2 Sheets—Sheet 1.

M. S. MILLARD.

Pump.

No. 227,177. Patented May 4, 1880.

Fig. 1.

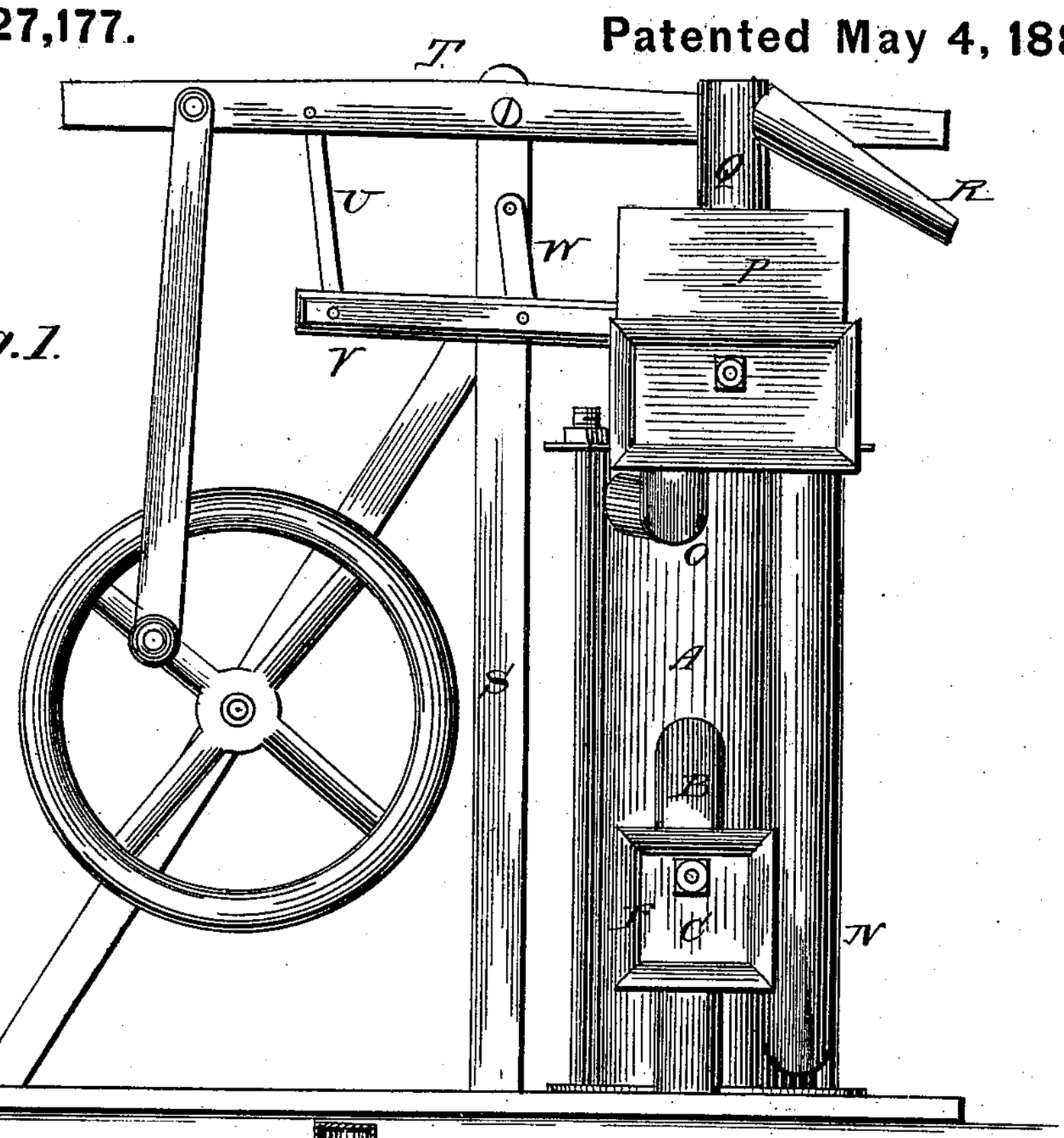
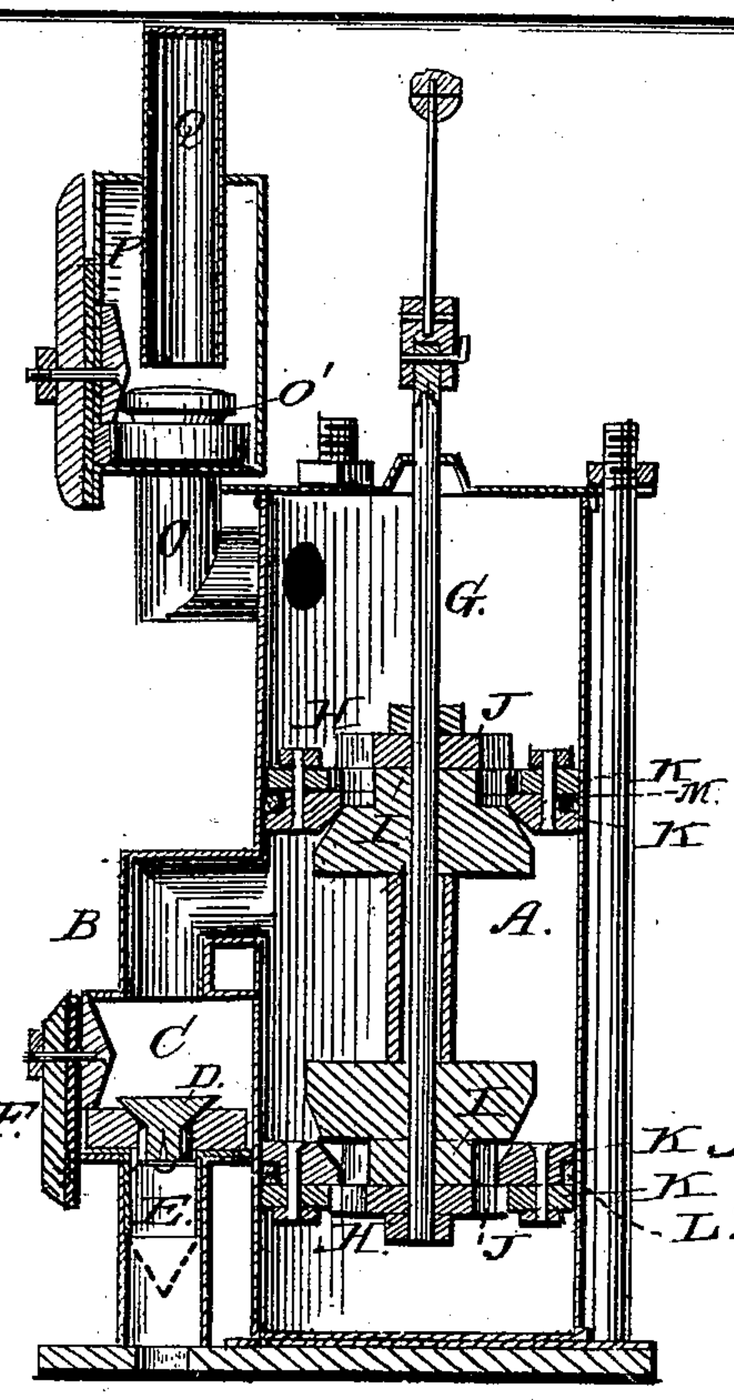


