

(No Model.)

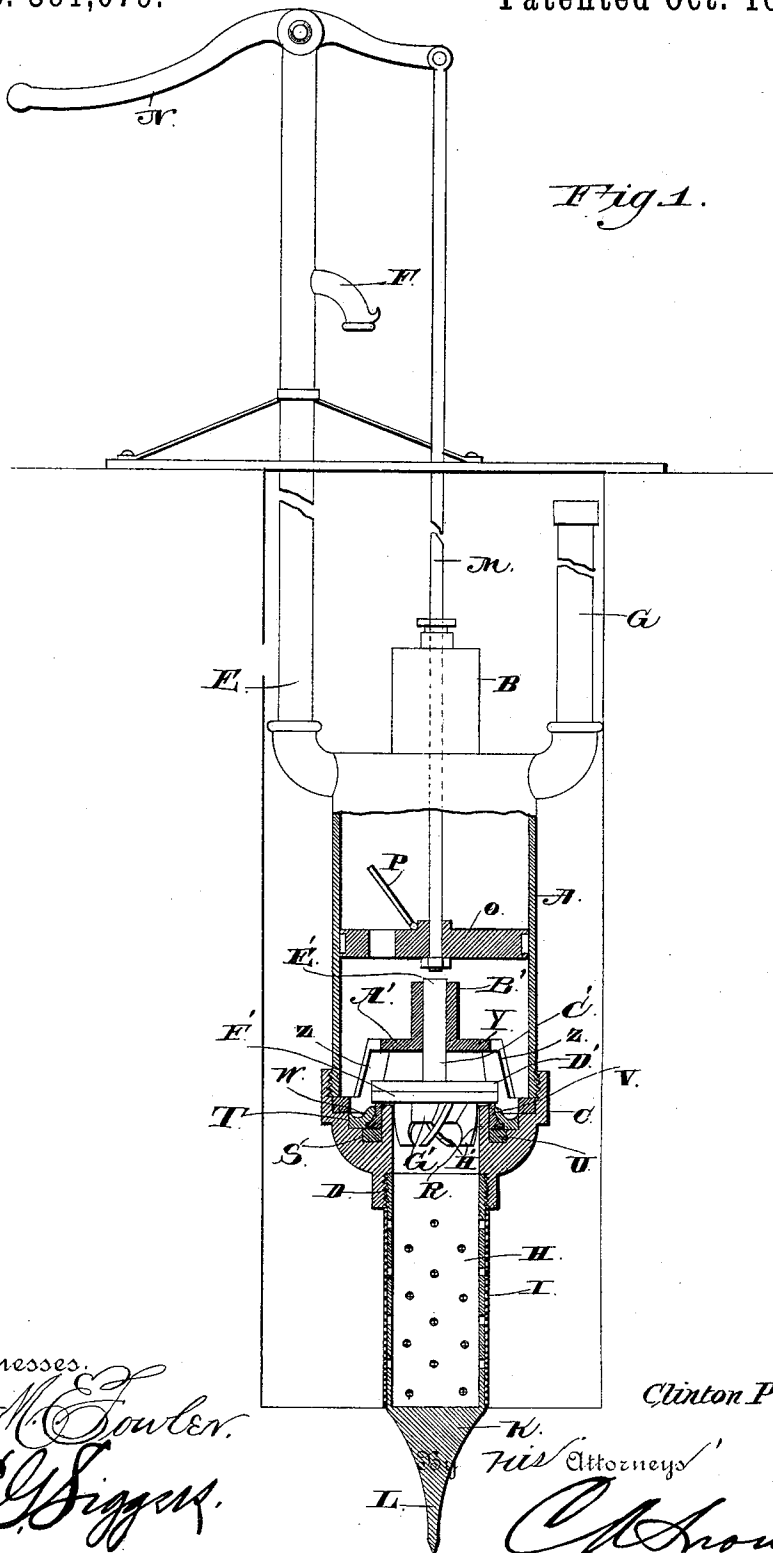
2 Sheets—Sheet 1.

C. P. RINKER.

PUMP.

No. 391,079.

Patented Oct. 16, 1888.



Witnesses.

M. Fowler.
E. Siggs.

Inventor.
Clinton P. Rinker.

