(No Model.)

R. I. KNAPP.

PUMP.

No. 345,384. Patented July 13, 1886.

Fig. 1

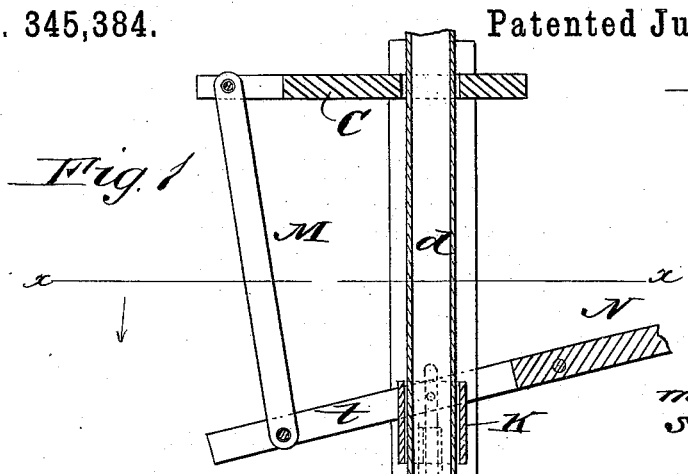


Fig. 2

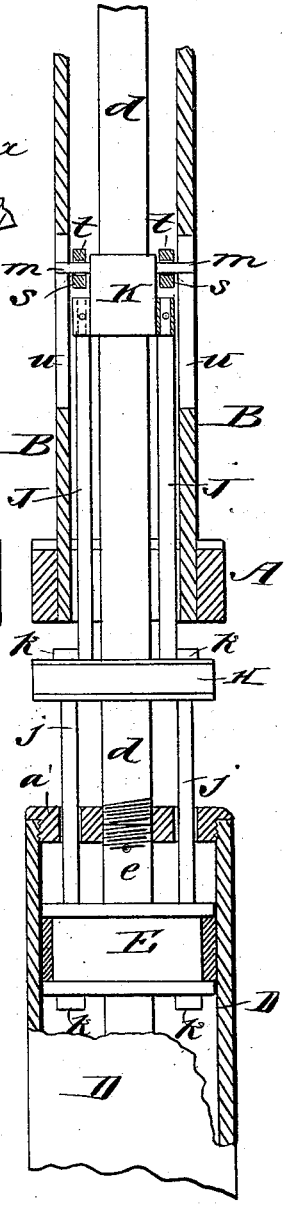


Fig. 4

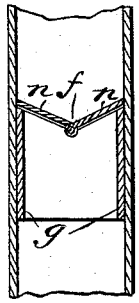
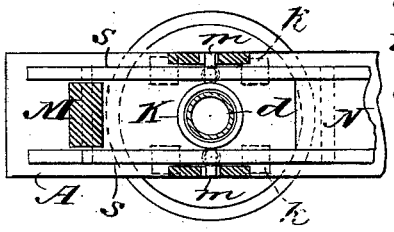
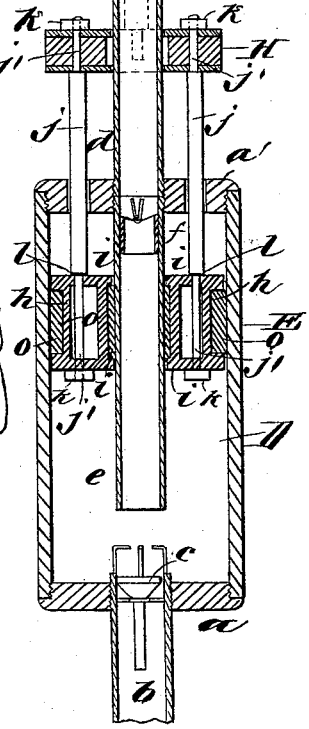


Fig. 3





WITNESSES:

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UNITED STATES PATENT OFFICE.

RILEY INGERSOLL KNAPP, OF PLATTEVILLE, WISCONSIN.

PUMP.

SPECIFICATION forming part of Letters Patent No. 345,384, dated July 13, 1886.

