To all whom it may concern:

Be it known that I, ERNEST D. ORTON, a citizen of the United States, and a resident of Farmersville, in the county of Cattaraugus and State of New York, have invented a new and Improved Pump-Valve Lifter, of which the following is a full, clear, and exact description.

This invention relates to valves and refers more particularly to a lifting means for flap check valves for pumps, the same being in the nature of an improvement over a similar device granted to me on August 1, 1911, and bearing United States Letters Patent No. 999,584.

The invention broadly contemplates a means for lifting the valve by direct downward contact to effect the release of fluid imprisoned above the valve.

More specifically the invention contemplates a means for lifting the valve by direct downward pressure without injurious pressure being brought to bear on the leather or rubber gasket of the valve as was the case in my prior application.

A still further object in view resides in the provision of a device of the character described which is simple and inexpensive to manufacture and produce and which is thoroughly reliable and highly efficient in its purpose.

With the above recited and other objects in view the invention resides in the novel construction, combination and arrangement of parts set forth in the following specification, particularly pointed out in the appended claims and illustrated in the accompanying drawings, in which—

Figure 1 is a fragmentary vertical sectional view through the base of a pump taken approximately on the line a—a of Fig. 2.

Fig. 2 is a horizontal sectional view taken approximately on the line b—b of Fig. 1.

Fig. 3 is a fragmentary detail sectional view of the pivotal connection of the valve.

Referring more particularly to the drawings by characters of reference, 10 designates the base of a pump provided with a central hollow interiorly threaded boss 11 into which the upper end of the well casing or pipe 12 is threaded. The pump barrel 13 in which the plunger 15 operates, is connected to the upper end of the base by the screws or bolts 14, a gasket 15 being interposed between the lower end of the barrel and the upper surface of the base. A valve supporting ring 16 is detachably associated with the pump barrel by means of peripheral radially disposed lugs 17 which are clamped within the receiving depressions 18 in the packing ring by the lower edge of the pump barrel and the upstanding peripheral lugs 19 which serve to center and maintain the supporting ring in axial alignment, said lugs 19 coacting with the inner periphery of the pump barrel. The valve carrying ring 16 is provided with upstanding spaced parallel ears 22 having elongated slots 23 which receive the oppositely projecting extremities of pivot pin 24 extending through one end of the cross arm 25 of the flap check valve 26. A washer or gasket 27 of leather, rubber or any other suitable material is secured to the under side of the valve 26 and is adapted to coact with the upper surface of the pump base 10 to close the bore of the base, the same functioning in the usual manner to open upon upward movement of the pump plunger and close upon the downward movement thereof. The opposite end 28 of the valve arm 25 projects beyond the periphery of the valve and is provided with a V-shaped under face 29. A valve lifting means is provided which consists of a trip lever 30 pivoted between the upstanding parallel bearing ears 31 on the valve supporting ring, the same being provided with a foot 32 which normallyunderlies the V-shaped under face of the end 28 of the valve arm, the trip lever being provided with an upstanding curved extremity 33 which is disposed in the path of movement of the plunger and is engageable therewith when the same approaches the lower limit of its stroke. A spring 34 serves to normally swing the trip lever to dispose the foot 32 out of engagement with the end 28 of the valve arm.

In use and operation the flap check valve opens upon upward movement of the pump plunger to admit an intake of the fluid within the pump barrel, the down stroke of the plunger serving to close the valve 26 and imprison the fluid therein which is forced out through the mouth of the pump through a suitable valve in the plunger in the ordinary well known manner. When it is desired to lift the valve to release any fluid which remains in the barrel, the plunger is forced down to the extreme lower
limit of its stroke where it contacts and engages with the upper curved extremity 33 of the trip lever, thereby swinging the same downward against the action of the spring 34 and lifting the foot 35 into engagement with the V-shaped under surface of the end 28 of the valve arm. Thus the valve is open and any fluid trapped or imprisoned in the lower end of the pump barrel above the base 10 will be permitted to escape and return through the pipe or casing 12.

While there has been illustrated and described a single and preferred embodiment of the invention, no limitation is necessarily made to the precise structural details as it is to be understood that variations and modifications which will properly fall with the scope of the appended claims may be resorted to when found expedient.

Having thus described my invention, what I claim is:

1. The combination with a pump including a plunger and a flap check valve, of an arm extending diametrically across the valve, a trip pivotally supported within the pump barrel having a foot disposed beneath said arm, means for holding said foot normally out of engagement with said arm, and a terminal on said trip above the valve structure for engagement by the pump plunger to effect the throwing of the trip and lifting of the foot with the arm to open the valve.

2. The combination with a pump including a plunger and a flap check valve, of means disposed in the path of movement of and engageable by the plunger upon movement of said plunger to the lower limit of its stroke for effecting the opening of said valve to release water imprisoned thereabove, said means comprising an arm extending diametrically across the valve and having a V-shaped lower edge, a trip arm pivotally supported within the pump barrel and having a foot disposed beneath said edge of the arm on the valve, a spring for holding said foot normally out of engagement with the arm, and a terminal projecting above the valve structure and for engagement by the pump plunger to throw the arm against the action of its spring for effecting lifting engagement of the foot with the arm of the valve to open the same.

ERNEST DUTTON ORTON.