

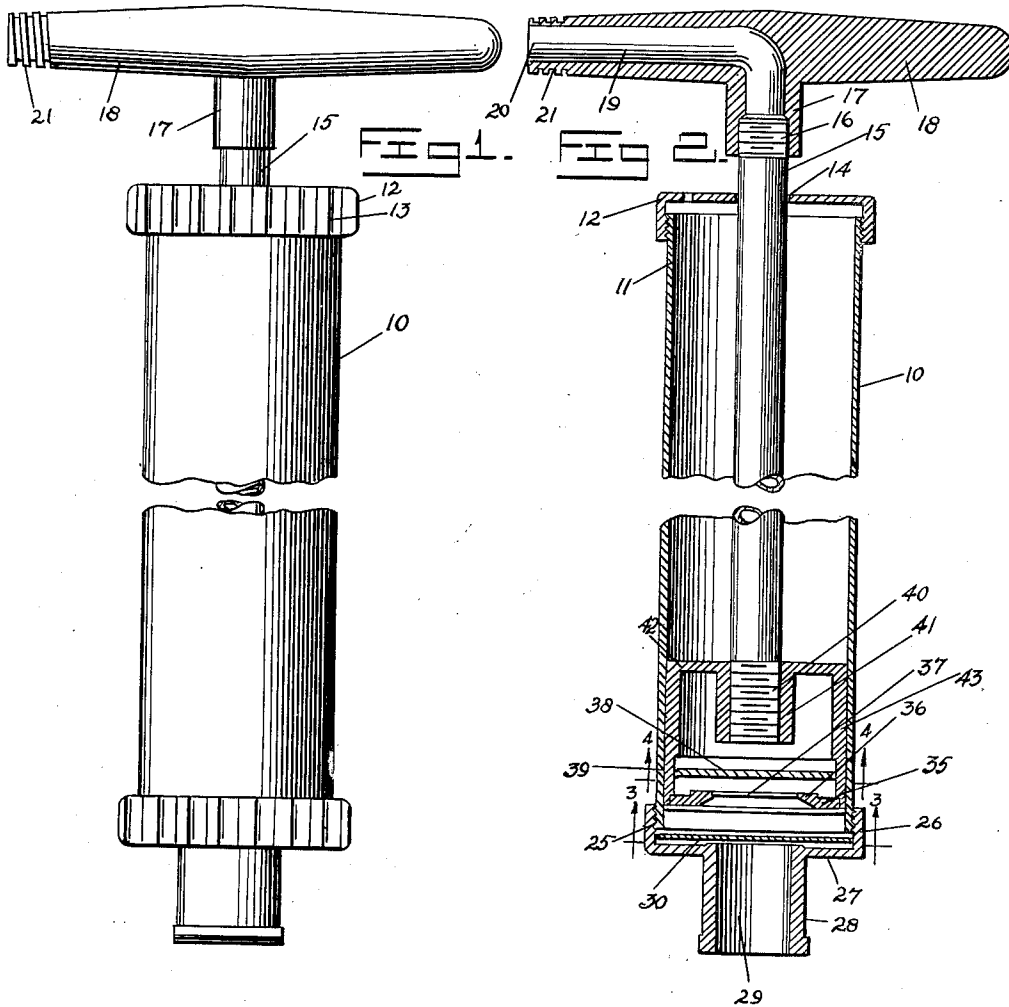
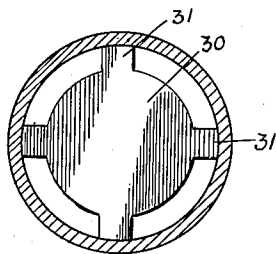
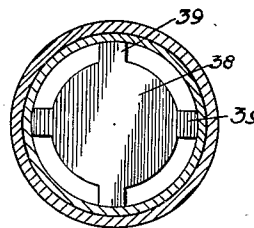
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W. F. PHILLIPS

2,522,633

PUMP

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PUMP

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1 Claim. (Cl. 103—188)

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This invention relates to a pump, and more particularly to a hand pump adapted for the pumping of fluids.

A primary object of this invention is the provision of an improved pump particularly adapted for baling small boats and the like, characterized by simplicity of construction and reliability in operation, and a relative minimum of operating parts.

A further object of this invention is the provision of such a pump having a tubular piston, which piston forms the outlet for fluid pumped thereby.

An additional object of the invention is the provision of such a device which is sturdy and durable in construction and relatively simple and inexpensive to manufacture and assemble.

Other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and disclosed in the accompanying drawings, wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a side elevational view of one form of pump showing features of the instant invention, portions thereof being broken away.

Figure 2 is a longitudinal sectional view of the apparatus of Figure 1.

Figure 3 is a sectional view taken along the line 3—3 of Figure 2, as viewed in the direction indicated by the arrows.

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 2, as viewed in the direction indicated by the arrows.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings, there is indicated at 10 a tube or sleeve threaded at its upper extremity at 11 to accommodate a cap 12, knurled, as at 13, on the exterior surface thereof, and provided with a centrally positioned aperture 14, through which extends the upper extremity of a tubular piston rod 15. The upper extremity of the rod 15 is threaded, as at 16, to engage a boss 17 forming a portion of a handle member 18. The handle member 18 is provided interiorly with a curved tube 19 which extends to an opening 20 at one end thereof, and communicates with the upper extremity of the tubular member 15. Threads 21 may be provided, if desired, on the extremity of the handle adjacent the opening 20 in order to permit the application thereto of a flexible tube or the like. The aperture

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20 serves as an outlet for fluid from the pump when the device is operated in a manner to be more fully described hereinafter.