His Attorneys

C. H. Snow & Co.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

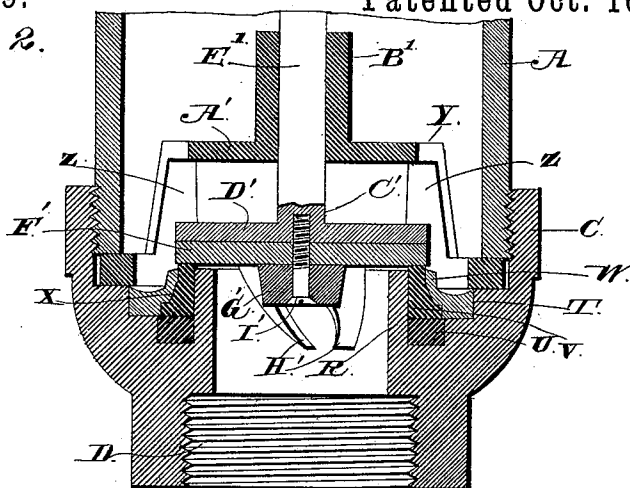


Fig. 3.

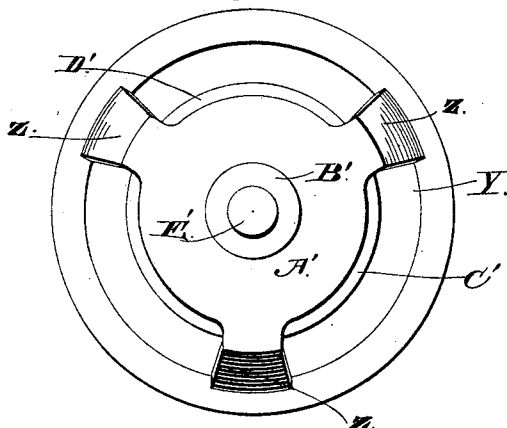
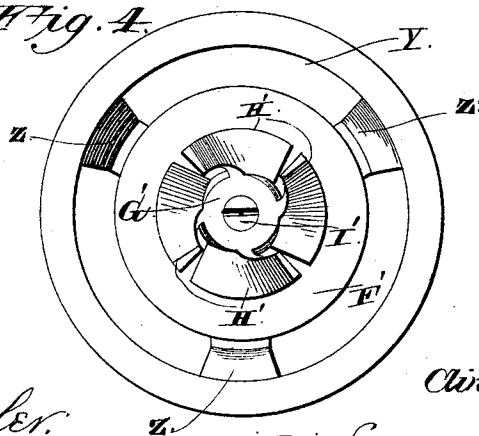


Fig. 4.



Witnesses.

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By his Attorneys.

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UNITED STATES PATENT OFFICE.

CLINTON P. RINKER, OF McCOOK, NEBRASKA, ASSIGNOR OF ONE HALF TO
DELOS GRIGGS, OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 391,079, dated October 16, 1888.

Application filed June 21, 1888. Serial No. 277,723. (No model.)

To all whom it may concern:

Be it known that I, CLINTON P. RINKER, a citizen of the United States, residing at McCook, in the county of Red Willow and State of Nebraska, have invented a new and useful Improvement in Pumps, of which the following is a specification.

My invention relates to an improvement in single-cylinder double-acting pumps; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a pump embodying my improvement. Fig. 2 is an enlarged detail sectional view of the sand-valve. Fig. 3 is an enlarged top plan view of the same. Fig. 4 is an enlarged bottom plan view of the same.

A represents a vertical cylinder of suitable diameter, the upper end of which is provided with a vertical extension, B, which is of less diameter, as shown. The lower end of the cylinder is closed by a cap, C, which is provided with a central threaded opening, D. Communicating with one side of the cylinder A, at the upper end thereof, is a vertical discharge-pipe, E, which extends to the upper end of the well, and is provided with a discharge-spout, F. On the opposite side of the cylinder A, and communicating with the upper end thereof, is a vertical pipe, G, which has its upper end closed by a suitable cap or plug, and thereby forms an air-chamber.

H represents a vertical tube of suitable diameter, which is perforated, as shown, and has its upper end screwed in the opening D. The said perforated pipe is incased in a wire screen, I, and to the lower end of the said pipe is secured a plug, K, which tapers downward to a point, L, that is driven in the bottom of the well, and thereby the said plug constitutes an anchor, the function of which is to securely fasten the pump in the bottom of the well and prevent the same from moving while being operated.

M represents a piston rod, which is guided in the cylinder and has its upper end connected to a handle or lever, N, which is pivoted on the upper end of the pipe E. To the lower

end of this piston-rod is attached a piston or plunger, O, which is provided with an upwardly-opening valve, P.

From the upper side of the cap C, at the center of the same, projects a cylindrical flange, R, of suitable height, and formed in the said cap and surrounding the said flange is an annular groove, S, a shoulder, T, being formed between the said groove and side of the cap.

U represents a ring, which is made of rubber and is slipped over the flange R and forced to the base of the same, and V represents a similar, but somewhat narrower, rubber ring, which is slipped on the flange R and bears upon the upper side of the ring U.

