(No Model.) 2 Sheets—Sheet 1.

I. THORNTON.

PUMP.

No. 428,238. Patented May 20, 1890.

Fig. 1.

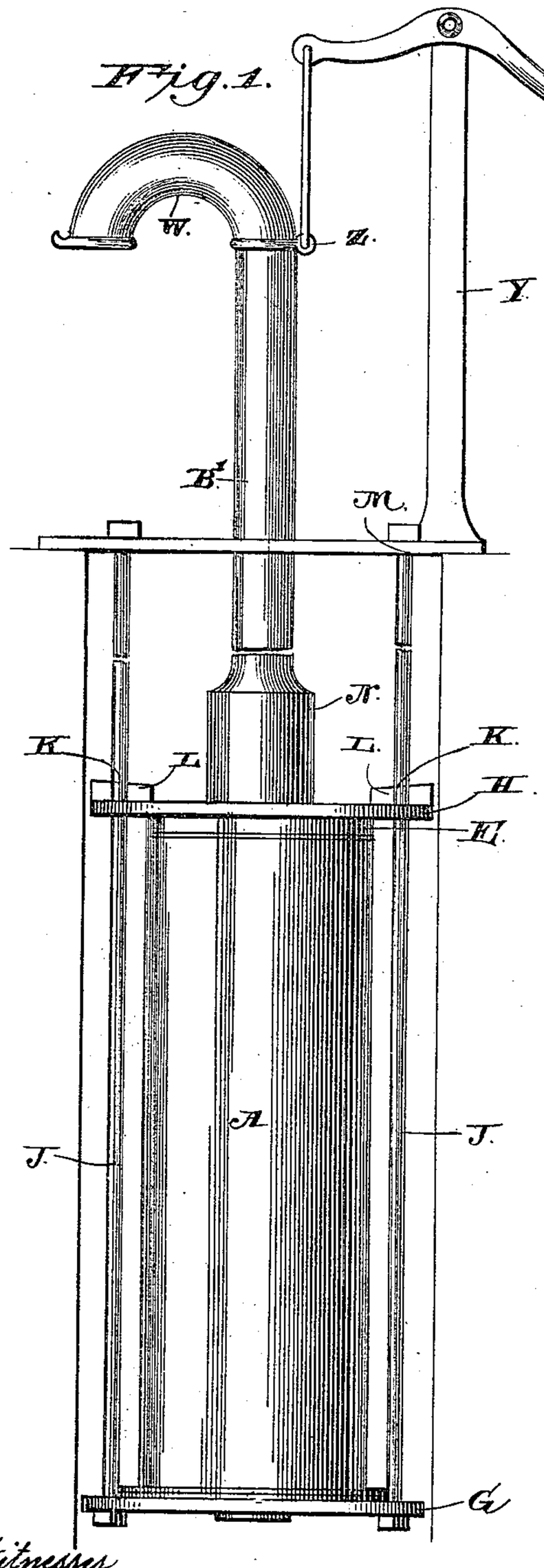
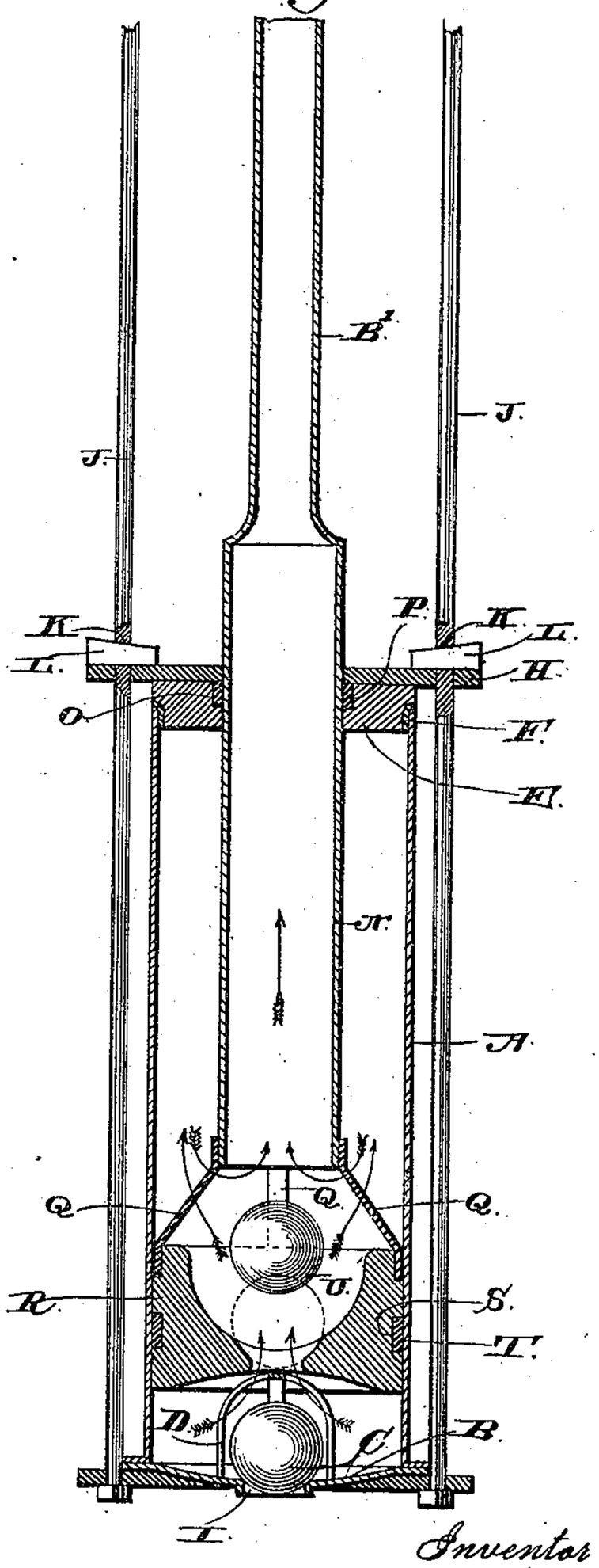