Application filed September 15, 1885. Serial No. 177,180. (No model.)

To all whom it may concern:

Be it known that I, RILEY INGERSOLL KNAPP, of Platteville, in the county of Grant and State of Wisconsin, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

My invention relates to the construction of pumps, and its object is to produce a pump by which large volumes of water may be drawn from the well or cistern and forced upward to a tank or other water-receptacle; and to this end the invention consists of a piston arranged to be reciprocated in a cylinder by lifting-rods that are arranged entirely outside of the delivery-pipe; and the invention further consists of a novel arrangement and construction of the valves, as will be hereinafter described, and specifically pointed out in the claim.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical sectional view of my improved pump. Fig. 2 is a similar view representing the device in a plane at right angles to that shown in Fig. 1. Fig. 3 is a sectional plan view taken on line *x x* of Fig. 1; and Fig. 4 is a detail view representing in vertical section the construction of the upper or V valve.

Referring now to the general construction illustrated in the drawings, A is the well-curb, which is provided with two perpendicular standards, B B, which support a horizontal arm, C. A large cylinder, D, is supported beneath the curb A in any manner desired, the lower end of the cylinder being closed by a head, *a*, into which the well-pipe *b* is led and securely fitted, a valve, *c*, being arranged at the top of the pipe *b*, as shown. The top of the cylinder D is also closed by a head, as *a'*, from which the delivery-pipe *d* extends upward, while a pipe, *e*, extends downward from the head *a'* to within an inch and a half or two inches of the bottom head, *a*. At the upper end of the pipe *e* there is a valve, *f*, consisting of two semicircular leaves, *n n*, pivoted in line with the center of the pipe *e*, and supported by the internal sleeve, *g*, the upper edges of the sleeve forming the valve-seat, said edges being cut to an expanded V form, as best shown in Fig. 4. The piston E is made to fit and reciprocate in the space between the pipe *e* and the inner face of the wall of the cylinder D, and this piston consists of a core, *h*, and two disks, *i i*, the core being made so as not to fit close to either the pipe *e* or the inner face of the wall of the cylinder; but the disks *i i* are made to fit as close as possible to both without actually coming in contact with them. Leather or other suitable packing, *o o*, is placed about each face of the core *h*, between the disks *i i*, being arranged to form water and air-tight joints between the cylinder D, pipe *e*, and the piston. Four rods, *j j*, lead upward from the piston through apertures formed in the cylinder-head *a'*, and connect with a disk, H, which encircles the pipe *d*, extensions *j' j'* of the rods *j j* passing through both the piston and the disk to engage with the nuts *k k*, and, as the extensions *j' j'* are of smaller diameter than the rods *j j*, shoulders *l l* will be formed on said rods and the disk and piston will be held between the shoulders so formed and the nuts *k k*. Two rods, J J, connect the disk H with a sleeve, K, which is provided with two gudgeons, *m m*, that project through apertures *s s*, formed in the arms *t t* of a forked lever, N, which lever is suspended from the arm C by means of a hanger-arm, M. The extending ends of the gudgeons *m m* ride in guideways or slots *u u*, formed in the standards B B. Such being the construction of the parts, it will be readily understood that by raising and lowering the lever-arm N a vertical reciprocating motion will be given to the piston E, which will act by suction to draw the water from the well up within the cylinder D upon the upward stroke, the valve *f* being at this time closed. Upon reversing the motion and giving a downward stroke to the piston it immediately acts to close the valve *c*, and the water will rush upward through the valve *f* into the pipe *d*, the leaves of which valve will close when the motion is again reversed.

Such a pump will lift a large volume of water and deliver it to the tank or receptacle.

The head *a'* is fitted so that it may easily be removed for the purpose of making repairs.

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

The combination, with the cylinder D, its valves *c* and *f*, of pipes *b*, *e*, and *d*, piston E, connecting by rods *j j* to disk H, rods J J, sleeve K, lever N, and hanger M, substantially as described.

RILEY INGERSOLL KNAPP.

Witnesses:

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