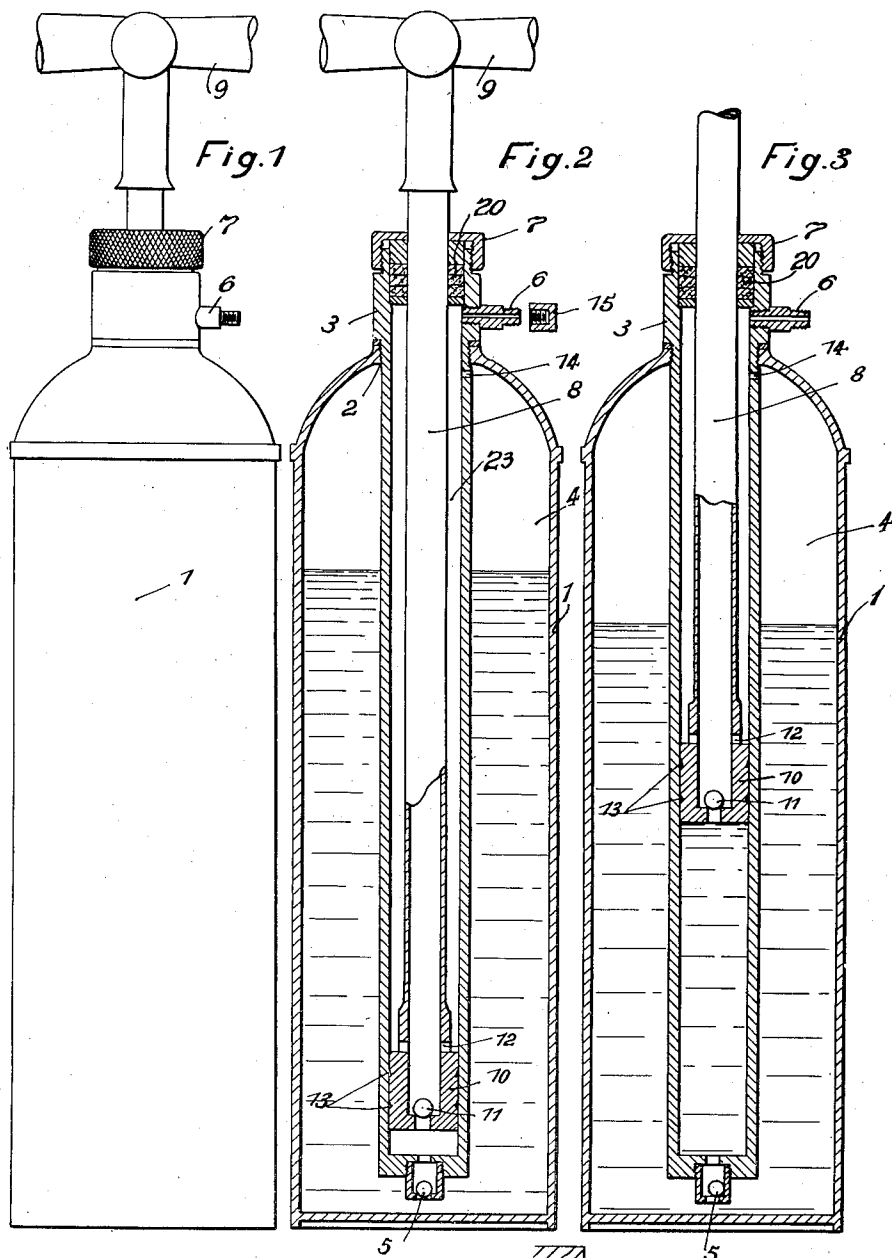
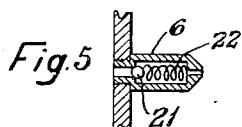
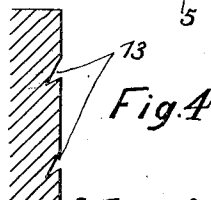
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PUMP FIRE EXTINGUISHER

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PUMP FIRE EXTINGUISHER

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2 Claims. (Cl. 299—97)

Pump fire extinguishers as hitherto known are either pneumatic or a fourfold acting pump or the like. The fire extinguisher which is an improvement over those hitherto known is according to the present invention, characterized by a single action inlet and a double action outlet pump that permits the fire extinguishing liquid to be forced out of said pump on both the inward and outward strokes of the piston of the pump.

The principal object of the present invention is to produce a fire extinguisher that has a simple mechanism, but is reliable and ejects a semi-continuous stream of liquid when in operation. Another object of the present invention is to produce a fire extinguisher having a larger operating range and giving a more powerful stream of liquid than hand fire extinguishers hitherto known.

And a further object of the present invention is to have the piston of the fire extinguisher entirely metallic without any tight fittings.

Further objects of the invention are in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by persons skilled in the art, I have in the accompanying illustrative drawing and in the detailed following description based thereon, set out an embodiment of the same.

In the drawing:

Fig. 1 is a side elevation of the present invention.

