J. O. BANE.

COUNTERBALANCING DEVICE FOR PUMPS.

APPLICATION FILED FEB. 20, 1909.

939,967. Patented Nov. 16, 1909

Fig. 1.

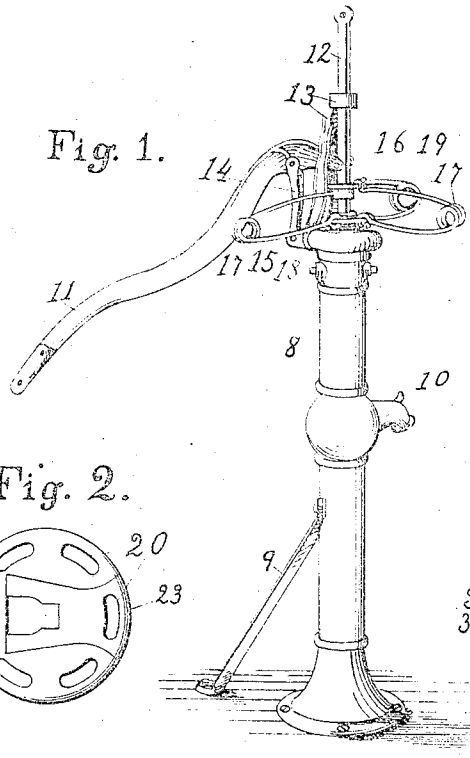

Fig. 2.

Fig. 5.

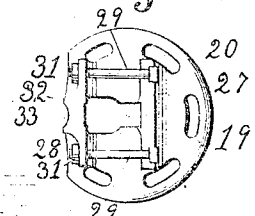

Fig. 3.

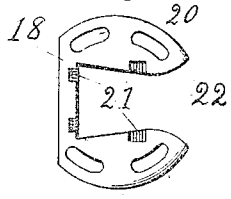

Fig. 4.

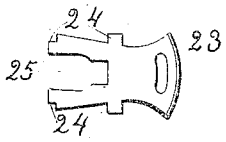

Fig. 6.

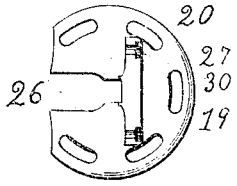

Fig. 7.

Witnesses
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UNITED STATES PATENT OFFICE.

JAMES O. BANE, OF WASECA, MINNESOTA.

COUNTERBALANCING DEVICE FOR PUMPS.

939,967. Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed February 20, 1909. Serial No. 479,215.

To all whom it may concern:

Be it known that I, JAMES O. BANE, a citizen of the United States, residing at Waseca, in the county of Waseca and State of Minnesota, have invented certain new and useful Improvements in Counterbalancing Devices for Pumps, of which the following is a specification.

This invention relates in general, to pumps of the reciprocating piston variety, and more particularly to pumps which are used on farms, either by hand or windmill power to raise water for general purposes; and its object is to provide means for counterbalancing the weight of the movable parts comprising the piston, its rod, and a portion of the weight of the water so that the operation will be rendered very light and easy.

To this end my invention consists in the construction and combination of parts forming a pump hereinafter more fully described and particularly set forth in the claim, reference being had to the accompanying drawings in which—

Figure 1, represents a perspective view of the hand pump according to my invention. Fig. 2, is a top view of the stationary spring-plate. Fig. 3, is a view of the body of the same plate inverted. Fig. 4, is a view of the removable portion of the same plate inverted. Fig. 5, is a top view of the upper spring-plate with its clamping jaw in position for service. Fig. 6, is a top view of the same plate with the clamping jaw removed. Fig. 7, is an edgewise view of the plate shown in Fig. 5.

