

W. S. Judd,

Oscillating Pump,

N^o 39,577.

Fig. 1. Patented Aug. 18, 1863.

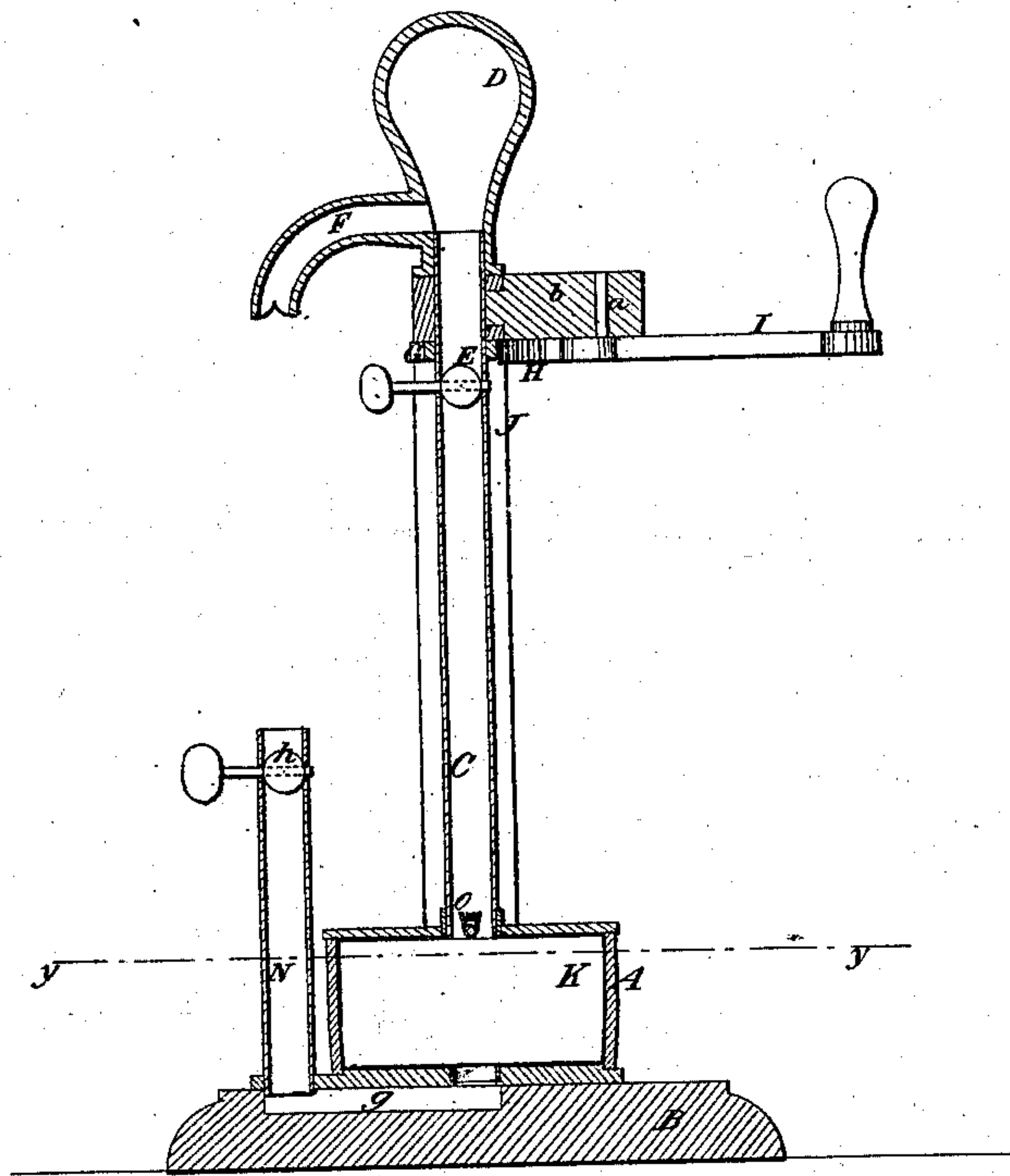


Fig. 3.

