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A. L. PARKER ET AL

2,450,295

ENGINE PRIMER

Original Filed Nov. 27, 1944

Fig. 1

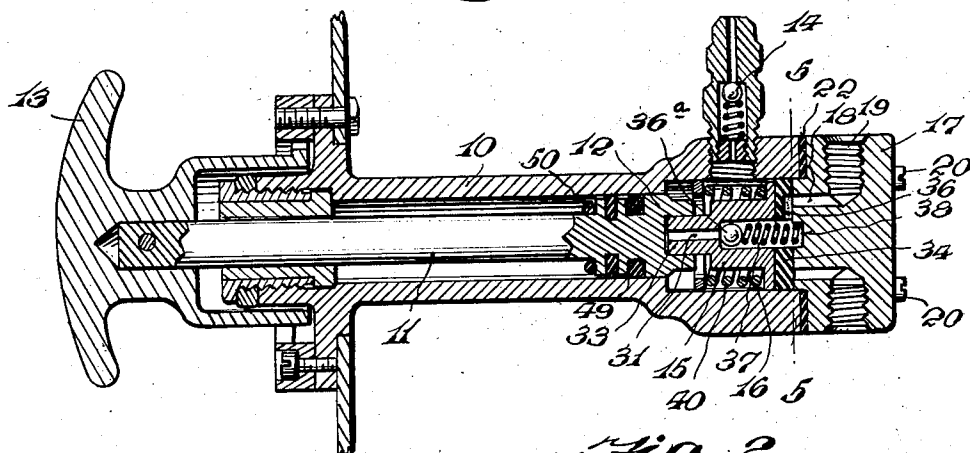


Fig. 2

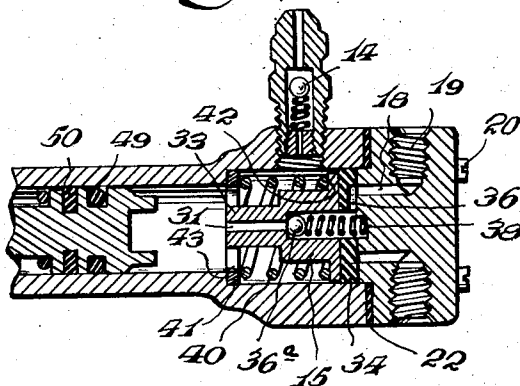


Fig. 4

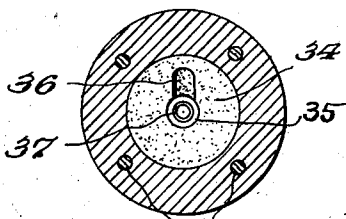


Fig. 3

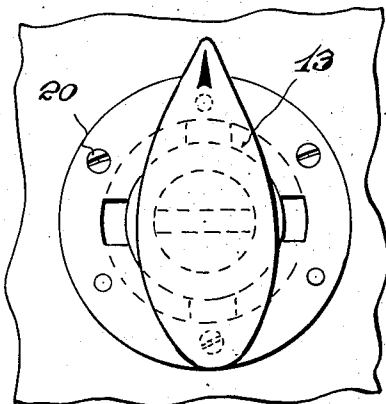
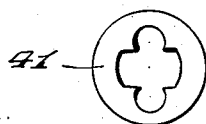


Fig. 5



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2,450,295

ENGINE PRIMER

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Original application November 27, 1944, Serial No. 565,240, now Patent No. 2,412,532, dated December 10, 1946. Divided and this application May 15, 1945, Serial No. 593,799

5 Claims. (Cl. 277—25)

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In a copending application Serial No. 565,240, filed November 27, 1944, now Patent No. 2,412,532, granted Dec. 10, 1946 there is shown an engine primer including an indexing, locking and indicating arrangement for use with a selector disk valve. The present application is a division thereof and is directed to the construction of the disk valve and the means for operating the same.

An object of the invention is to provide a primer of the reciprocating piston type with a rotary disk valve for selectively distributing the fluid transferred by the reciprocating piston.

A further object of the invention is to provide a primer of the above type with spring means for holding the disk valve continuously in contact with its seat.

