LIQUID PUMP ADAPTED FOR FIRE-EXTINGUISHING, ETC.

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This invention relates to liquid pumps, and particularly those which are adapted for fire-extinguishing, although not limited thereto.

It is among the objects of the present invention to provide a device of the class described which is characterized by its capability of projecting a sizable quantity of liquid for a substantial distance, whereby the device may effectively be used not only for extinguishing fires, etc., but for various other types of sprinkling, spraying or diffusion.

Another object is the provision of a device of the class described which may be easily and quickly operated to achieve its principal objective, and one which may also be quickly and easily refilled.

Other objects are durability in service, simplicity and low cost of manufacture, etc.

The invention, then, comprises the features hereinafter fully described and as particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative of some of possibly several ways in which the principles of the invention may be employed.

In said drawings:
FIGURE 1 is a side elevational view of the device of the present invention as held in the hand of an operator;
FIGURE 2 is an end elevation taken on the line 2—2 of FIG. 1; and
FIGURE 3 is a fragmentary side elevational view, partly in section, and illustrating all of the operating elements of the device.

Referring more particularly to the drawings, the numeral 4 designates a cylinder of metal or other suitable material which may be used for holding various liquids to be projected, the same being provided at one of its ends with a closure member 6 having a central aperture 7. The central aperture 7 is interiorly screw-threaded to receive an exteriorly screw-threaded dispensing nozzle 8 which may assume various interchangeable forms to thereby obtain the desired discharge pattern.

Within the cylinder 4 there is disposed a pair of oppositely facing (i.e., back-to-back) cups or plunger washers 12 which may have one or more immediately disposed disk-like washers 10. Within the cup 12 which is most adjacent the end closure 6 of the cylinder 4 there is disposed a relatively inflexible disk 16 which is of substantially the same diameter as that of the interior of said cup. The other of the pair of oppositely facing cups or plunger washers 12 receives the bottom of a rearwardly facing, snugly-fitting, and relatively inflexible cup 18, the side walls of which extend rearwardly and project therefrom for a substantial distance as shown. The rearward extension of the side walls of the rearwardly facing relatively inflexible cup 18 lends support to the immediately adjacent (and concentric) side walls of the rearwardly facing flexible plunger washer 12, thereby preventing the latter from moving out of engagement with the inner surface of the cylinder 4. This renders the assembly of oppositely facing plunger cups 12, immediately disposed cylinder washers 10, etc., particularly effective during both the filling of the cylinder 4 and the dispensing of the liquid therefrom. The forwardly disposed disk 16 and rearwardly facing cup 18 may be formed of metal or other suitable material.

The pair of oppositely facing cups or plunger washers 12, the immediately disposed disk-like washers 10, the forward disk 16 and the rearwardly facing cup 18 are shown as secured in assembled relationship by means of a centrally disposed nut-and-bolt arrangement 22.

The end of the cylinder 4 which is opposite the closure member 6 is shown as being open and receiving an actuating rod 26 which is provided on its undersurface with a series of teeth or serrations 28. A disk-like pressure plate 30 is secured to the inner end of the actuating rod 26.

Rings 32 and 34 are secured to the adjacent faces of the disk-like pressure plate 30 and the rearwardly facing cup 18, respectively; the same being shown as connected together by means of a chain 36.

Disposed between the rearwardly facing cup 18 and the pressure plate 30 is a compression spring 38 which surrounds the rings 32 and 34 and their interconnecting chain 36.

According to the foregoing construction and arrangement, the actuating rod 26 may be progressively moved forwardly; and through the pressure plate 30, compression spring 38 and piston 10 be made to effectively force liquid through the dispensing nozzle 8. Since liquids do not compress, the spring 38 between the pressure plate 30 and the most adjacent of the cups or plunger washers 22 maintains an even pressure throughout the dispensing cycle.

After complete discharge of the liquid within the cylinder 4, it may easily be refilled upon the rearward movement of the actuating rod 26 which will carry with it the pair of back-to-back cups 12 through the medium of the rings 32 and 34 and their interconnecting chain 36. The inner and oppositely facing plunger cup 12 enables the development of a high degree of suction which greatly facilitates the filling cycle.

A closure for the end of the cylinder 4 which is opposite the closure member 6 may, of course be provided with a central aperture for the passage through which the actuating rod 26, suitable venting means being included in order to eliminate the formation of a vacuum in this end of the cylinder.

However, the open-ended arrangement illustrated in FIGURES 1 and 3 permits easier and quicker dismantling for purposes of repair, etc.

The teachings of the present invention contemplate the provision of a cylindrical trough or cradle 42 which is somewhat longer than the cylinder 4 in order to readily receive the same. The cylindrical trough or cradle 42 is provided at its forward end with a front retainer wall or member 44 having a vertically extending slot 46 therein, the latter being adapted to receive the dispensing nozzle 8 in projecting relationship.

In addition, the front retainer wall or member 44 may be provided on the upper surface of its rearward wall with a curved lip 48 which permits the forward end of the cylinder 4 to be more securely retained in position in the cylindrical trough or cradle 42.

The rearward portion of the cylindrical trough or cradle 42 is provided with a forwardly facing cup-like member 50 having a central aperture 52 to permit the movement therethrough of the actuating rod 26.

To the rearward surface of the forwardly facing cup-like member 50 there is secured a depending hand-lever 54 which carries a hand-grasp lever 56, the latter being pivotally mounted intermediate its ends and provided on its upper extremity with an actuating pawl 58 for engaging the teeth or serrations 28 on the undersurface of the actuating rod 26.
A spring 60 is provided for resiliently influencing the upper end of the hand-grasp lever 56 and, accordingly, the actuating pawl 58 into their rearward positions.

The hand lever 54 carries a pivotally mounted dog 62 having a lip 64 which locks into the various teeth or serrations 28 on the actuating rod 26. As in the case of the hand-grasp lever 56, the pivotally mounted dog 62 is resiliently influenced into its rearward position by a spring 66.

The hand-grasp lever 56 and its actuating pawl 58 very effectively serve to advance the actuating rod and the back-to-back plunger cups 12 forwardly into the cylinder 4 in direct opposition to the resistance of the compression spring 38 which stores the energy necessary to move the liquid through the dispensing nozzle 8.

In lieu of the actuating pawl 58, which is shown in FIGURE 3 as simply comprising the upper edge of upper portion of the hand-grasp lever 56, there may be utilized a pivotally mounted dog which is similar in construction to the pivotally mounted dog 62.

While we have shown and described certain specific embodiments of the present invention, it will be readily understood by those skilled in the art that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention as defined in the appended claims.

We claim:

1. A readily refillable liquid dispenser adapted for fire-extinguishing and the like comprising, in combination, a cradle carrying a right-angually extending abutment at each of its ends; a handle secured to and extending at substantial right angles from one of said right-angulary extending abutments; a cylinder disposed in said cradle; the rearward end of said cylinder which is most adjacent said handle being open; the forward end of said cylinder having a closure and provided with a centrally disposed dispensing nozzle which extends through and projects from the adjacent abutment on said cradle; an assembly comprising a pair of oppositely facing plunger cups reciprocably disposed in said cylinder; at least one cylinder washer disposed between said oppo-