2 Sheets—Sheet 1.

J. HALLNER.
Rotary-Pump.

No. 228,344. Patented June 1, 1880.

Fig. 1.

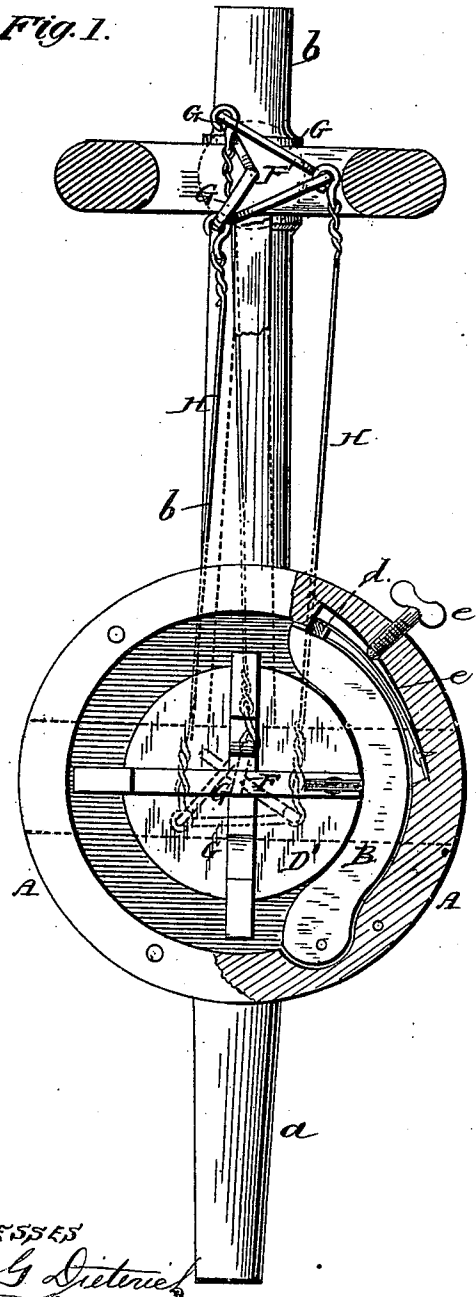
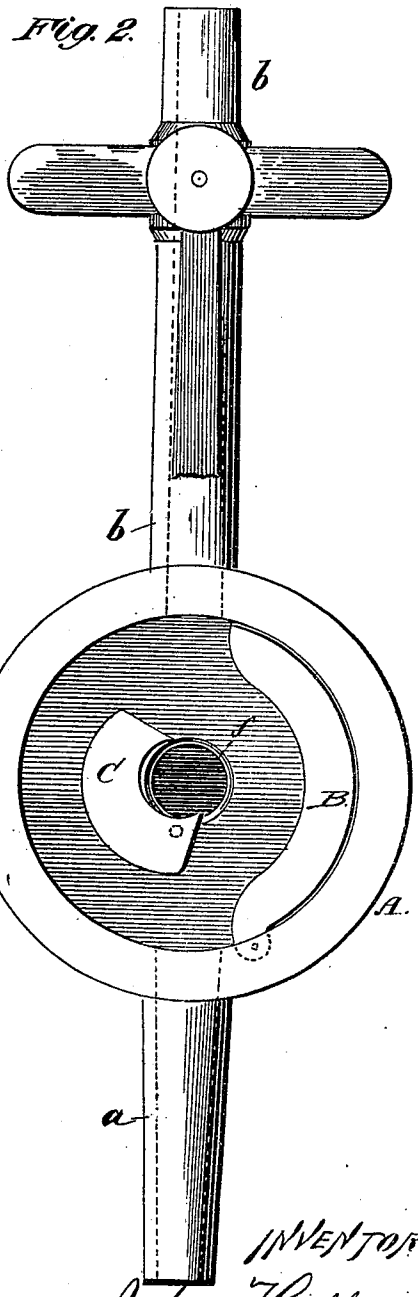


Fig. 2.



WITNESSES
Ed. G. Dieterich
Joseph T. Rover

INVENTOR.
John Hallner
by Louis Bagger & Co
attorneys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

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Fig. 3.

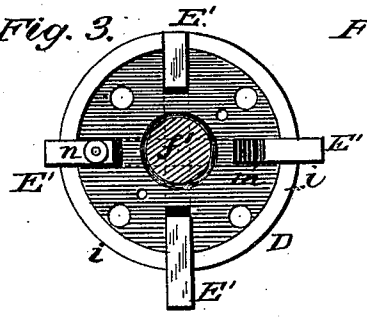


Fig. 4.