A further object of the invention is to provide a primer having a disk valve for selectively controlling the discharge of the fluid from the primer wherein said disk valve has an outlet axially thereof leading to a radial port in the under face of the valve so that by rotation of the valve said radial port will be selectively connected to the outlet ports of the primer.

A still further object of the invention is to provide a disk valve mechanism for a primer of the above type wherein a check valve is located in the axial outlet of the valve and so disposed as to open under the pressure of the fluid discharged by the piston.

These and other objects will in part be obvious and in part will be hereinafter more fully disclosed.

In the drawing wherein like reference characters refer to like parts throughout the several views:

Figure 1 is a longitudinal sectional view of an embodiment of the present invention.

Figure 2 is a fragmentary longitudinal sectional view illustrating the action of the valve device when disconnected from the piston.

Figure 3 is an end elevation illustrating the piston operating handle and associated parts.

Figure 4 is a transverse sectional view taken on the line 5—5 of Figure 1.

Figure 5 is a face view of the valve abutment plate.

The dispensing engine primer in which the novel valve arrangement is incorporated, comprises a cylinder 10, a piston 11 with an enlarged head portion 12, an operating handle 13 for reciprocating or rotating the piston head 12, and an inlet check valve 14 leading into the base of the cylinder 10, which is bell-shaped so as to form

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an enlarged chamber 16 designed to house the novel selector valve arrangement.

The chamber of the cylinder 10 is closed by a block 17 provided with a plurality of conduits 18 each leading to a plurality of radially directed discharge ports 19. This block 17 may be secured to the annular end wall of the cylinder 10 by bolts 20, and if desired a gasket 22 interposed between the contacting faces of the block 17 and the end wall of cylinder 10, to thereby provide a fluid-tight joint.

The wall of cylinder 10 contains a threaded aperture, which leads into the enlarged chamber 16, and in which is threaded a unit which contains the inlet check valve 14.

The inner face of the block 17, is made flat and true, so as to provide a flat seating surface for the body 15 of the selector valve arrangement, as hereinafter explained.

This valve comprises the body 15 having a central longitudinally extending outlet passage 31 extending therethrough. One end of the valve body 15 has a non-circular reduced portion 33 and the other end comprises a relatively larger headed portion and has bonded thereto a disk 34 of material having lubricating properties, such as for example a graphite composition. This disk 34 is adapted to seat on the flat surface of the block 17. The disk 34 is apertured centrally at 35, see Figure 4, so as to align with the central aperture 31 defined in the valve body 15, and contains a radial channel 36, leading off from the apertures 31 and 35, so as to selectively align with the openings in the block 17 defined by the ends of conduits 18 therein. Each of these conduits communicates with its respective radially positioned outlet.

The valve body 15 is counterbored a substantial part of its length from the graphic seat portion 34 thereof for the purpose of housing in the said counterbore an outlet check valve comprising a ball 36a and a spring 37. The spring 37 rests in an annular depression 38 defined centrally in the flat face of the block 17 and expands against the surface of the ball 36a to thereby maintain the ball seated over the end of the restricted portion of the central opening in the valve body 15.

Mounted concentrically around the valve body 15 is a yieldable member, such as a coiled spring 40. This coiled spring 40, see Figure 2, is always maintained under compression between the valve body 15 and a spring abutment plate 41, one end thereof engaging a shoulder 42 on the seating head of the valve body 15, and the other

end engaging with the spring abutment plate 41 through which the flattened end 33 of the valve body 15 protrudes.

The spring abutment plate 41 is adapted to engage with an annular shoulder 43 at the upper end of the enlarged chamber 16, and is apertured, as shown in Figure 5, to provide for the passage of fluid to and from the cylinder 10 around the flat end portion 33 of the valve body 15.