Fig. 2.



Witnesses:
Fred. G. Dieterich
J. M. Littell,

Inventor:
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by
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Atty's.

2 Sheets—Sheet 2.

M. S. MILLARD.

Pump.

No. 227,177. Patented May 4, 1880.

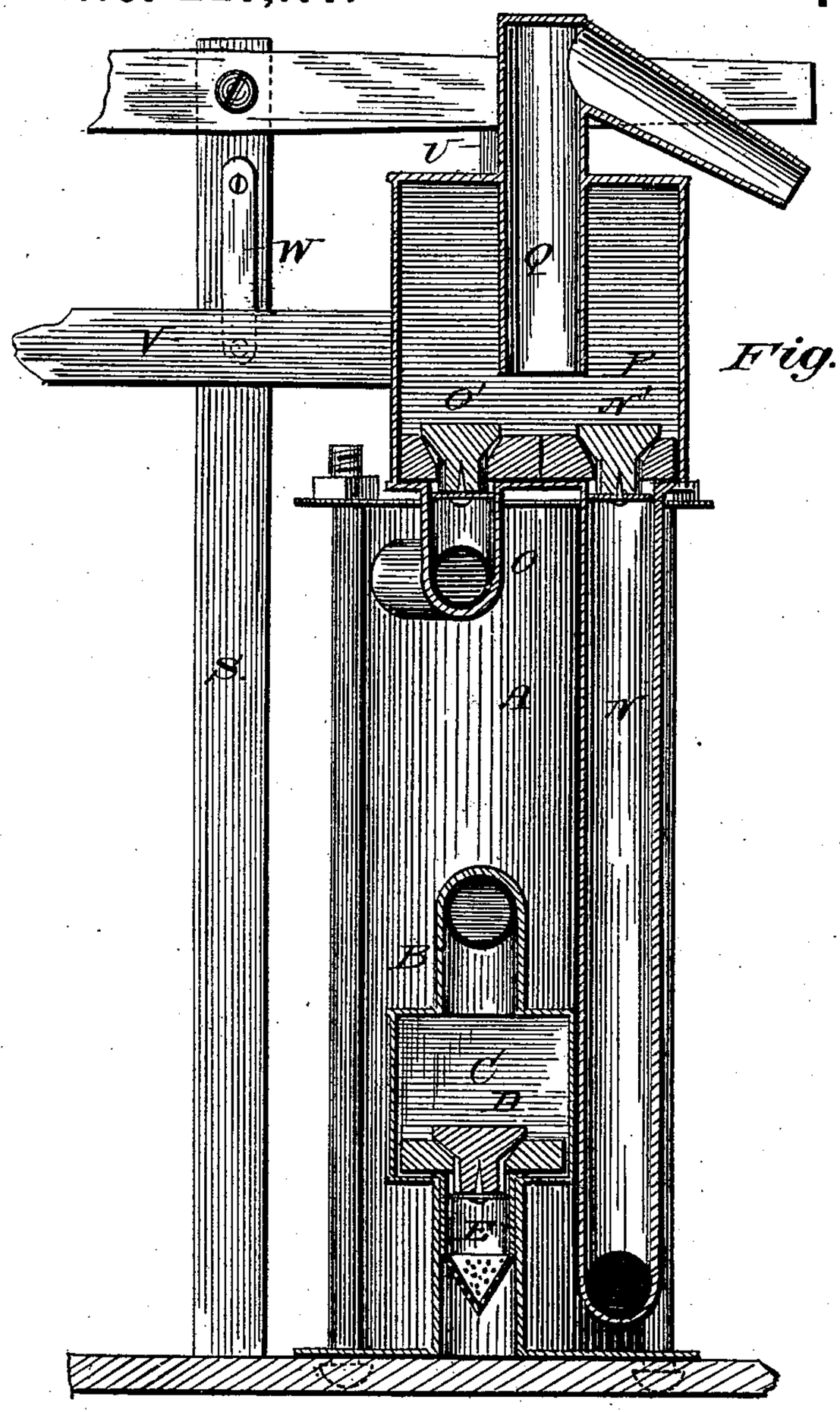

Fig. 3.

