

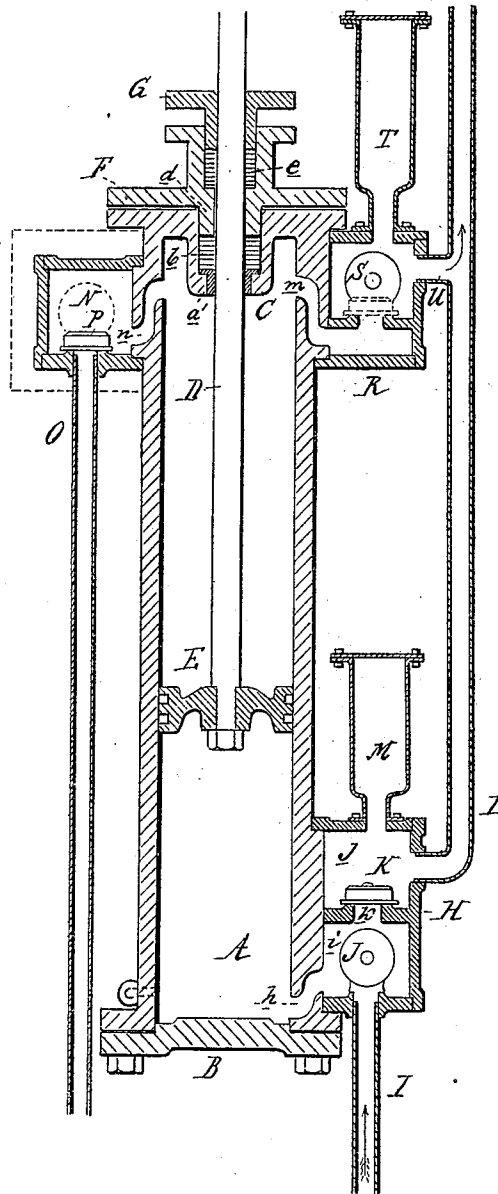
(No Model.)

T. M. JOHNS & R. GAGE.

PUMP.

No. 252,946.

Patented Jan. 31, 1882.



Attest:

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UNITED STATES PATENT OFFICE.

THOMAS M. JOHNS AND ROBERT GAGE, OF JACKSON, MICHIGAN.

PUMP.

SPECIFICATION forming part of Letters Patent No. 252,946, dated January 31, 1882.

Application filed September 14, 1881. (No model.)

To all whom it may concern:

Be it known that we, THOMAS M. JOHNS and ROBERT GAGE, of Jackson, in the county of Jackson and State of Michigan, have invented an Improvement in Pumps, of which the following is a specification.

The nature of this invention relates to certain new and useful improvements in the construction of pumps of that class usually denominated "double-acting pumps;" and the invention consists, first, in the peculiar construction and application of the valve-chambers, which are removably secured to the pump-cylinder; second, in the peculiar construction of the stuffing-box; and, third, in the peculiar construction, arrangement, and combinations of the various parts, all as more fully hereinafter set forth.

In the accompanying drawing, which forms a part of this specification, and in which our invention is shown in central vertical section, A represents the pump-cylinder, provided with the removable head B upon one end, while to the opposite end of the cylinder is cast the inwardly-projecting stuffing-box C, through which the pump-rod D reciprocates, said pump-rod being provided with a plunger, E. The stuffing-box C is provided with the bushing *a'*, surrounding the pump-rod, above which is a packing, *b*, and upon this is another bushing, *d*, which is held in place by the head F, of which it forms an integral part. Above this bushing *d* is placed a packing, E, which is compressed and held to place in the ordinary manner by means of a follower, G. By this construction we provide a double stuffing-box, through which the pump-rod reciprocates, and thereby very materially lessen the danger of leakage at that point.

Near the lower end of the cylinder A is removably secured a double valve-chamber, H, a channel or water-way, *h*, being cut through the wall of the pump-cylinder, to afford communication between such cylinder and the lower valve-chamber.

I is a suction-pipe projecting downward from the lower valve-chamber, *i*, said chamber being provided with a proper valve, J, which closes the outlet of the suction-pipe I. From this valve-chamber *i* communication is had with the upper chamber, *j*, through the channel *k*,

which is closed by a similar valve, K, the said upper valve-chamber, *j*, being provided with a discharge-pipe, L, and an air-chamber, M. Upon the opposite side of the pump-cylinder and near the upper end thereof is removably secured a single valve-chamber, N, provided with a suction-pipe, O, and a valve, P, communication being had between such valve-chamber and the cylinder through the channel *n*. Upon the opposite side from this valve-chamber N is similarly secured the valve-chamber R, which is provided with the valve S and air-chamber T, the valve-chamber being connected with the discharge-pipe L by means of a pipe, U, while communication between this valve-chamber and the cylinder is had through the channel *m*. It is designed by us to have one wall of each of the valve-chambers separately removable, or provided with hand-holes, so that communication can be had to the interior of the valve-chambers without necessarily entirely removing them, and to afford facility for cleaning out the chambers or putting in new valves, as occasion may require.

In practice, in the upstroke of the plunger water is drawn up through the pipe I into the lower valve-chamber, *i*, from whence it passes into the cylinder, following the plunger its entire stroke. In the downstroke of the plunger the water is forced back through the lower valve-chamber, *i*, closing the valve J and finding exit through the valve K into the upper valve-chamber, *j*, and out through the discharge-pipe L, while at the same time water is drawn through the pipe O into the valve-chamber N, from whence it passes into the discharge L through the valve chamber R and pipe U. If preferred, the two discharge-valve chambers may be provided with separate discharge-pipes, so that two streams of water may be thrown.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A pump-cylinder, A, provided with a removable head, B, upon one end, the opposite head being cast with and forming an integral part of said cylinder, and provided with the inwardly-projecting stuffing-box C, and ports *h m n*, in combination with the valve-chambers H R N, secured to the outside of said cylinder, substantially as set forth.

2. A stuffing-box for pump-rods, consisting

of the box C, bushing *a'*, and packing *b*, in combination with the follower F, provided with the bushing *d* and packing *e*, and the outer follower, G, substantially as and for the purpose
5 specified.

3. In a double-acting pump, and in combination with the cylinder A thereof, the valve-chambers H, N, and R, provided with the valves J, K, P, and S, air-chambers M and T, and

pipes I, O, L, and U, constructed, arranged, and operating substantially in the manner and for the purposes described.

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Witnesses:

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