Normally, as shown in Figure 1, when the piston 11 is locked down, as described in our co-pending application, supra, the spring abutment plate 41 is depressed downwardly away from the shoulder 43 by the piston head 12, but when the piston is rotated by handle 13 to thereby rotate the valve to any selected open position in registry with one of the channels 18 in the block 17, then the spring 40 expands and pushes the abutment plate 41 into engagement with shoulder 43, as shown in Figure 2. This action of the spring 40, also pushes the head of the piston upward, so as to disconnect the same from its connection with the flat end 33 of the valve body 15, so that the piston may now be moved independently of the valve body 15. Simultaneously upon engagement of the spring abutment plate 41 with the shoulder 43, the spring 40 continues to press the valve body 15, and seat 34 downward into fluid-tight engagement with the flat seating surface of block 17. Obviously, the spring 40 should have greater tension than the opposing suction forces created in the cylinder by the upward movement of the piston 11, so that the valve body 15 will remain seated on the flat seating surface of the block 17.

In addition to providing a valve body 15 with a seating disk 34 of graphitic material, the piston 11 may also be provided with a graphite ring 50, as shown in Figure 2. With this graphite ring 50, the piston head 12 does not rub against and score the cylinder walls when the walls are still dry before fluid has been drawn in through the inlet valve 14, and thus the packing ring 49 on the piston head 12 will wear much longer.

Thus there is provided a dispensing valve unit including a selector disk valve and an outlet check valve having particular utility in engine primers of the reciprocating piston type, wherein the valve elements of the unit cooperate to dispense fluid from any one of a plurality of outlets selected by rotation of the unit by the primer and wherein the valve is maintained in contact with its seating surface, at all times. The valve is also provided with a replaceable disk seat having the properties of lubricating a flat seating surface containing the outlets to reduce friction between the disk seat and the flat seating surface during rotation.

While there is illustrated and described only one form of the invention, it is apparent that many changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as defined in the appended claims.

It is claimed:

1. A valve for engine primers or the like including a fluid directing body having an axially disposed outlet, means connected to said body for rotating the same, a flat seat carried by said body having a radial channel therein connected to said outlet, a flat seating surface having a plurality of outlet conduits adapted to independently register with the channel in said seat when

it is rotated, and resilient means adapted to constantly press the outlet end of said body against said flat seating surface to effect a seal therebetween except through one of said selected outlets.

2. A valve for engine primers or the like having a flat surface containing a plurality of outlet conduits, and a valve mechanism including a body, one end thereof having a flat head portion and the other end a non-circular relatively smaller portion, a check valve mounted within said body adapted to permit the discharge of fluid under pressure, means detachably connected to said non-circular end portion adapted to thereby rotate the said body, and a disk secured to said flat head portion and engaging said flat seat surface, said disk having means for radially directing fluid discharged through the valve in said body into any selected one of said outlet conduits in the said flat seat surface.

3. A valve for engine primers or the like having a flat surface containing a plurality of outlet conduits and a valve mechanism including a body, one end thereof having a flat head portion and the other end a non-circular relatively smaller portion, a check valve mounted within said body adapted to permit the discharge of fluid under pressure, means detachably connected to said non-circular end portion adapted to thereby rotate the said body, and a centrally apertured graphite disk containing a radial channel therein adapted to radially direct fluid discharged from the said body to a selected conduit in said seat.

4. A valve for engine primers or the like having a flat surface containing a plurality of outlet conduits, and a valve mechanism including a body, one end thereof having a flat head portion and the other end a non-circular relatively smaller portion, a check valve mounted within said body adapted to permit the discharge of fluid under pressure, means detachably connected to said non-circular end portion adapted to thereby rotate the said body, a disk secured to said flat head portion and engaging said flat seat surface, said disk having means for radially directing fluid discharged through the valve in said body into any one of said outlet conduits in the said flat seat surface, and yieldable means associated with said valve body adapted to maintain said disk on the valve body in engagement with the said flat seat surface during all the functions of the valve.

5. A valve adapted to be mounted in a cylinder having an enlarged base portion with an internal annular shoulder therein, for use in engine primers or the like, comprising a body with a central conduit, a flat head at one end of said body, a disk secured to said head having a central aperture connected to said central conduit and a channel radially extending therefrom, an outlet valve mounted within the said body in the central conduit, means adjacent to the said disk having a plurality of outlet conduits, yieldable means concentrically positioned around said valve body and compressed between the inner portion of said head and the said shoulder in the said base portion of the cylinder, and means adapted to angularly position said valve body and said disk on said first-named means to thereby open or close selected outlet conduits.

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