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

I. THORNTON.

PUMP.

No. 428,238. Patented May 20, 1890.

Fig. 3.

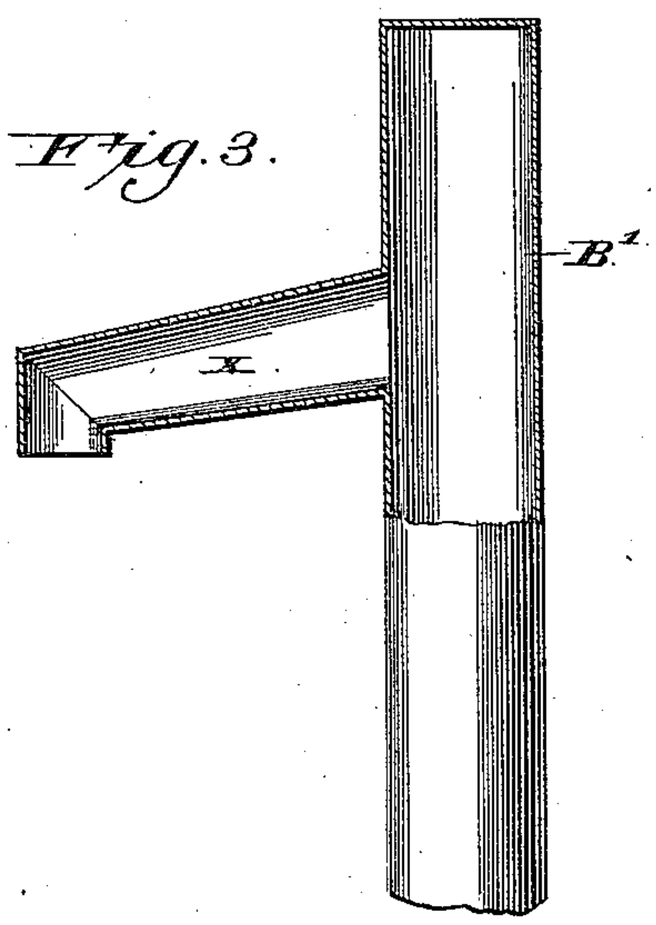
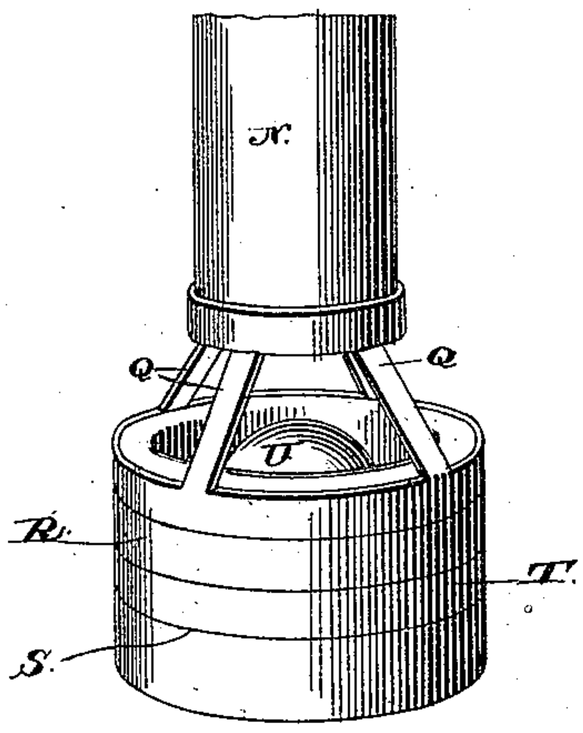


Fig. 4.



