

W. W. Robinson,

Cattle Pump.

N<sup>o</sup> 32,485.

Patented June 4, 1861.

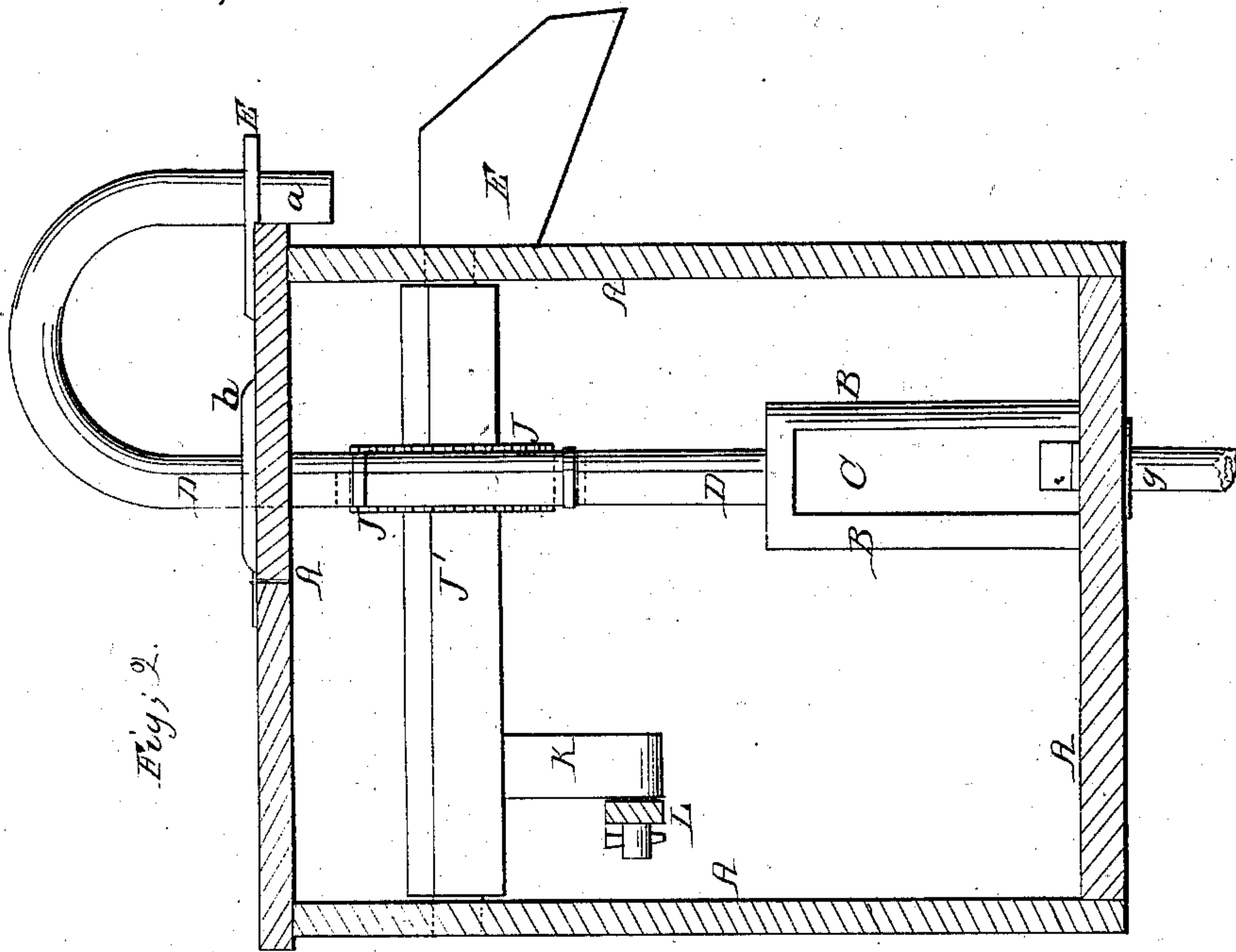


Fig. 2.