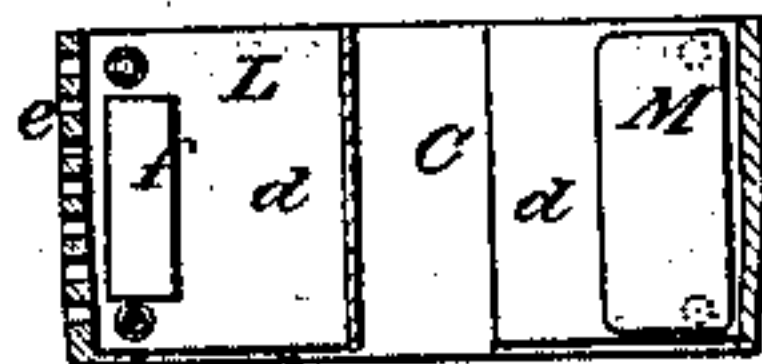
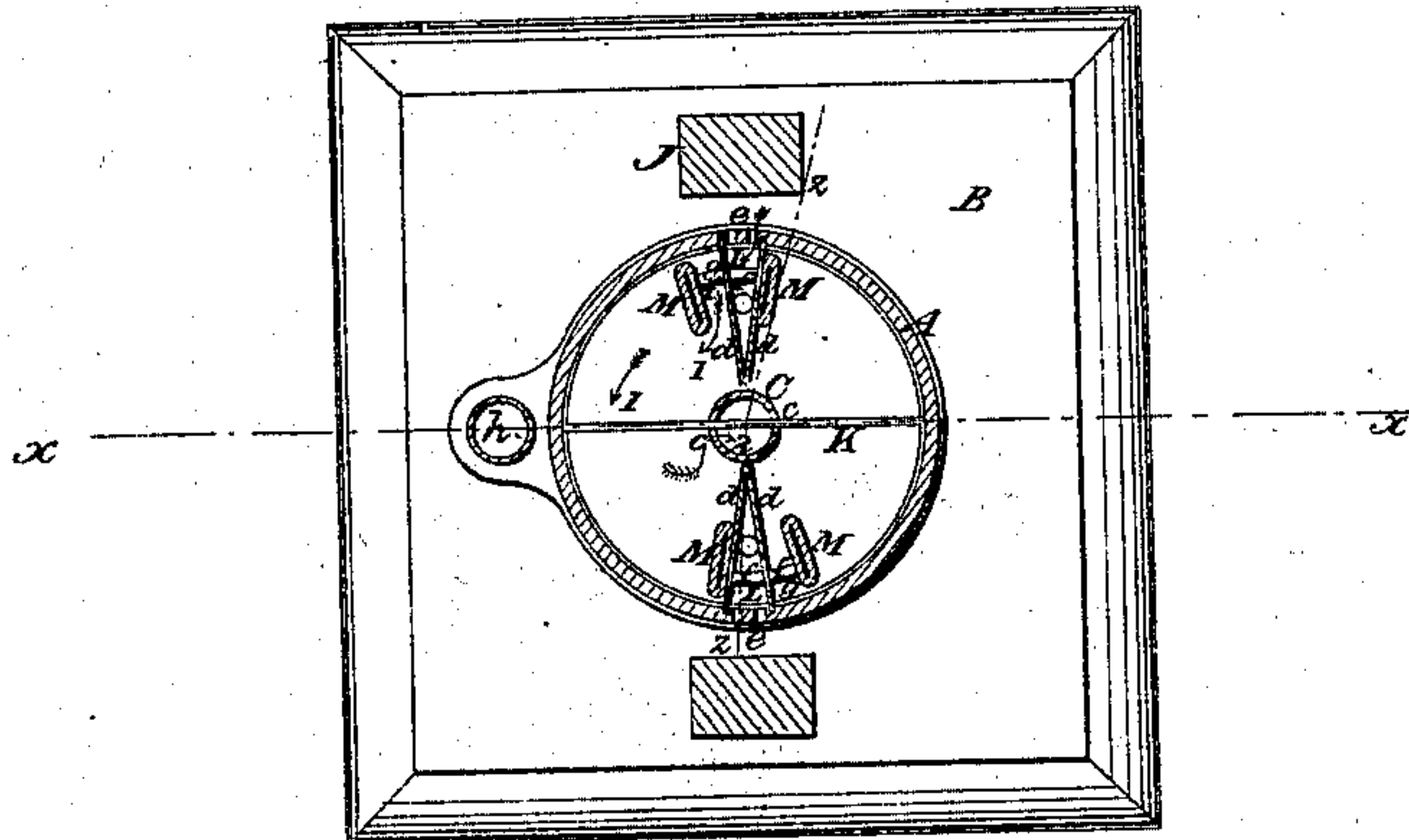


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 39,577, dated August 18, 1863.