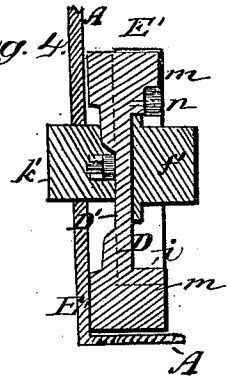


Fig. 5.

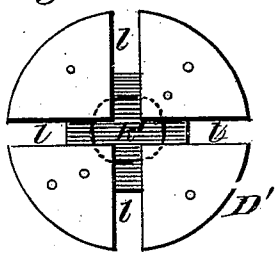


Fig. 6.

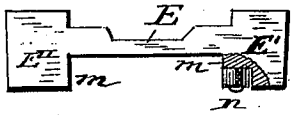


Fig. 7.

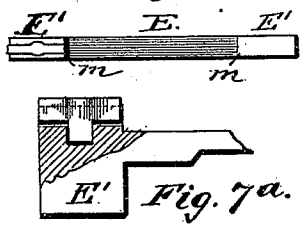


Fig. 7a.

Fig. 8.

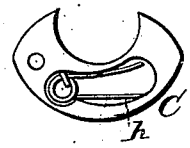
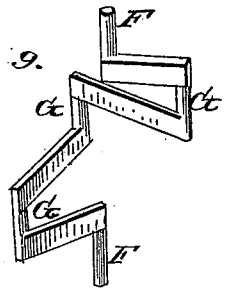


Fig. 9.



Witnesses.
Fred. G. Dieterich
Joseph T. Power

Inventor.
John Hallner
by Louis Bagger & Co.
Attorneys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN HALLNER, OF SAUNDERS, NEBRASKA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 228,344, dated June 1, 1880.

Application filed October 20, 1879.

To all whom it may concern:

Be it known that I, JOHN HALLNER, of Saunders, in the county of Saunders and State of Nebraska, have invented certain new and useful Improvements in Rotary Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front or face view of a rotary pump embodying my improvements, the face-plate having been removed to show the arrangement of the operating parts. Fig. 2 is a similar view with the face-plate and valve-wheel removed. Fig. 3 is a plan of the inner side of the valve-wheel with its valves or gates. Fig. 4 is an axial section of the same. Fig. 5 is an inside view of one of the two circular disks which, when united, compose the valve-wheel. Fig. 6 is a side view of one of the sliding double-headed valves detached from the valve-wheel. Fig. 7 is an end or edge view of the same. Fig. 7^a is a sectional view of one of the valve-heads. Fig. 8 is an inverted view of the guide-shoe by which the valves or gates are operated; and Fig. 9 is a perspective view of one of the triple cranks for operating the pump when it is immersed or inserted into the well or reservoir from which the water is to be drawn.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to rotary pumps; and it consists in an improved construction and combination of the operating parts, as hereinafter described, and particularly pointed out in the claims, having for its object to produce a pump that can be easily and evenly operated without jerks or spurts, is absolutely air and water tight, capable of raising water to a great height or distance, and, withal, requires but little power proportionate to the work accomplished to operate it.

In the two sheets of drawings hereto annexed, A represents the cylindrical pump box or casing, which is provided with the induction-pipe *a* and eduction-pipe or outlet *b*. Pivoted in one side of the casing A is a segment, B, the upper end of which impinges upon a block, *d*, which is sunk into a recess in the edge or rim of the casing and affixed upon the end of a spring, *e*, which works in a segmental slot in the rim of the casing back of the hinged segment B.

The cylindrical casing A has a central journal-box, *f*, on one side of which, opposite to the segment B, is another smaller segment, C, which is pivoted at one end upon a pin projecting inwardly from the cylinder-head, close up against its journal-box *f*, and recessed on its under side to receive a spring, *h*, (see Fig. 8,) which bears against a pin in the cylinder-head, so as to impel or force the segment C outwardly from the central journal-box, *f*. The large hinged segment, B, I call the "packing-segment or gainer," and the small pivoted segment, C, I call the "guide-shoe." The gainer-spring *e* impinges upon a set-screw, *e'*, inserted through the rim of the casing A, by means of which its tension relative to the block *d* and segment B may be adjusted from the outside without disturbing or removing any part of the machine.

