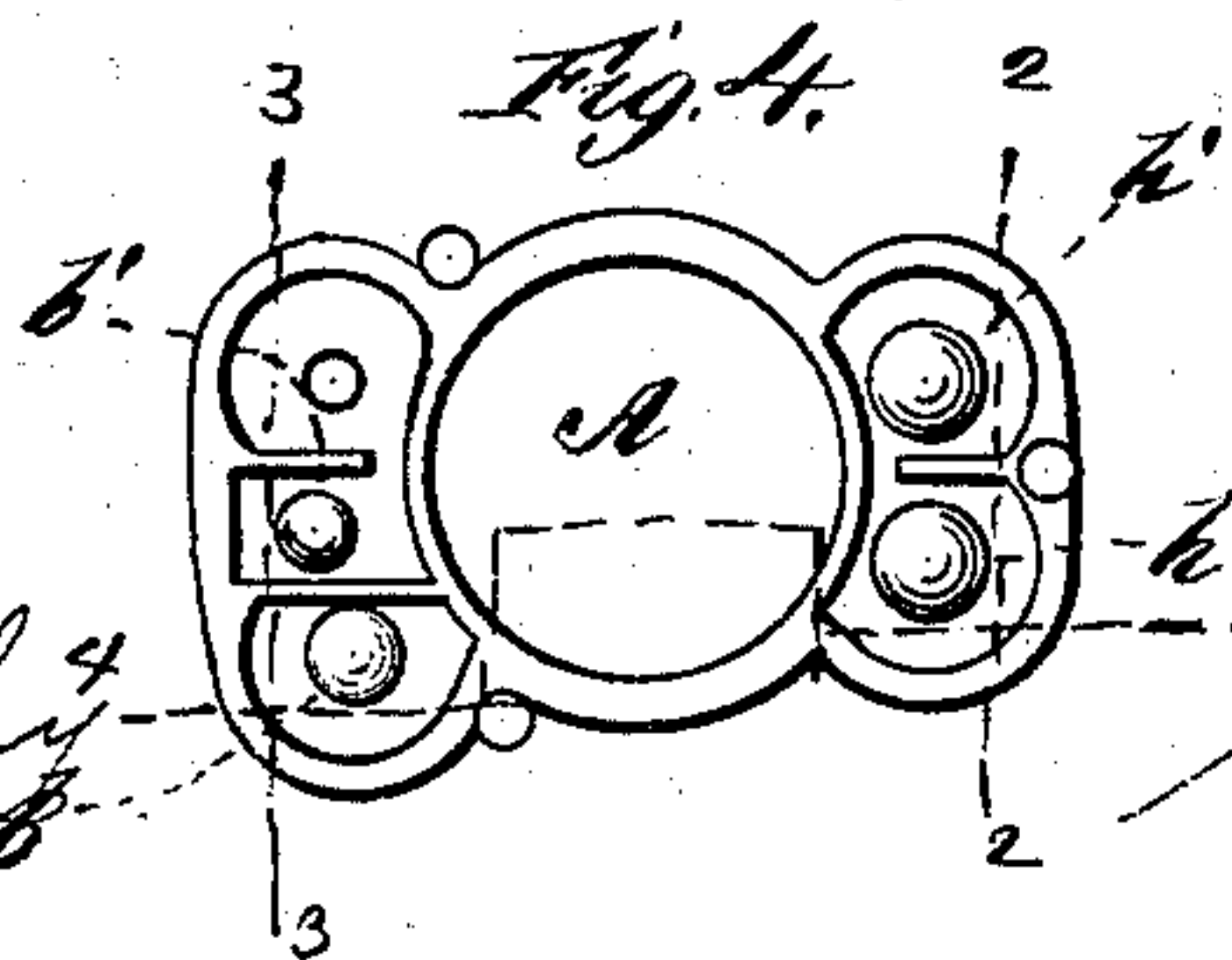
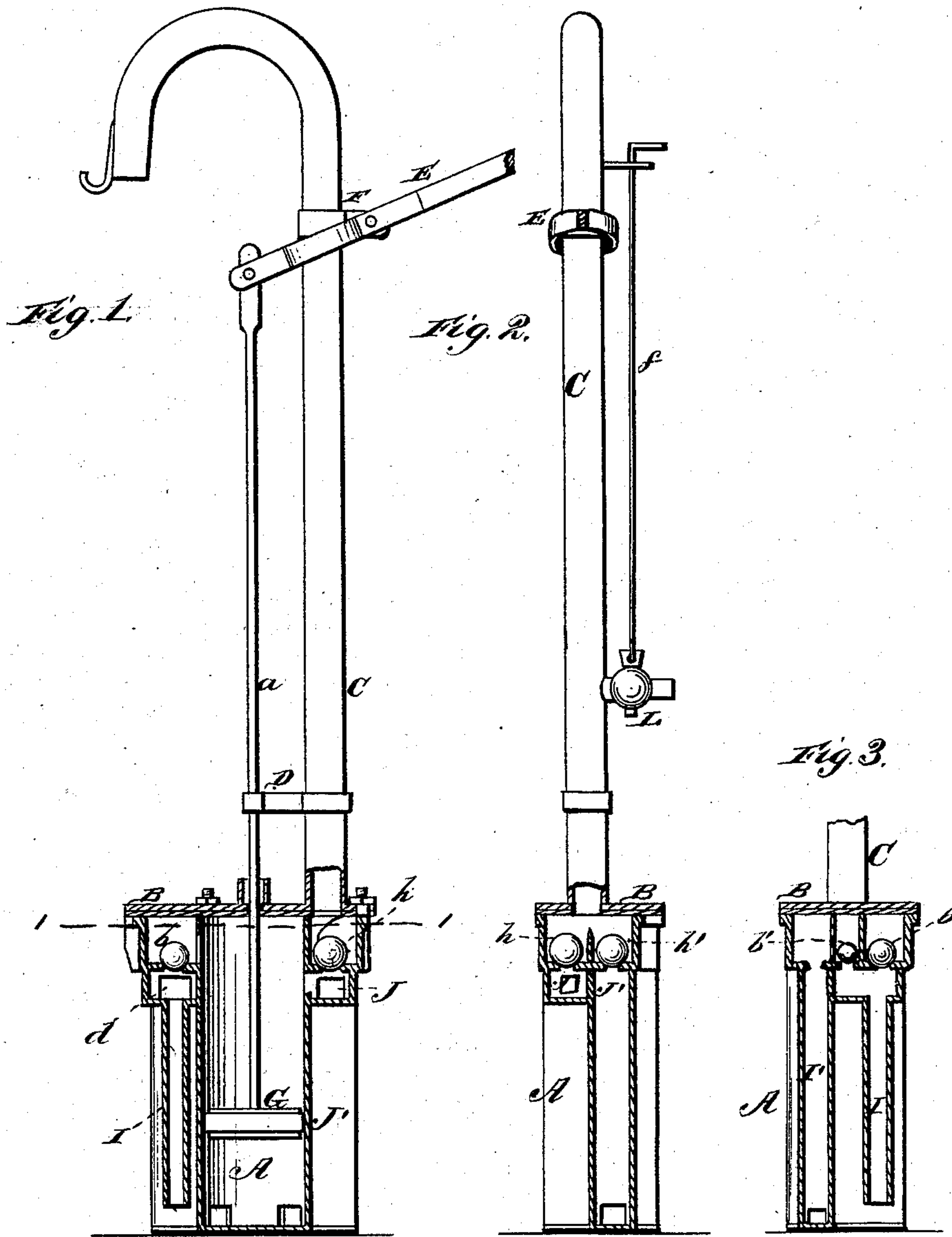