The lower portion of the sleeve 10 is provided with exterior threads 25 to accommodate corresponding interior threads on the flanges 26 of an end cap 27 provided with a depending boss 28 having a centrally positioned bore 29 there-through serving as an inlet for the pump mechanism. The interior threads of the end cap 27 do not extend to the bottom thereof, so that when the same is screwed on the tube 10, a space is provided between the lower end of the tube 10 and the interior surface of the end cap for accommodating a plate valve 30. The valve 30 is adapted to seat on a raised lip at the upper end of the boss 28, and is provided with outstanding lugs 31 which serve to center the valve in the cylindrical flange 26 of the end cap 27, and to permit the passage of fluid around the valve 30 when the same is lifted from its seat during the suction stroke of the piston. The lower end of the tube 10 constitutes an abutment limiting the upward movement of the valve.

An annular member 35, having a raised central flange 36 surrounding the opening 37, is secured at the lower end of the plunger, said raised flange 36 functioning as a seat for a second plate valve 38. The valve 38 is also provided with outstanding lugs 39 which center the same in the interior of the pump piston, and permit the flow of fluid around the valve when the same is lifted from its seat on the downward or pressure stroke of the pump piston.

The pump piston is secured to the lower end of the tubular member 15, said end being threaded, as indicated at 40, to engage corresponding threads on the interior of a boss 41. The boss 41 is formed centrally of and extending from the upper face of head 42 of the piston. The skirt 43 of the piston is formed integrally with said head, and the thickness of the wall of said skirt is reduced at the lower end thereof. The annular member 35 is secured to the lower end of the skirt 43, being soldered or brazed thereto, after the plate valve 38 has been inserted in the lower end of said piston.

In operation, the valve 38 is closed and the valve 30 is opened, as a partial vacuum is created in the tube 10 on the upward stroke of the pump piston. Fluid is drawn into the interior of the pump around the circular body of the valve 30, which is spaced from the interior wall of the flange 26 of the end cap 27 by the lugs 31. It will be understood that the distance through

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which the valve 30 is permitted to lift on the suction stroke before movement thereof is stopped by the lugs 31 engaging the lower end of the tube 10 as an abutment, is insufficient to permit the valve to be upset, that is, to assume an edgewise position in the bore of the tube 10.

On the downward or pressure stroke of the piston, the valve 30 is forced into a closed position, and the valve 38 is lifted from its seat until it is stopped by the lugs 39 contacting an internal annular abutment within the skirt 43, which abutment is formed by the difference in the thickness of the wall of the skirt adjacent this lower end. It will be understood that this abutment is formed sufficiently close to the annular member 35 to prevent the valve 38 from being upset. The fluid in the portion of the tube 10 below the piston is forced around the valve 38 through the spacing between the circular body thereof and the interior wall of the skirt 43, which spacing is provided by the lugs 39. The fluid then flows upwardly through the tube 15 and is discharged through the opening 20.

From the foregoing it will now be seen that there is herein provided an improved pump construction which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

In a pump comprising a tubular casing forming a pump barrel, the latter being externally threaded upon the lower end thereof, an upper end upon the pump barrel having a central opening, an end cap having an intermediate opening and an upwardly-projecting internally-threaded flange fitting upon the lower threaded end of the pump barrel, a depending discharge pipe secured to the end cap and communicating with the intermediate opening thereof, a piston reciprocable in the pump barrel, and a tubular member secured to the piston to serve as a piston rod for reciprocating the piston in the barrel and extending slidably up through the central opening in the upper end of said barrel, the features which include a substantially flat bottom in the end cap spaced a short distance below the lower

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threaded end of said barrel and a raised lip surrounding the intermediate opening in the flat bottom of said end cap, a plate valve disposed in the space between said lower threaded end of the barrel and the raised lip in said end cap and having a plurality of radial lugs extending beneath said end of the barrel for centering the plate valve within said end cap, the piston being hollow and having a cylindrical skirt containing an internal chamber, a piston head above the internal chamber integral with the cylindrical skirt of the piston, a central boss depending rigidly from the piston head into said internal chamber and having an internally-threaded bore, a threaded lower end upon said tubular member fitting the internally threaded bore in said central boss, the lower portion of said cylindrical skirt having an internal annular recess forming an annular stop or shoulder above the recess, an annular member secured to the lower end of said cylindrical skirt and having a central opening therein, a raised flange surrounding the latter central opening a distance below the annular stop or shoulder in the piston, and a second plate valve disposed between said annular stop or shoulder and said raised flange and having a plurality of radial lugs extending into said annular recess to center the latter plate valve, there being a transverse handle fixed on the upper end of said tubular member above said pump valve and having a passage extending inwardly through one end of the handle and communicating with the tubular member, and the latter one end of said handle being threaded and adapted for connection to a hose or the like.

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