

RECEIVED

JOSEPH S. GODFREY.

Rotary-Pump.

No. 126,540.

Patented May 7, 1872.

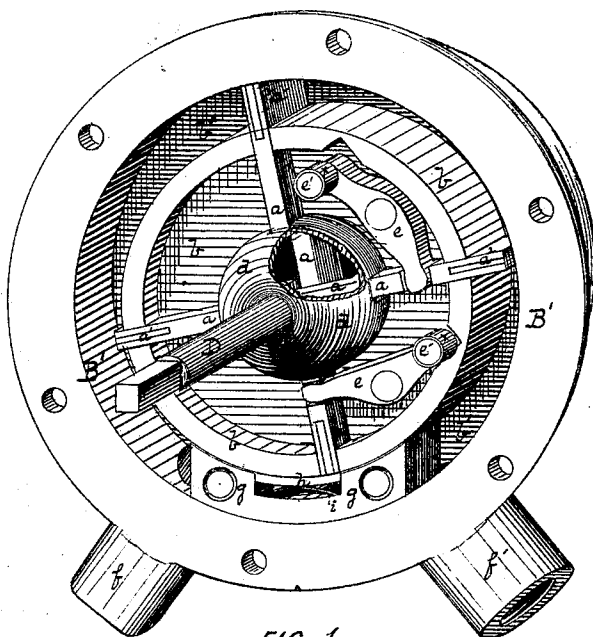


FIG. 1.



FIG. 3.

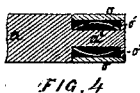


FIG. 4.

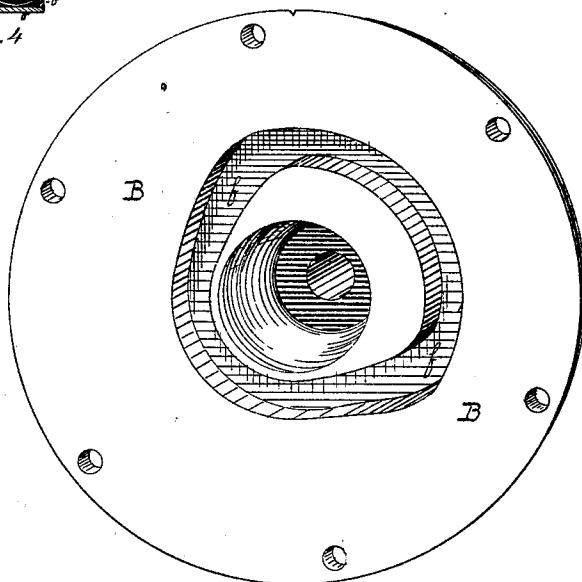


FIG. 2.

WITNESSES: James I. Kay
E. C. Fidler.

INVENTOR: Joseph S. Godfrey,
by Bakewell, Christy & Kerr,
his Attys.

UNITED STATES PATENT OFFICE.

JOSEPH S. GODFREY, OF LESLIE, MICHIGAN, ASSIGNOR TO HIMSELF AND SEARS M. LOVERIDGE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. 126,540, dated May 7, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JOSEPH S. GODFREY, of Leslie, in the county of Ingham and State of Michigan, have invented a new and useful Improvement in Rotary Pumps; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of my improved pump, the cap or top part of the case being removed and a part of the hub being broken away. Fig. 2 is a like view of the under face of the cap or top part of the case, showing the eccentric groove from which the sliding gates are operated; and Figs. 3 and 4, by an end and side view of one of the gates, illustrates the arrangement of the packing therein.

Like letters of reference indicate like parts in each.

My invention relates to an improvement in rotary pumps; and consists in the features of construction and combination hereinafter particularly set forth and claimed.

The top and bottom plates B B' inclose the pump-chamber, in which is the rotary piston or head *b*. This head is made of a diameter somewhat smaller than the chamber, so as to have an annulus, *b'*, around which the water passes, and in which it receives the throw or momentum imparted to it. Of the pipes *f f'* leading to this annulus, either one may be the water-inlet pipe, according to the direction in which the head *b* is rotated, and the other will be the water-outlet pipe. The annulus *b'*, however, is broken by a block, *g*, which is arranged between the inner openings of the pipes *f f'*. The periphery of the head *b* operates as near as may be to the inner face of this block, and the face of the latter is packed by means of packing *h*, which is pressed out so as to make a tight joint, even as it wears away, by means of a spring, *i*. Both are inserted in a recess or seat in the inner face of the block. The piston or head *b* is caused to rotate by power communicated through an axle or shaft, D. Through the piston *b* in the plane of its operation, and at right angles to each other, is

a pair of sliding gate-stems, *a*, each carrying at its outer ends a pair of sliding gates or buckets, *a¹ a²*. The total length of each stem with its bucket is equal, or about equal to the diameter of the piston, plus the breadth of the annulus *b'*, and each being operated by a single motion, one end or gate *a¹* will be drawn in so as to clear the block *g*, and the other end or gate *a²* will be thrust out across the annulus *b'*, so as to act on a new volume of water at each shifting motion. Hence, the same motion which draws in one gate or bucket thrusts out another on the opposite end of the same stem, and vice versa, continuously, so long as the pump is kept going. In notches or recesses cut in these gates I insert the packing *o*, and press it outwardly, so as to make a tight joint, even as it wears out, by means of springs *o'* of suitable form. Notwithstanding the packing, however, some water will leak into or toward the middle of the piston *b*. To prevent this water from operating somewhat on the principle of the water-hammer, and, by filling the notches in the gate-stems, prevent them from being shifted with readiness, I make a hollow chamber, *s*, in the hub *d* at the intersection of the stems, and make it of such capacity, that, whenever by a movement of one gate-stem the water is displaced from one part of the chamber it will be free to flow to some other part. Hence, there will be no concussions to interfere with the practical and successful shifting of the gates or buckets. In order now to effect this shifting, I make use of the levers *e*, one to each gate-stem. One end of each lever *e* is connected with one of the gates or gate-stems, as shown in Fig. 1. The other end of each lever terminates in a wrist, *e'*, which is raised sufficiently high to enter and pass along the eccentric groove *f* made in the top plate or cover B, or in the bottom plate if the levers be arranged on the under side of the piston *b*. The form of this groove and the relation of its varying degrees of eccentricity to the gates *a¹ a²* and levers *e*, are such with reference to securing the motions above described, as can be readily understood by those skilled in the art, the eccentric motion itself, as I believe, being a common one. On each wrist *e'* I arrange a friction-roller, *x*.

Each lever *e* is pivoted at any suitable point with reference to the motion or throw to be given to the sliding gates and gate-stems.

The apparatus described may by obvious modifications be adapted for use as a water-wheel, and its application to this use I include as one of the purposes of my invention.

I am aware that the sliding gates of a rotary pump have been separately attached each to a stem, and have been operated in and out by means of an eccentric groove; but I am not aware that two gates have ever before been attached to the opposite ends of a single stem, so that one gate shall be thrust out and the other in by a single motion.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The stem *a* carrying its gates or buckets *a*¹ *a*², in combination with an eccentric groove, *f*, and lever *e*, substantially as set forth.
2. The gate-stems *a* crossing each other, as described, in combination with the hollow hub *d*, substantially as and for the purposes set forth.

In testimony whereof I, the said JOSEPH S. GODFREY, have hereunto set my hand.

JOSEPH S. GODFREY.

Witnesses:

A. S. NICHOLSON,
G. H. CHRISTY.