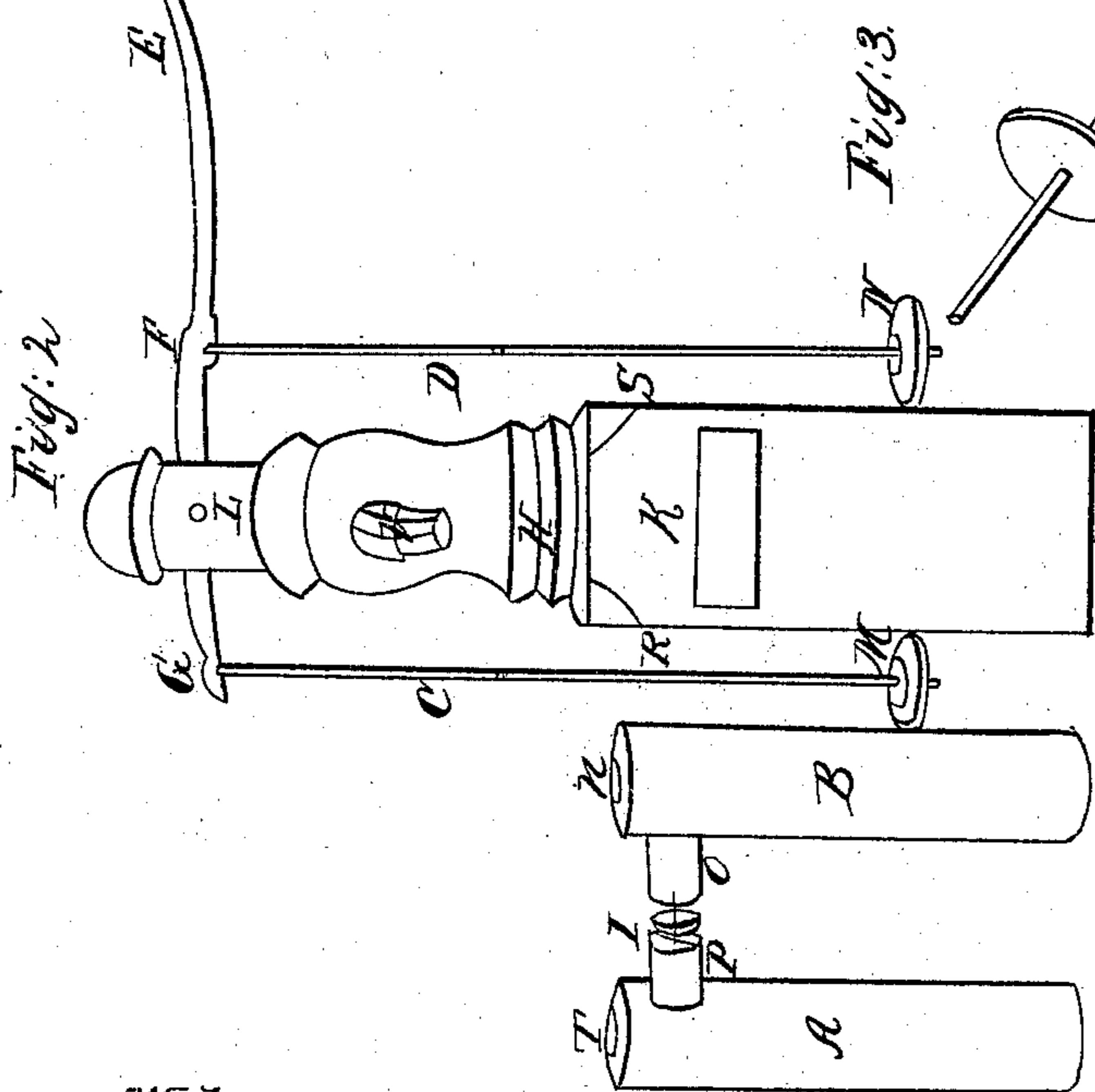