W represents a circular collar, which is made of metal and is adapted to fit in the groove S. The said collar has its inner edge beveled, as at X, the said beveled edge bearing against the rubber ring U and serving to compress the latter so firmly against the flange R as to effect a perfectly tight joint therewith, and also causes the rubber rings U and V to expand upwardly when the ring is forced down into its seat, so as to cause the upper edge of the ring V to project slightly above the upper end of the flange R.

Y represents a valve-cage, which has its lower edge seated on the rim W and projecting outward under the lower end of cylinder A, so that when the cap C is screwed to the lower end of said cylinder said cage and the collar W are firmly secured in place. From the base of the cage project vertical arms Z, the upper ends of which are connected by a circular plate, A', which is provided on its upper side with a central vertical stem or guide, B', the said stem, plate, arms, and base being formed integrally, and preferably of cast-iron. Openings are formed between the arms Z, as shown, said openings extending almost entirely around the cage.

C' represents a sand-valve, the construction of which is as follows:

D' represents a circular plate of suitable diameter, from the center of which projects a vertical rod, E', that extends through and is guided by the stem B'. On the under side of plate B' is arranged a valve, F', which is circular in form, and is made of leather or other suitable material.

G' represents a hub, which is provided with a series of spirally-arranged radial wings, H', and said hub is arranged under the center of the valve S', and it and said valve are secured under the plate D' by means of a screw, I, which passes through central openings in the hub and valve H' and enters a threaded opening in the lower end of rod E'. When the sand-valve is seated on the upper end of the flange R in its normal position, the radial wings thereof depend in said flange.

The operation of my invention is as follows: When the piston-rod is raised, the water is drawn into the cylinder through the sand-valve and fills the lower part of said cylinder and forces the water which was before in the said cylinder into the upper portion thereof until the latter is filled, and the residue is then forced through the discharge-pipe. The air-chamber, being placed opposite the discharge-pipe, receives the pressure equal to the column of water in the discharge-pipe, and when the piston becomes stationary at the upper or lower limit of its stroke this compressed air causes the water to flow steadily through the discharge-pipe, and as the cylinder holds a larger volume of water than the discharge-pipe the air in the air-chamber acts as a cushion and relieves the cylinder of excessive pressure. When the plunger is lowered, the water in the upper portion of the cylinder is forced through the discharge-pipe, and thereby the pump is rendered double-acting, and thereby a continuous flow of water is caused. The sand-valve being provided with spiral radial arms on its under side, said arms are acted upon by the ascending current of water through the pipe H, caused by the ascent of the piston or plunger, and cause said sand-valve to rotate rapidly, thus displacing any substance which might otherwise remain lodged on the valve-seat, and the valve then settles back to its place upon the valve-seat, and the latter is kept constantly clear. By means of the rubber rings, upon which the sand-valve settles, the fine particles of sand, scale, or other foreign substances are permitted to remain without breaking the packing-joint between the valve and valve-seat, as the rubber ring will be pressed down by the valve, together with the obstruction, until the valve reaches the lower limit of its movement, thus effecting a perfectly tight joint between the valve and seat and preventing the water from escaping back into the well from the cylinder. When the valve is drawn upward at the next

ascending stroke of the piston, any obstruction which might have been pressed down on the rubber valve-seat will be forced to the surface by the expansion of the rubber as the latter seeks to reassume its original form, and the obstruction will be again acted upon by the lateral current of water caused by the rotation of the sand-valve.

Having thus described my invention, I claim—

1. The combination of the cap C, having the central opening and the flange or rim R, the elastic packing-ring around said flange, the ring W, surrounding said packing-ring and having its inner side beveled, the cage having its lower side bearing on the ring W and extending outward therefrom, the cylinder screwed to the cap and bearing on the extended base of the cage, for the purpose set forth, the vertically-movable valve having the stem E' guided in the cage, and the wheel secured to the lower side of the valve and provided with the radial spiral blades, substantially as described.

2. The combination of the cap C, having the central opening and the flange or rim R, with the elastic packing-ring around said flange, the ring W, surrounding said packing-ring and having its inner side beveled, the valve D', having the stem E' on its upper side, and the valve-cage having the guide for the said stem and the flange at its base compressed on the ring W, for the purpose set forth, substantially as specified.

3. The combination, with the cylinder A, the cage having its lower edge provided with a flange resting under the lower end of the cylinder, the collar W, bearing under the base of the cage and having its inner side beveled, the cap C, screwed to the lower end of the cylinder, and thereby securing the cage and collar in place, said cap having the flange or rim R extending through the collar, the rubber packing on said flange or rim and pressed by the collar, and the vertically-movable valve C, guided in the cage and having its seat on the upper end of the flange or rim, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CLINTON P. RINKER.

Witnesses:

S. H. COLVIN,
T. M. DEMPEY.