J. F. RYAN.
Pump.

No. 219,529.

Patented Sept. 9, 1879.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN F. RYAN, OF MAYSVILLE, KENTUCKY.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **219,529**, dated September 9, 1879; application filed June 21, 1879.

To all whom it may concern:

Be it known that I, JOHN F. RYAN, of Maysville, in the county of Mason and State of Kentucky, 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 construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 is a partial vertical sectional view taken through the line 4 4 in Fig. 4. Fig. 2 is a vertical view, partially in section, through the line 2 2 in Fig. 4. Fig. 3 is a partial vertical sectional view through line 3 3 in Fig. 4, and Fig. 4 is a sectional plan view taken through line 1 1 in Fig. 1.

The nature of my invention consists in the construction and arrangement of a pump, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the pump-cylinder, closed at the bottom, and provided at the top with a cover, B, which is suitably packed and fastened with bolts or otherwise, as desired.

In the cover B is fastened the discharge-pipe C, on which is a guide, D, for the passage of the plunger-rod *a*, the upper end of said rod being connected to one end of the handle E. This handle is pivoted to a collar or bearing, F, which is secured to the discharge-pipe.

G is the piston or plunger working in the cylinder A and attached to the lower end of the rod *a*. This plunger is preferably to be made in double-cup form, and capable of expansion to compensate for wear.

On one side of the cylinder A is the suction-pipe I, open at the lower end, and has its upper end provided with a ball-valve, *b*.

The suction-pipe opens above the valve *b* into the cylinder, and below the valve it opens into a passage, *d*, which communicates with a tube, I', said passage *d* having a ball-valve, *b'*, in its upper end. The lower end of the tube I' opens into the cylinder A at the bottom.

On the opposite side of the cylinder are outlet-passages J J', opening, respectively, from the top and bottom of the cylinder, and provided at the top with check ball-valves *h h'*.

The lower end of the discharge-pipe C is directly over the space between the valves *h h'*, so that the water coming from either outlet-passage will pass out through said discharge-pipe.

It will be understood that the pump-cover B is extended so as to cover and close the various side passages, as shown and described.

All the four valves, it will be noticed, are in my pump placed at the upper end of the cylinder, so that by removing the cover all the valves and the plunger are exposed to view, and if anything is out of order it can be seen at a glance and such repairs made as are necessary without removing anything else.

The ball-valves are to be made of rubber, formed over iron cores or centers to give them sufficient weight to make them seat promptly.

The pump is drained, to keep from freezing in winter, by means of a plug-cock, L, inserted in the pipe C about four feet below the cistern or well cover, and a rod, *f*, running up from said plug-cock to or above the pump-handle, the upper end of said rod forming a handle for operating the same.

One of the main advantages of my invention is that by the arrangement of valves and ports as described the pump will never lose its priming, but is always ready to start at the first stroke.

At the downward stroke of the piston G the water below the same is forced up through the tube J', lifting the valve *h'*, and the water passes out through the discharge-pipe, while at the same time the suction draws the water up through the pipe I, lifting the valve *b*, and causing it to fill the cylinder above the piston.

At the upward stroke of the piston the water above it is forced out at J, lifting the valve *h*, and then out through the discharge-pipe. This action seats the valve *b*, and the suction

draws the water from the well through I and *d* down the tube I' and into the bottom of the cylinder.

I claim—

The combination of the suction-tubes I I', communicating above and below with the cylinder A, the valves *b b'*, the chambers J J', valves *h h'*, pipe C, and operating-piston G, as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN FRANKLIN RYAN.

Witnesses:

GEO. W. CHAMBERS,
C. D. OUTTEN.