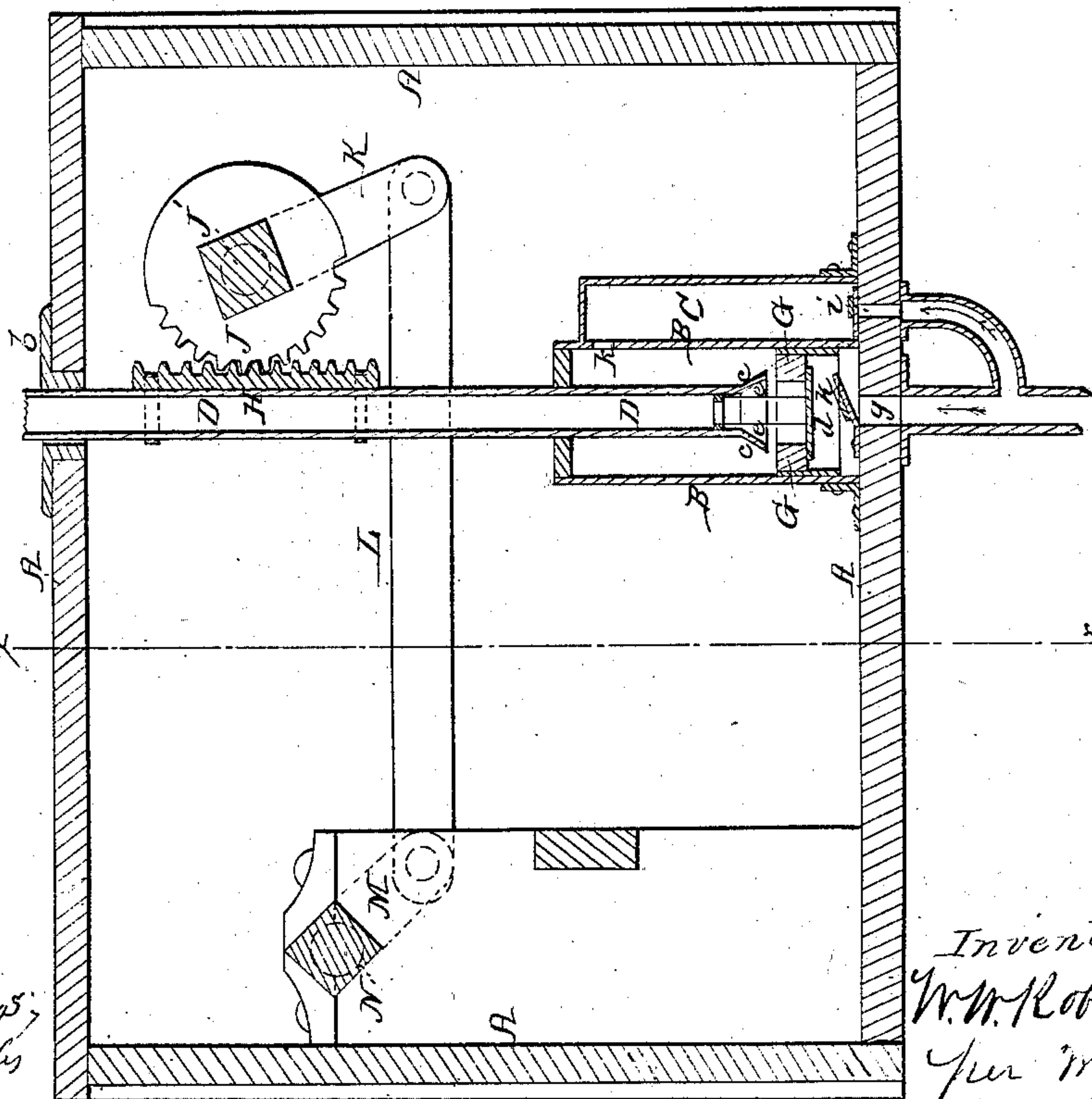


Fig. 1.

Witnesses,  
J. W. Coombs  
R. S. Spencer

Inventor,  
W. W. Robinson  
per Messrs H & C  
Attorneys



# UNITED STATES PATENT OFFICE.

W. W. ROBINSON, OF RIPON, WISCONSIN.

## PUMP.

Specification of Letters Patent No. 32,485, dated June 4, 1861.

*To all whom it may concern:*

Be it known that I, W. W. ROBINSON, of Ripon, in the county of Fond du Lac and State of Wisconsin, have invented a new and useful Improvement for Operating the Piston-Rod of a Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a sectional view through a double acting pump having a hollow piston showing the application of my device for operating the pump. Fig. 2 is a transverse section through Fig. 1 in the vertical plane indicated by red line *x, x*.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to a novel device for operating a double acting force pump having a hollow discharging piston.

It consists in screwing to the hollow piston in a suitable manner a rack—the teeth of which engage with a sector rack which latter is keyed to a rock-shaft and receives an alternate rocking motion from a crank-shaft through the medium of a pitman and a vibrating arm, as will be hereinafter described, so that a rotary motion given to the crank shaft will communicate a uniform alternate vertical motion to the hollow piston.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, A, represents a box which is shown merely as a support for the pump and mechanism for operating it.

