

UNITED STATES PATENT OFFICE.

JOSIAH H. SUTTER, OF LAKE ARTHUR, TERRITORY OF NEW MEXICO.

POWER-PUMP.

995,581.

Specification of Letters Patent. Patented June 20, 1911.

Application filed October 10, 1910. Serial No. 586,292.

To all whom it may concern:

Be it known that I, JOSIAH H. SUTTER, a citizen of the United States, residing at Lake Arthur, in the county of Chaves and Territory of New Mexico, have invented certain new and useful Improvements in Power-Pumps, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in power pumps, especially irrigating pumps, the object of the invention being to provide an improved pump of this character which is provided with valves of novel construction, and mechanism for operating the said valves so as to cause the pump to elevate and deliver water in a continuous flow, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view of a pump constructed in accordance with my invention, showing the operating mechanism therefor in elevation. Fig. 2 is a detail vertical sectional view of one of the valves.

The pump cylinder 1 is here shown as provided near its upper end with a delivery spout 2. The lower end of the pump cylinder is open, and at the upper end thereof is a head 3 provided with an opening for a tube 4, to the lower end of which is attached a valved plunger 5 which operates in the pump cylinder. A rod 6 extends through the tube 4 and is provided at its lower end with a valved plunger 7 which also operates in the pump cylinder.

I will now describe the machine for operating the pump plungers.

A frame 8, having sills 9, which rest on the ground at one side of the upper end of the pump cylinder is provided with a samson post 10 in which are mounted a pair of walking beams, 11, 12, which are arranged one above the other, the walking beam 11 being connected by a suitable flexible joint 13, to the upper end of the pump rod 6, and the lower walking beam 12, being connected by a similar joint 14 to the upper end of the pump tube 4. Braces 15 are here shown for the samson post. In suitable bearings on the frame 8 are shafts 16, 17 and 18. The shaft 16 is provided with a pulley 19 driven by a power belt 20, and is also provided with a spur gear 21, which engages a larger gear 22 on the shaft 17, the said gear

22 being provided with a crank 23, to which is connected the lower end of a pitman 24, the upper end of the said pitman being pivotally connected to the lower walking beam 12, as at 25. The shaft 18 has a gear 26, which is similar to and meshes with the gear 22, the said gear 26 being provided with a crank 27, to which is connected the lower end of a pitman 28, the upper end of the said pitman being pivotally connected as at 29 to the upper walking beam 11.

It will be understood from the foregoing that the cranked gears 22, 26, which rotate in opposite directions, will cause the walking beams to be simultaneously operated in opposite directions, and to impart corresponding motion to the valved plungers in the pump cylinder so as to cause said plungers to alternately approach and recede from each other. Each pump plunger has a central opening 30, of suitable diameter, and an annular recess 31 in its upper side, providing an annular flange 32, which extends around the said opening. Angle bolts 33 have their lower ends extended through openings in the plunger and provided with nuts 34, which bear against the lower side of the plunger. The upper portions of the angle bolts are inturned as at 35 and terminate in vertical portions 36 which pass through a disk 37, and are secured to the said disk by means of nuts 38 which bear on the said disks. The disk 37 of the lower plunger is secured to the lower end of the pump rod 6. The inturned angle bolts 33 in addition to their function in connecting the plungers to the rod and pump tube, also form cages in which operate valve disks 39, 40, a pair of said disks 39, 40, being employed in connection with each of the pump plungers. These valve disks may be made of any suitable material. The lower, large disk 39 when lowered bears on the flange 32 of the pump plunger, in which it is employed, and is provided with a large central opening 41. The upper disk 40 of the upper plunger 5 has a central opening through which the rod 6 extends, so that the said disk is guided on the said rod, and the said disk is of sufficient size to enable the same when lowered to close the opening 41 of the lower disk 39. The angle bolts are provided with inwardly extending pins 42 disposed at a suitable distance above the pump plungers, and which operate as stops to limit the upward movement of the lower disks 39. The

upward movement of the upper disks is limited by the inturned portions 35 of the angle bolts. The lower disk 39 of the lower plunger 7 is provided with guide pins 43, and which extend upwardly therefrom, and pass through openings in the upper disk 40 of the said plunger, and serve to guide the said upper disk 40 and keep the latter in place.

10 In the operation of my improved pump, as the plungers approach each other at one stroke thereof, the valve disks of the ascending lower plunger 7 will be closed, those of the descending upper plunger will be open, and hence the water raised in a column in the pump cylinder by the ascending lower plunger, will be passed through the upper plunger and be discharged through the spout 2. On the reverse stroke 20 of the plungers, the valve disks of the ascending upper plunger will raise the column of water above them and discharge the same through the spout 2 while the valve disks of the descending lower plunger will be open, thereby enabling the said lower plunger to pass down through the column of water in the lower portion of the pump cylinder, and at the end of the downward movement of said lower plunger the valve disk thereof will close, and hence water will be lifted and discharged at each stroke of the plungers, and the flow of water from the pump will be continuous.

I claim:—

35 1. A pump of the class described having a plunger provided with a central opening, and an annular recess forming an annular shoulder or flange around the said opening, said recess being in the upper side of said plunger, angle bolts attached to the said 40 plunger and extending upwardly therefrom, the upper ends of the said angle bolts be-

ing inturned, a disk connecting the upper ends of said angle bolts and to which the plunger operating element is attached, the said angle bolts forming a cage above the said plunger, a lower valve disk in said cage, and movable vertically therein, and when lowered resting on the said flange of the plunger, said lower valve disk having a central opening, and an upper valve disk to close the said opening of the lower valve disk, and a guide for the said upper valve disk.

2. A pump of the class described having a plunger provided with a central opening, and an annular recess forming an annular shoulder or flange around the said opening, said recess being in the upper side of said plunger, angle bolts attached to the said plunger and extending upwardly therefrom, the upper ends of the said angle bolts being inturned, a disk connecting the upper ends of said angle bolts and to which the plunger operating element is attached, the said angle bolts forming a cage above the said plunger, a lower valve disk in said cage, and movable vertically therein, and when lowered resting on the said flange of the plunger, said lower valve disk having a central opening, and an upper valve disk to close the said opening of the lower valve disk, and a guide for the said upper valve disk, the inturned upper portions of the said angle bolts forming stops to limit the forward movement of the upper valve disk, and the said angle bolts having stops to limit the upward movement of the said lower valve disk.

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

JOSIAH H. SUTTER.

Witnesses:

EUGENE C. BROWN,
HAROLD HAMS.