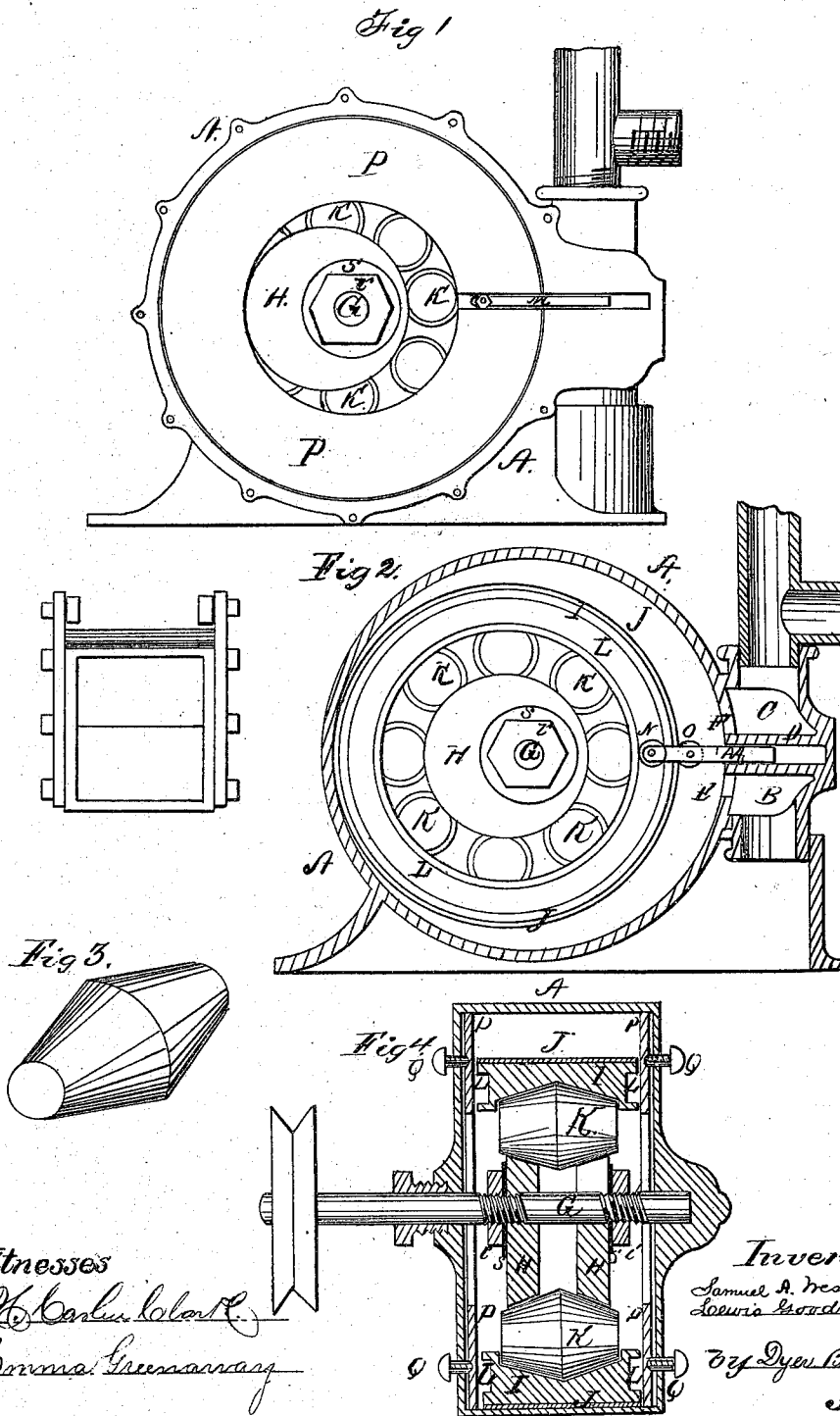


S. A. WEST & L. GOODWIN.

Rotary-Pump.

No. 131,801.

Patented Oct. 1, 1872.



Witnesses

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UNITED STATES PATENT OFFICE

SAMUEL A. WEST, OF SAN FRANCISCO, CALIFORNIA, AND LEWIS GOODWIN,
OF VIRGINIA CITY, NEVADA.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. 131,801, dated October 1, 1872.

To all whom it may concern:

Be it known that we, SAMUEL ALEXANDER WEST, of the city and county of San Francisco, State of California, and LEWIS GOODWIN, of Virginia City, county of Storey and State of Nevada, have invented an Improved Rotary (lift and force) Pump; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters marked thereon.