To all whom it may concern:

Be it known that I, WILLIAM S. JUDD, of Chanhassen, in the county of Carver and State of Minnesota, have invented a new and Improved Force-Pump; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a horizontal section of the same, taken in the line *y y*, Fig. 1; Fig. 3, a detached section of the pump-cylinder, taken in the line *z z*, Fig. 2.

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

This invention relates to an improved submerged pump; and it consists in the employment or use of a tubular rotating or reciprocating piston-rod in connection with a piston, valves, and stationary water-passages within the cylinder, all arranged in such a manner as to form a very simple and efficient pump of the class specified, and one which may be used to elevate the water to the top of the well only, or to force water at a considerable distance, as may be required.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a cylinder which is permanently attached to a base-plate, B, and C is a tubular piston-rod, which is fitted centrally in the cylinder A, and extends upward a suitable distance above the top of the well. The upper end of the piston-rod C is fitted within an air-chamber, D, and it has a valve, E, within it a short distance below the air-chamber.

F is a discharge-pipe which projects from the lower part of the air-chamber; and G is a pinion which is placed on the rod C and gears into a segment-rack, H, which has a handle, I, attached to it, the segment-rack H working on a pin, *a*, as a center. (See Fig. 1.) The air-chamber D is fitted on the upper cross-beam of a framing, J, the pin *a* passing through a projection, *b*, which is attached to the same. The lower part of the piston-rod C, which is within the cylinder A, has slots *c* made in it at opposite points to admit of a piston, K, passing through, said piston being equal in

length to the diameter of the cylinder, so that its ends may work in contact with the inner side of the cylinder. The slots *c* are made of sufficient capacity to serve as openings to admit of the water passing into the piston-rod. Within the cylinder A there are placed two pairs of plates, *d*, arranged in V-form at opposite sides of the piston-rod C. These plates are permanent, and their outer ends are attached to the inner side of the cylinder, while their connected or attached ends are in contact with the rod C, as shown in Fig. 2. These plates *d*, thus arranged, form water-chambers L, and they communicate with the water in the well by means of perforations *e*, which are made in the cylinder A, as shown in Fig. 2. In each plate *d* there is made an opening, *f*, and M are valves, which are connected by rods *g* in pairs, a pair of rods being for each water-chamber L. The rods *g* pass through the plates *d*, and they cause the two valves of each pair to work or move simultaneously, one moving off from the opening *f* in its plate *d*, while the other closes over the opening *f* in its plate. This will be fully understood by referring to Fig. 2. The piston-rod C is operated with a reciprocating rotating motion—that is to say, it is turned first in one direction and then in the other by actuating the segment-rack H. The piston K is, of course, moved in the same way, and the valve behind the suction part of the piston is drawn into the cylinder A through the water-chambers L, as indicated by the arrows I, while the water in front of the forcing end of the piston is pressed forward and ejected through one of the slots *c* into the piston-rod C and up the same into the air-chamber and out through the discharge-pipe F. On the return motion of the piston the water that was previously drawn into the cylinder is forced into the piston-rod C, as indicated by the arrows in Fig. 2, the valves M opening and closing under the action of the piston. When it is desired to force the water from the pump the valve E is closed, so that the water cannot be discharged from the pipe F, and it is forced through the lower end of the piston-rod C and through a passage, *g'*, into a vertical pipe, N, which may be extended upward to a proper height. In the pipe N there is a valve, *h*, which is closed when said pipe is

not used. In the lower part of the piston-rod C there is a valve, O, which serves as a check-valve. The arrangement is extremely simple and efficient, and may be used advantageously for domestic or other purposes.

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

The tubular reciprocating rotating piston-

rod C, provided with the piston K, in combination with the plates *d*, placed within the cylinders A, and provided with valves M, all arranged to operate as set forth, and either with or without the pipe N.

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