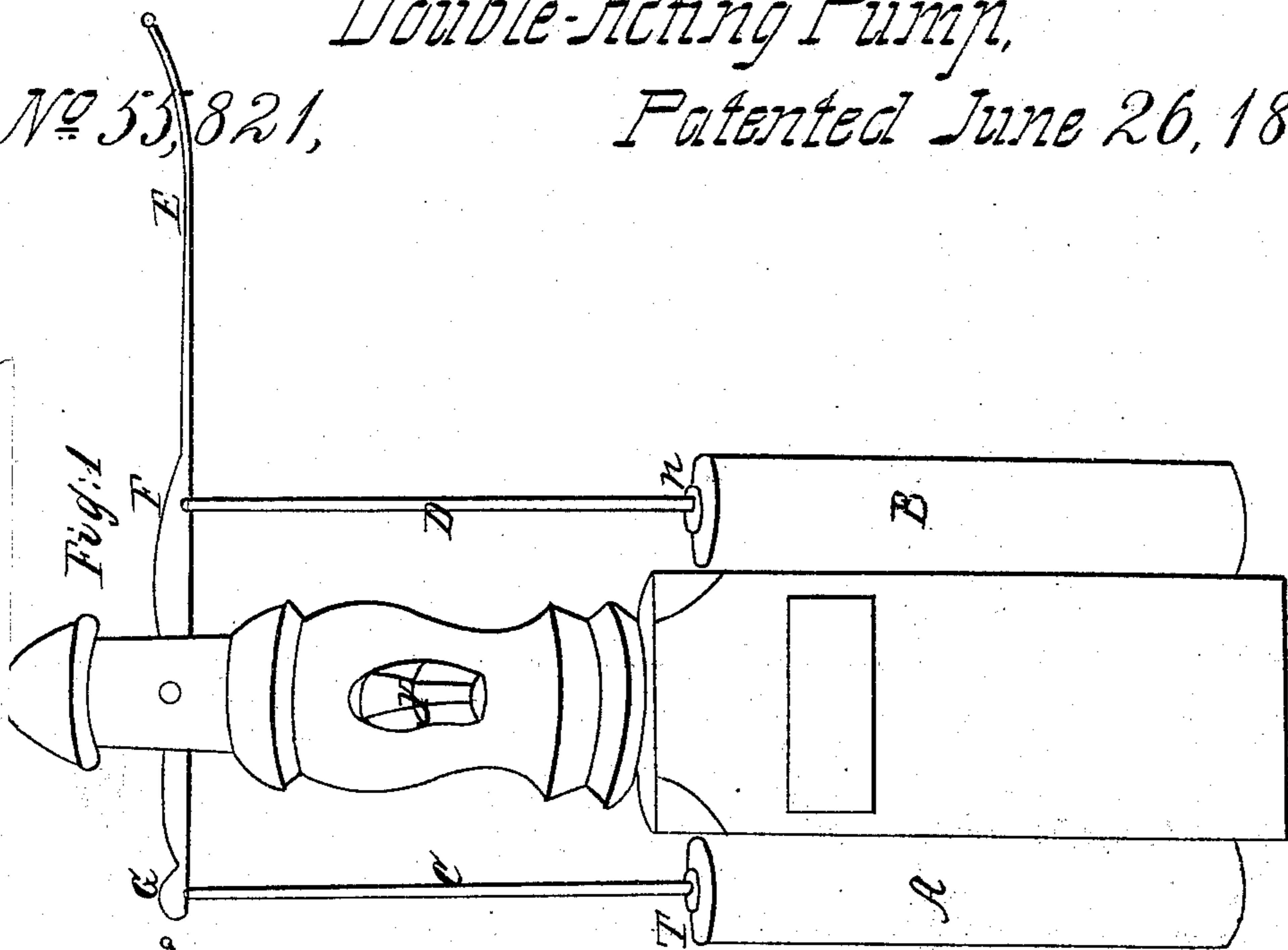