Let numeral 8, represent the body of a pump steadied by a brace 9, and provided with a spout 10, a handle 11, and a piston-rod 12. A bracket 13, serves as a guide for the upper portion of the rod which is fitted to slide vertically therein. The handle is pivoted upon a brace 14, which is pivoted to the top of the pump at 15, to accommodate the arc of motion of the handle, while its end 16, pivoted to the piston-rod 12, moves up and down in a straight line. The upper portion of the rod 12, may be adapted for attachment by a connecting rod with the crank of a windmill, not shown. The springs 17, are made of stiff wire and attached to the pump by means of the plates 18 and 19, the hooked ends of the springs passing through suitable holes 20, in the plates. If these plates were made, each in a single piece it would require the piston-rod 12, to be entirely freed from the bracket 13, and the pump handle so that each plate could be slipped on to the end of the rod. This is a matter of great inconvenience, and especially so, when the piston-rod is also connected with a windmill. To enable these plates to be put in place without disconnecting any part of the pump attachments, I make each plate in two or more parts, yet these plates cannot be duplicates of each other, for the plate 19, must be fastened to the piston-rod and the plate 18, must permit the piston-rod to play freely through it. To this end, each plate is made open at one edge and a removable piece is provided to close that opening. The plate 18, is made with recesses 21, in its under side at the edges of the opening 22; and the closing piece 23, which is made to fit that opening, is provided with lugs 24, to rest in, and engage the plate at the recesses 21. This plate 18, is to be placed around the piston-rod on top of the pump; then it is to be raised a little and the closing piece 23, is to be inserted under it into the opening 22, with its lugs 24, engaging the apertures 21, when the plate is permitted to rest upon the pump. The piston-rod will now be in the opening 25, which is large enough to permit it to play freely therethrough.

The plate 19, has an opening 26, at one side to receive the piston rod and is provided with a projecting shoulder 27. A clamping jaw 28, is to be located freely on top of the plate 19, opposite to the shoulder 27, and is connected therewith by means of bolts 29, which are let into the shoulder 27, in recesses 30. These recesses are shaped to receive the neck and head of the bolt and to prevent the bolt from turning when the nut 31, is screwed upon the other end thereof. The plate 19, is to be placed around the piston-rod and then the clamping jaw 28, is to be put in position and the bolt heads inserted in the apertures 30. Now by screwing up the nuts 31, the jaw 28, will be clamped against the piston-rod, holding it firmly to the shoulder 27. The springs may now be individually hooked into the aperture 20, in the lower plate 18, and then be sprung into the apertures 20 in the upper plate 19. The plate 19, may be located up or down upon the piston-rod to adjust the pressure of the springs to the weight to be balanced in each particular case. To adapt the same patterns as plates and clamps for

service on both round and flat piston-rods, the apertures 25, 26, are made to fit near enough for practical purposes to both forms; and the clamping jaw 28, is made flat on one face 32, and concave at 33, on the other face. In service the plate 18, being held firmly down upon the pump top by means of the springs, holds its closing piece 23, securely under it by means of the lugs 24, resting in the apertures 21; and the upward pressure against plate 19, is resisted by the jaw 28, clamped firmly upon the piston-rod 12. It will be readily seen that, these plates thus adapted to be applied to the pump rod and to be removed therefrom without disconnecting any part of the pump, is a matter of great convenience, especially to the salesman in introducing these counterbalancing springs for use upon pumps that are already in service; because the plates may be applied and adjusted to counterbalance the springs so that their value may be shown in a few minutes. It will be seen that when the piston-rod 12, projects far enough above the guiding bracket 13, the plate 18, may rest thereon and the plate 19, be secured to the rod higher up; and for the purpose of the claims either the cap of the pump or the top of the bracket 13, may be termed the top of the pump. Of course it may be necessary to furnish springs of different sizes and different degrees of strength for large and small pumps but the plates as commonly furnished are adapted for nearly the whole range of common pumps.

Having thus fully described my invention, what I believe to be new and desire to secure by Letters Patent, is the following:

In a pump, a reciprocating rod and counterbalancing springs therefor; two plates for attaching these springs to the pump body; one of the plates being secured firmly upon the rod and the other plate resting upon a fixed portion of the pump, this plate being open at one edge and having apertures in its under side, and a closing piece fitted to the opening and having lugs fitted to engage the said apertures in the plate.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES O. BANE.

Witnesses:

JOHN MOONAN,

FLAVIA PETERS.