B, is the pump cylinder, and C, is a chamber formed on one side of this cylinder. The cylinder B, with its chamber C, are secured down to the bottom of the box A, and carefully packed so that they will not leak at their lower ends. The top of cylinder B, and the chamber C, have heads which close them tightly at their upper ends and through the head of cylinder B, passes the vertical hollow piston tube D, which is curved over at its upper end as shown in Fig. 2, forming a nozzle *a*, from which water is discharged into spout E. The nozzle portion of hollow piston tube D, passes through a stationary bracket E', and the vertical portion near the curve passes through a collar *b*, which is secured to the

top of box A. This keeps the piston tube in a proper position and prevents it from rotating in its up and down movement. The lower end of piston tube D, is flared out forming a bell mouth *c*, and to this lower end of the piston tube a solid valve *d*, is attached by short rods *e, e, e*. This valve *d*, is in a parallel plane with the lower edge of the bell mouth *c*, and the rods *e, e, e*, pass freely through a central opening through a piston G, which is packed tightly within the cylinder B, and is moved up and down by the piston tube D. The space between the top surface of valve *d*, and the bottom edge of the bell mouthed portion *c*, is greater than the thickness of the piston G, consequently there will be allowed a slight play to the piston tube, and while the piston tube is ascending the valve *d*, will draw up the piston and close the opening which is through this piston thus causing an upward suction through the pipe *g*, which communicates with the cylinder below the piston G. The suction pipe *g*, is provided with a valve *h* opening upward.

When the piston tube D, descends the valve *d*, will be pushed downward and the lower edge of the tube D, will be forced tightly down on piston G, so that the water which is below this piston and over valve *h*, will rush up through the piston and through eduction pipe, or piston tube D. When the piston G, descends it sucks water into the side chamber C, through valve opening *i*, the valve of which opens upward and as chamber C, communicates with the cylinder B, through the opening *k*, above the piston, water will be drawn through valve opening *i*, chamber C, and opening *k*, into cylinder B, when the piston G, descends, then again when the piston ascends, this water above it will be forced up through piston tube D. The pump is therefore double acting and a continuous discharge of water is obtained from nozzle *a*, during the operation of the pump.

A rack H, varying in length according to the length of stroke of the piston tube D, is rigidly secured on one side of this tube some distance above the head of pump cylinder B. With the teeth of this rack engage the teeth of a sector rack J, which is keyed to the rock shaft J'. Shaft J', is in a horizontal transverse position and it has its end bearings in each side of the box A, as shown in Fig. 1 of the draw-



ings. K, is an arm of a suitable length, secured to and projecting down from rock-shaft J'. To the lower end of this arm K, a pitman rod L, is connected, which is  
 5 carried off and again connected to the end of crank arm M, which latter is keyed to the end of crank-shaft N. Now by rotating this shaft N, using for this purpose a common winch, the shaft J', will receive a  
 10 rocking motion, and the sector J, will give a vertical reciprocating movement to the piston tube through which the water is discharged.

The operation of the entire machine is as  
 15 follows: Rotary motion is given to the shaft N, which communicates a vertical reciprocating motion to the piston tube D, through arm M, pitman L, arm K, sector J, and rack H, as before described. When the piston  
 20 tube D, which is the eduction pipe also, is drawn up the valve *d*, closes the opening through piston G, and water is drawn through valve opening *g*. Then when the piston tube is forced down the valve *d*, is  
 25 depressed and the end of piston tube is forced down tightly over the opening through piston G, and the water is forced up through the piston tube. In this descent

of the piston G, a vacuum is produced above it and water rushes in through valve  
 30 opening *i*, through chamber C, and fills up the space above the piston, and this water is forced up through tube D, when the piston is again drawn up. Thus the suction  
 35 and the forcing action of the pump occurs simultaneously both in the ascent and descent of the piston G, and a continuous discharge of water from nozzle *a*, is effected.

I do not claim the arrangement of valves, nor the hollow piston rod, nor do I claim  
 40 the rack and sector gearing when these parts are considered separately and irrespective of the combination herein described but

What I do claim as new and desire to  
 45 secure by Letters Patent; is,

The combination with the hollow piston rod D, and the pump otherwise constructed as described, of the rack H, sector J, rock-shaft J', pitman L, crank M, and crank-  
 50 shaft N, all arranged as, and for the purposes herein set forth.

W. W. ROBINSON.

Witnesses:

H. H. MEADE,  
 S. B. MOE.