

H. DURRE.  
PUMPS.

No. 179,689.

Patented July 11, 1876.

fig: 1.

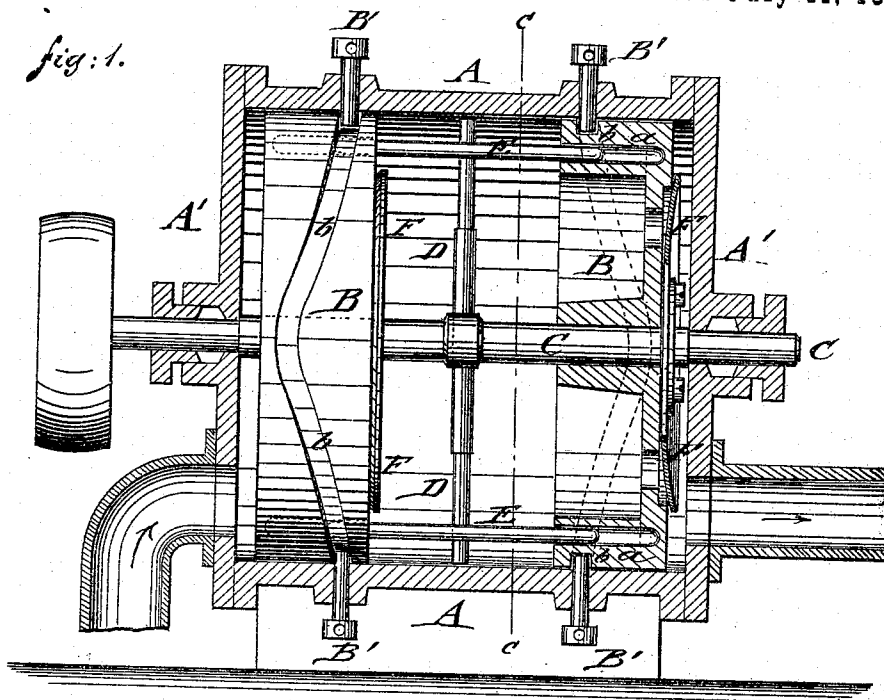
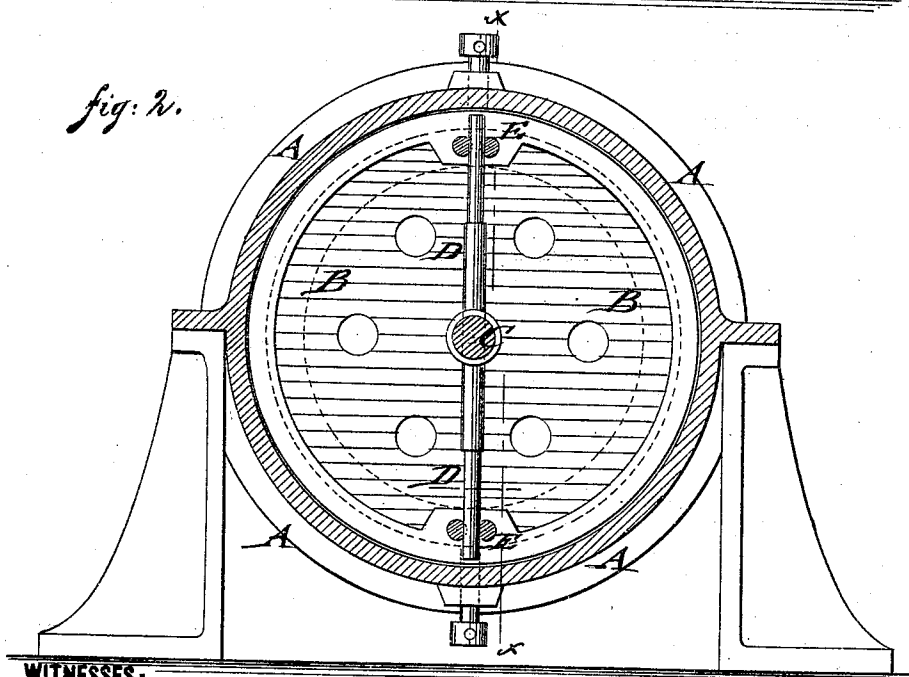


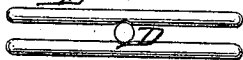
fig: 2.