Our invention relates to certain improvements in pumps of that class in which an eccentrically-mounted piston revolves upon its shaft within a cylindrical case, and which are known as rotary pumps; and it consists, mainly, in a novel construction and arrangement of the piston and its connection with the operating eccentric by means of conical or other shaped friction-rollers, either with or without centers, whereby all the working parts are caused to run with the least possible friction, and all wear can be easily compensated. It further consists in the employment of a rubber packing upon the outside or inside cylinder, or both, and a rolling contact of the parts, which gives smoothness and a close fit. A sliding valve or diaphragm is fitted to move automatically with the piston and separate the suction and discharge chambers, and this is also provided with friction-rollers. The ends of the piston are channeled, and an adjustable packing-plate is set up by adjusting-screws, so that water is employed to make the parts as tight as may be desired while in action without creating unnecessary friction.

Referring to the drawing for a more complete explanation of our invention, Figure 1 is a side elevation of the pump with the side of the case removed, showing the packing-plate. Fig. 2 is a vertical section of the pump with the packing-plate removed. Fig. 3 is a perspective view of one of the rollers. Fig. 4 is a transverse section taken through Fig. 1.

Similar letters indicate like parts.

A is the case of the pump, which is made preferably in the form of a short cylinder of large proportional diameter, and provided at one side with suction and discharge chambers B and C, suitable pipes leading from each. These chambers are separated by a partition,

D, and openings E F lead from the chambers into the cylinder proper. A shaft, G, passes through the center of the cylinder, and has secured to it an eccentric, H, the throw of which is made to suit. This eccentric is, in the present case, made of two frustums of cones keyed to the shaft, so as to stand a short distance apart and with their smaller ends toward each other, but it is manifest that other devices might be made to answer. The piston proper I consists of a cylinder made somewhat smaller than the interior of the case, and its outer surface is covered with a rubber packing, J. The interior is made conical, as shown, and between this piston and the eccentric H is placed a number of rollers, K. These rollers are made, in the present instance, in the form of double cones or frustums, the bases lying together, so that when in place they just fit the grooves made by the peculiar shapes of the eccentric and the piston, as before described. The two parts of the eccentric H are so fitted that they can be moved nearer together on the key or feather by nuts r, and by this means, with the conical rollers described above, any wear of the parts can be easily compensated. A washer, S, is placed between the nuts and the sides of the eccentric to give elasticity and relieve the strain. The outer edges of the piston are channeled, as shown at L, for a purpose to be hereafter described. The partition D is slotted, as shown, and a movable sliding diaphragm, M, fits into this slot, being as wide as the piston. This diaphragm is made hollow below, as shown, to relieve the friction of the moving parts. Arms extend upon each side of this diaphragm, and at their ends carry rollers N, which fit into the channels L, and as the piston is carried around by the movements of the eccentric the diaphragm is moved out and in, thus always keeping the divisions complete between the inlet and discharge chambers. A friction-roller, O, also moves at the edge of the diaphragm and against the face of the piston to insure freedom of action. At the ends of the piston are plates P, which are adjusted by set-screws Q from the outside, and are by this means brought as close to the ends of the piston as may be necessary, and when the pump is running the water contained in

the channels L serves as a packing, which is of superior tightness, with the least possible friction.

The operation of our pump will be as follows: The pump being driven by the proper power applied to the shaft G, by means of a pulley or otherwise, the shaft and the eccentric H will be rapidly rotated. This eccentric movement will be communicated to the piston I by means of the rollers K, so that the piston will move around the interior of the pump-case with a rolling contact, thus driving the water from the suction-chamber around to the discharge-chamber, from which it passes by means of a pipe.

By this construction we are enabled to greatly reduce the friction and to render the pump perfectly tight with the least possible wear on the parts.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The piston I, in combination with the rollers K and the adjustable eccentric H, substantially as and for the purpose described.

2. The rollers K, when constructed in the form of a double cone, together with the beveled eccentric H and the beveled interior of the piston, for the purpose of retaining the

latter in its central position in the case at all times, substantially as herein described.

3. The piston I, operated as herein shown, and provided with the elastic face J, for the purpose of giving a perfect rolling contact at all times, substantially as described.

4. The side plates P, with their adjusting-screws Q, in combination with the piston I, substantially as and for the purpose described.

5. In combination with the adjustable packing-plates P, we claim the piston I, when channeled or chambered at L for the purpose of furnishing a water-packing, substantially as described.

6. The sliding diaphragm or partition M, with its friction-rollers O and N, in combination with the piston I, channeled at L, the whole operating substantially as herein described.

In witness whereof we have hereunto set our hands and seals.

SAMUEL ALEXANDER WEST. [L. S.]

LEWIS GOODWIN. [L. S.]

Witnesses to WEST's signature:

C. W. M. SMITH,

PHILIP MAHLER.

Witnesses to GOODWIN's signature:

C. DERBY,

R. V. DEY.