Fig. 2 is a cross sectional view of Fig. 1 with the pump piston at its lowest point in the cylinder.

Fig. 3 is a cross sectional view of Fig. 1 with the pump piston at its uppermost point in the cylinder.

Fig. 4 is an enlarged view of a section of the pump piston, and

Fig. 5 is a cross sectional view of a modification of the pump nozzle.

Having more particular reference to the drawing, wherein like characters of reference designate corresponding parts throughout, the apparatus includes a casing 1 which constitutes the tank for the fire extinguishing liquid. Said casing 1 has a threaded port 2 formed in its top portion for receiving therein a cylinder 3 threaded for engagement with port 2. Cylinder 3 has its uppermost portion threaded and extending outside of casing 1 and having mounted there-through an ejecting nozzle 6. The lowermost portion of cylinder 3 carries a ball inlet valve 5.

A threaded cap 7 is fastened to the uppermost threaded portion of cylinder 3 and said cap 7 retains packing 20 within the cylinder. Both packing 20 and cap 7 have a bore therethrough for the passage of hollow piston rod 8 which has handle 9 mounted on its uppermost portion and carries at its lowermost end a metallic piston 10 with ball valve 11 therein at its lower portion. Said rod 8 has ports 12 formed therein just above piston 10.

Piston 10 is provided with one or several grooves 13 which are substantially of a triangular configuration having the vertex thereof directed at a downward angle. A piston 10 of the present design eliminates the use of rings of tight fitting material such as leather, plastics or the like which have heretofore been used to permit a tight fit between cylinders and pistons in liquid pumps. The said grooves 13 gather liquid and thereby form a natural tight joint between the piston and cylinder walls.

Cylinder 3 has a port 14 formed therethrough at its uppermost portion within casing 1. Said port 14 permits the air coming into cylinder 3 by way of the ejecting nozzles 6 to instantly pass into chamber 4 as soon as the piston 10 is stopped, thereby compensating the vacuum in chamber 4 due to the withdrawal of liquid therefrom by the pump members.

To operate, the cap nut 15 closing the ejecting nozzle is removed and the pump is reciprocally moved by its handle while the apparatus is vertically or slantingly held up to direct the stream on the fire to be extinguished.

Upon the upward movement of piston 10 from the lower portion of cylinder 3, liquid is drawn from chamber 4 through ball valve 5. However, upon the downward movement of piston 10 the liquid forces valve 5 closed and opens ball valve 11 through which it enters and passes therefrom through ports 12. The liquid is then forced through ejecting nozzle 6 and the liquid remaining in cylinder 3 is forced through nozzle 6 upon the next upward stroke of piston 10 in order that a semi-continuous stream of liquid passes outwardly through nozzle 6.

A modification of nozzle 6 as shown in Fig. 5 employs a ball 21 and spring 22 therein. Outgoing liquid under pressure forces ball 21 against spring 22 and thereby permits an open passage for the liquid. At all other times, the ball 21 closes the valve and is held in closed position by spring 22. This type of nozzle eliminates the use of a cap 15 as shown in Fig. 2.

The construction of the present pump permits

a ready dismantling of parts for repairs or inside inspection. The assembly of parts is simple and yet quite tight by the placing of the nozzle at the top of casing 1 instead of the bottom and the use of a plastic sealing 20 at the only possible point of escape.

Having now described the object of this invention and in which manner same is to be performed, what I claim is:

- 10 1. An improvement in pump fire extinguishers giving a semi-continuous stream of fire extinguishing liquid comprising a casing forming a reservoir for fire extinguishing liquid, a cylinder positioned through and within said casing, a ball
15 valve mounted within the lower end of said cylinder, packing held within the upper end of said cylinder having a bore formed vertically there-
through, a hollow rod capable of being reciprocated within said packing bore and said cylinder,
20 a piston mounted on the lower end of said rod, a ball valve mounted within the lower face of said piston and open to the interior of said hollow rod, a nozzle mounted within an opening formed in
25 said cylinder externally of said casing, and a port of given diameter formed in said cylinder at a point just within said casing in order that air may be drawn through said nozzle to fill any vacuum created within said casing.

2. An improvement in pump fire extinguishers giving a semi-continuous stream of fire extinguishing liquid comprising a casing forming a reservoir for fire extinguishing liquid, a cylinder positioned through and within said casing, a ball
5 valve mounted within the lower end of said cylinder, packing held within the upper end of said cylinder having a bore formed vertically there-
through, a hollow rod capable of being reciprocated within said packing bore and said cylinder, 10
a piston mounted on the lower end of said rod, substantially V-shaped downwardly slanting grooves formed within the periphery of said piston for gathering liquid on the walls of said cylinder to form a natural tight fit between said
15 piston and said cylinder walls, a ball valve mounted within the lower face of said piston and open to the interior of said hollow rod, a nozzle mounted within an opening formed in said cylinder externally of said casing, and a port of given diameter 20
formed in said cylinder at a point just within said casing in order that air may be drawn through said nozzle to fill any vacuum created within said casing.

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