The rotary valve or piston wheel is made in two parallel circular sections, D D', which, bolted together, form the complete wheel or disk. The part D, which faces the inner head of casing A, with its pivoted segments B C, has an annular flange, *i*, slotted at right angles to make room for the valves or pistons, and is provided with a central hub or journal, *f'*, which fits into the central box, *f*, of casing A. The adjoining part, D', has a central hub, *k'*, which extends out through the face-plate of casing A, as shown in Fig. 4 of the drawings, and is provided with a crank or pulley for operating it.

Both parts D D' are slotted diametrically at right angles, and are so placed together that the slots of one register with those of the other, thus forming two diametrical channels, *l l*, in the body of the wheel, crossing each other at right angles. Into these channels are inserted the double-headed pistons E E, the heads E' E' of which have projecting shoulders or flanges *m*, which bear against the spring guide-shoe C, as hereinafter described.

The flanges *m* may be provided with friction-rollers, as shown at *n* in Fig. 6, or with springs which work against the curved back of the shoe as the wheel with its pistons is

rotated, and each of the piston-heads is recessed to receive spring or any other suitable packing, so as to form a water-tight joint with the heads and rim of the cylindrical casing A.

For the use of deep wells, or where it is desired to lift the water to a considerable height, the pump may be immersed in the well and operated by means of the attachment shown in Figs. 1 and 9. This consists of two shafts, F F′, provided with triple cranks, G G G, the cranks of the upper shaft being connected with those of the lower by rods or cables H of any suitable length. The uppermost shaft, F′, has a pulley or crank for operating it, and both the shafts are arranged within a suitable boxing. By this arrangement the pump may be placed sufficiently close to the water to be operated easily, and yet lift a column of water to any desired height, as the length of the rods or wires H H H which connect the two triple cranks is immaterial.

From the foregoing description, taken in connection with the drawings, the operation of my improved rotary pump will be readily understood.

The hinged packing-segment or gainer B, operated by the spring *e* and block *d*, will impinge closely upon the valves or pistons as these rotate and take up wear, while the block *d* will prevent water from entering the space behind said block and the segment occupied by the spring. The pistons, being made with double heads E′ E′, greatly simplifies the operation of the pivoted guide-shoe C, upon which the pistons ride during the revolution of disk D D′, while the spring *h*, by forcing the end of the segmental shoe down against the flanged heads, insures a perfect and uniform reciprocating motion of the pistons, and compensates for wear of these as well as of the shoe.

An additional and very important advantage resulting from the construction and arrangement of the yielding segments B C, as described, is that the pump may be used for pumping muddy or gritty water, or water containing small pieces of rock, gravel, and other impurities, without injury to its parts, which makes it desirable for use in mines, coal-pits, the flushing of old wells, and similar purposes.

The diameter of the pump being comparatively small, a large volume of water may be lifted with proportionately little power, whether this is applied direct to the shaft of the valve-wheel or indirectly by means of the crank attachment with its connecting-rods.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a rotary pump, the disk composed of the parts D D′, provided with diametrical right-angled channels *l l*, registering with each other, slotted flange *i*, and hubs *f′ k′*, substantially as and for the purpose herein shown and described.

2. The combination, with the diametrically-channeled disk D D′, having slotted flange *i*, of the double-headed valves or pistons E E, set at right angles to and sliding centrally upon each other within their respective channels *l l* in disk D D′, substantially as and for the purpose herein shown and described.

3. The combination, with the cylindrical casing A and radial valves or pistons E of a rotary pump, of the pivoted segment B, block *d*, spring *e*, and set-screw *e′*, substantially as and for the purpose set forth.

4. The combination, with the cylindrical casing A, having central journal-box, *f*, of the pivoted segmental guide-shoe C, provided with the spring *h*, arranged and operating substantially as and for the purpose herein shown and specified.

5. The combination, substantially as described, of the cylindrical casing A, having a suitably-arranged inlet and outlet, and provided with central journal-boxes and the yielding pivoted segments B C, disk D D′, having channels *l l*, slotted flange *i*, and hubs *f′ k′*, and double-headed pistons E E, all constructed and combined to operate as and for the purpose herein shown and set forth.

6. The shafts F F′, provided each with triple cranks G G G, set at different angles, in combination with the parallel connecting rods or wires H H H, and hub of a rotary pump, substantially as and for the purpose herein described.

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

JOHN HALLNER.

Witnesses:
JOHN STEEN,
AUGUST HALLNER.