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UNITED STATES PATENT OFFICE.

ISAAC THORNTON, OF NEVADA, MISSOURI.

PUMP.

SPECIFICATION forming part of Letters Patent No. 428,238, dated May 20, 1890.

Application filed March 22, 1889. Serial No. 304,241. (No model.)

To all whom it may concern:

Be it known that I, ISAAC THORNTON, a citizen of the United States, residing at Nevada, in the county of Vernon and State of Missouri, have invented a new and useful Improvement in Pumps, of which the following is a specification.

This invention relates to pumps; and it consists in certain improvements in the construction of the same, having for their object to provide a simple, inexpensive, and useful device which may be easily operated.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and pointed out in the claim.

In the drawings, Figure 1 is a side view of my improved pump. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a side view, partly in section, illustrating a modification. Fig. 4 is a detail view of the plunger removed from the cylinder.

The same letters refer to the same parts in all the figures.

A designates the pump-cylinder, which is provided at its lower end with a concave seat B for the ball-valve C, which is retained in position by means of a basket D, attached to the bottom of the cylinder. The upper end of the cylinder is provided with a cap or cover E, between which and the upper end of the cylinder packing F is interposed, so as to make a tight joint.

G and H are elliptical base and cap plates, the former of which is provided with a concave seat for the lower end of the cylinder, and with an opening I, forming a water-passage. The base and cap plates are connected by means of the bolts or rods J J, which are provided above the cap-plate with transverse slots K to receive the wedge-shaped keys L, by means of which the cap-plate is maintained securely in position, and is moreover forced down tightly against the cover of the cylinder, which is thereby retained securely in position and in such a manner as to form an air-tight joint. The rods J J are extended upwardly to the well-curbing, as shown at M, where they are braced so as to retain the cylinder securely in the well below the water-level. Owing to the fact of the connecting-rods being thus extended to form supporting-rods, the wedge-shaped keys I are found necessary, inasmuch as nuts, which would require a considerable length of the rods J to be threaded, could not be conveniently used.

N designates the plunger, which consists of a cylindrical tube of smaller diameter than the cylinder in which it works, and through the cover of which it extends, the said cover being provided with an annular recess O, in which packing P is placed, so as to form a tight joint between the plunger and the cover. The packing is retained in the annular recess of the cover by means of a cap-plate H, which, as above stated, is wedged down tightly against the head of the cylinder. The lower end of the plunger is provided with the diverging arms Q Q, to which is attached the piston R, which is provided with an annular groove S, in which is fitted a packing-ring T of suitable construction. It will be observed that this piston fits smoothly in the bore of the cylinder, the packing-ring serving to form a perfectly-tight joint. The upper side of the piston is provided with a concave seat for a ball-valve U, which is retained in position by valves of the diverging arms, by which the piston is connected to the plunger, the spaces between the said arms forming the water-passages. From the upper end of the plunger a tube B′ extends upwardly to the top of the well, where it is provided with a discharge-spout, which, as shown in Fig. 1 of the drawings, may be in the form a goose-neck W. When desired, however, the discharge-spout X may be attached to the side of the tube below its upper end, which is closed, the space above the discharge-tube serving to form an air-chamber, whereby a steady flow is insured when the pump is in operation.

Y designates a standard attached to the well-curbing and having at its upper end a lever, one end of which is pivotally connected with a collar Z, encircling the discharge-tube of the drum. It will be seen that by operating this lever the discharge-tube, and with it the plunger, may be reciprocated vertically, so as to operate the pump.

The operation and advantages of this invention will be readily understood from the foregoing description, taken in connection

with the annexed drawings. On the upstroke of the plunger the valve in the piston remains closed, while the valve at the bottom of the cylinder opens for the admission of water. On the downstroke the valve at the bottom of the cylinder is closed, when the piston-valve opens, so as to cause the water to pass into the cylinder above the piston. As the water rises in the cylinder it compresses the air in the upper end of the latter, and the air-pressure serves to force the water up through the plunger and through the tubular discharge-pipe. It will thus be seen that by properly proportioning the capacity of the cylinder a steady and even flow of water may be secured with small expenditure of power to operate the pump.

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

The combination, with the pump-cylinder, of the cap-plate fitted loosely at its upper end and having a central opening provided with an annular recess, the packing F, interposed between said cap-plate and the upper edge of the cylinder, the vertically-movable plunger extending through the central opening in the cap-plate, the packing P, arranged in the annular recess of said opening around the plunger, the top and bottom plates H G, the former having a central opening for the passage of the plunger, the supporting and connecting rods extending through said top and bottom plates, and the tightening nuts and wedges, whereby the cylinder and its cap-plate are clamped between the top and bottom plates to compress and render effective the packings F and P, substantially as set forth.

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

ISAAC THORNTON.

Witnesses:

GEO. J. HORTON,

J. S. CRAVEN.