*R. Cochran,*

*Double-Acting Pump,*

*No 55,821,*

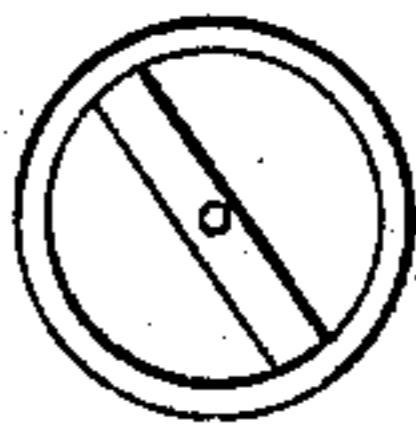
*Patented June 26, 1866.*



*Fig: 3*



*Fig: 4*



*Witnesses*

*M. D. Hugley*  
*A. Jackson*

*Inventor*

*Robert Cochran*

# UNITED STATES PATENT OFFICE.

ROBERT COCHRAN, OF MORRISON, ILLINOIS.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 55,821, dated June 26, 1866.

*To all whom it may concern:*

Be it known that I, ROBERT COCHRAN, of Morrison, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Pumps; and I hereby declare that the following is a true and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the use of one valve only in the construction of a pump with two cylinders, having pistons and plungers attached, presenting at once a force-pump with very little machinery, both strong and durable.

Figure 1 in the annexed drawings represents a front view, showing the cylinders A B and pistons C D, connected to lever E in a joint, F G. Fig. 2 exhibits the stock H and cylinders taken apart, showing a plan view of my valve at I.

Letter H represents the pump-stock, with the bore extending through it from the point K to the point L, near the top.

A B are the cylinders, with a bore of sufficient size to receive the plungers M N. The cylinders A B are provided each with a pipe, O P, which are inserted in the stock at R S, fitting snugly in holes that pass into the bore of the stock, my valve playing between the ends of the pipes P O, as shown at I in Fig. 2, when in the stock of the pump.

The bottoms of the cylinders are made fast to the stock of the pump by a strap which is screwed to the bottom of the pump-stock, with the ends hooked inside the cylinders.

C D are the pistons which pass through the top of the cylinders at Y N, and are made fast to the lever E in the points F G. The bottom ends of the pistons pass through the plungers M N, and are held by a burr on the under side. The plungers are provided each with six holes, that pass through them near the edges, with a leather or rubber cap that shuts down over the holes on the top of the plunger as the pistons are drawn up.

V is the spout. The distance from the spout to the top of the cylinders may be lengthened as the depth of the well or cistern may require.

The operation of my pump is as follows: When the long end of the lever E is raised the piston D raises the plunger N in the cyl-

inder B, and the piston C, attached to the short end of the lever, pushes the plunger M down in cylinder A, the water is forced through the pipe O, as seen in Fig. 2, my valve I is driven against the pipe P on cylinder A, closing it, and the water passes up the stock. At the same time the water passes through the holes in the edge of the plunger M and fills cylinder A. When the long end of the lever E is pulled down piston C raises plunger M in cylinder A, the water is forced through the pipe P, valve I is driven against the end of pipe O, closing it, and water passes up the stock. At the same time piston D pushes plunger N down in cylinder B the water passes through the holes in the edge of plunger N, and fills the cylinder.

It will be seen that as the water is forced into the pump-stock both by the downward and upward motion of lever E, a continuous stream will flow from spout V.

I construct my valve I, as seen in Fig. 2, out of any metal of known durability and strength, make it round, one-eighth to one-quarter of an inch thick, and large enough to close the ends of the pipes that pass into the pump-stock from the cylinder. I pierce a hole in the center of the valve large enough to receive a pivot, as shown at Fig. 3, of sufficient strength to keep the valve in its place, the length as required for the distance between the ends of the pipes it plays between in the pump-stock.

The ends of the pipes P and O are provided with a bearing set in the pipes, so that the surface will be even with the edges of the pipe, and provided with a hole in the center for the ends of the pivot on both sides of the valve to play, as shown in Fig. 4.

Having thus described my invention, its operation, and manner of construction, what I claim, and desire to secure by Letters Patent, is—

The combination and arrangement of the valve I, pipes O and P, and cylinders A and B, substantially as herein described and set forth.

ROBERT COCHRAN.

Witnesses:

M. D. HIGLEY,  
A. J. JACKSON.