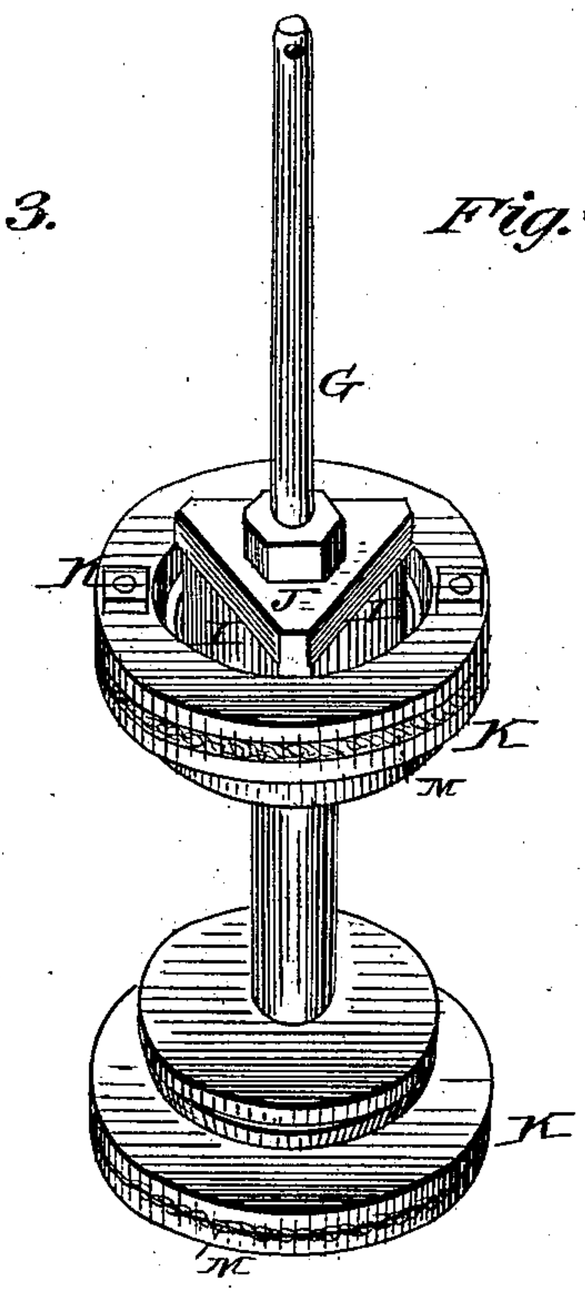

Fig. 4.

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UNITED STATES PATENT OFFICE.

MARTIN S. MILLARD, OF KANSAS CITY, MISSOURI.

PUMP.

SPECIFICATION forming part of Letters Patent No. 227,177, dated May 4, 1880.

Application filed September 25, 1879.

To all whom it may concern:

Be it known that I, MARTIN S. MILLARD, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a side view. Fig. 2 is a vertical sectional view. Fig. 3 is a vertical sectional view of Fig. 2, and Fig. 4 is a detail view of the plunger and piston.

Corresponding parts in the several figures are denoted by like letters of reference.

This invention relates to double-acting force-pumps; and it consists in certain improvements in the construction of the same, which will be hereinafter fully described, and particularly pointed out in the claim.

In the drawings, A represents the cylinder, which is provided with a pipe, B, for the admission of water, said pipe located about centrally upon its side.

The pipe B, the lower end of which extends down into the water, is provided with a chamber, C, containing the foot-valve D, below which is arranged a funnel-shaped strainer, E, to which, as well as to the valve, access may readily be had by removing the cover F of the valve-chamber.

The plunger consists of a shaft, G, moving vertically in a bearing in the upper head of the cylinder and carrying the piston-valves H H. The latter, which are in the shape of cone-frustums, are firmly secured to the rod or shaft a suitable distance apart, with their bases turned toward each other.

At the small ends of the valves are secured triangular blocks I I, upon the outside of which are secured similar blocks J J, slightly larger.

The seats of the valves are ground in rings K K, sliding upon the blocks I I, and prevented by the blocks J J from coming off or being displaced.

The rings K, which are fitted in the cylinder, are provided at their edges with annular grooves L for the packing M.

Near its upper and lower ends the cylinder A is provided with exit-pipes N O, leading to a chamber, P, located above the cylinder. Valves N′ O′ close the respective openings of the pipes N O.

Q is a pipe secured in the top of chamber P, and extending nearly to its bottom—not so low, however, as to interfere with the operation of the valves. At its upper end the pipe Q is provided with the spout R.

S is the post or upright, to which is pivoted the lever or walking-beam T, by which the pump is operated. Said lever is provided, at equal distances from its fulcrum, with downwardly-projecting pivoted rods U U, to the lower ends of which is pivoted a connecting-rod, V, pivoted at its outer end to the plunger-shaft. At its center the rod V is provided with a strap, W, projecting upwardly and pivoted to the upright S.

In the drawings, the lever T is shown to be operated by a pitman and crank-wheel; but any other suitable mechanism may be employed.

The operation is as follows: On the downstroke of the plunger the upper valve is separated from its seat, and the water, entering the space between the valves, is admitted into the space above the upper valve. On the upstroke the upper valve closes and the water above it is forced into chamber P. At the same time the lower valve is opened; and the water between the valves enters the space below said valve, to be, on the next downstroke, forced up into chamber P, and from thence out through the spout.

The chamber P, it will be seen, forms an air-chamber, by which a steady flow of water is caused.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

In a double-acting force-pump, the valves H H, consisting of cone-frustums having triangular blocks I I J J, and sliding seat-rings K K, provided with packing-grooves, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

MARTIN S. MILLARD.

Witnesses:

WILLIAM LACY,

E. L. BROWNE.