WITNESSES:

*Chas. Nigg.*  
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Fig: 3.



INVENTOR:

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# UNITED STATES PATENT OFFICE

HENRY DURRE, OF NEW YORK, N. Y.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **179,689**, dated July 11, 1876; application filed November 19, 1875.

*To all whom it may concern:*

Be it known that I, HENRY DURRE, of the city, county, and State of New York, have invented a new and Improved Rotary Pump, of which the following is a specification:

Figure 1 represents a vertical longitudinal section of my improved pump, taken on the line *xx*, Fig. 2. Fig. 2 is a vertical transverse section of the same on the line *cc*, Fig. 1; and Fig. 3 is a detail top view of the piston-carrying pins.

Similar letters of reference indicate corresponding parts.

My invention relates to an improved rotary and suction pump of considerable power and efficacy; and it consists of a revolving shaft, that imparts rotary motion to two sliding pistons, which are simultaneously reciprocated, so as to move alternately toward or away from each other, and produce thereby a compound action of the valves.

In the drawing, A represents a cylindrical casing, which is closed by heads A' fitted tightly thereto. The heads A' carry in suitable stuffing-boxes the central shaft C, which is revolved by suitable power. Two pistons, B, slide in opposite directions on the shaft, and are revolved therewith by a fixed diametrical post or rod, D, that extends midway between the heads from shaft C, and engages two parallel carrier-pins, E, which are applied near each end and side of the post D, passing in longitudinal direction through the casing, and entering socket-holes *a* of the pistons. Simultaneously with the revolving motion, imparted to the pistons by the shaft C, they are reciprocated along the same and the connecting carrier-pins by means of guide-pins B', that pass through top and bottom perforations of the casing A, and extend into wave-grooves *b* at the circumference of the pistons, as seen in Fig. 1. The wave-groove *b* consists of alternately ascending and descending spirals, that are connected by straight or curved parts at their points of junction.

In the drawing the pistons are arranged with wave-grooves composed of four spiral curves, which produce simultaneously with each complete revolution of the piston four strokes of the same within the casing. By increasing the number of spirals of which the wave-groove is composed a greater number of strokes to each revolution of the pistons may be obtained.

The effect of the compound rotating and reciprocating motion thus imparted to the pistons is the compound action of the valves E, which are both arranged at the side facing the delivery-pipe, and operated jointly as suction and force valves.

The forward stroke of the piston, near the suction-pipe, draws the water to the interior of the pump, near the suction-head, the return-stroke forcing it into the chamber formed between the pistons.

The next stroke of the piston draws again water from the suction-pipe, and forces simultaneously the water in the central chamber through the valve of the piston, near the delivery-pipe, into the chamber or space formed between the same and the pump-head.

The outward stroke forces the water in this pipe into the delivery-pipe while filling at the same time the interior chamber by the action of the first piston toward the suction-head of the pump, in connection with the suction exerted by the partial vacuum formed between the pistons on their outward stroke.

The alternating suction and force action of the pistons at each revolution of the same produces an easy-going and powerful pump, of compact shape and superior effect.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A combined suction and force pump, provided with two pistons, simultaneously rotating and reciprocating in the manner and for the purpose specified.

2. In a rotary pump, the combination of the revolving shaft, having a diametrically-extending rod or post, with longitudinal carrier-pins, engaging socket-holes of the pistons, for revolving the same with the shaft, substantially as specified.

3. The combination of the sliding pistons, having wave-grooves at their circumference, with guide-pins of the casing, that project at diametrically opposite points into the wave-grooves to produce the reciprocating motion of the pistons, substantially as specified.

HENRY DURRE.

Witnesses:

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PAUL GOEPEL.