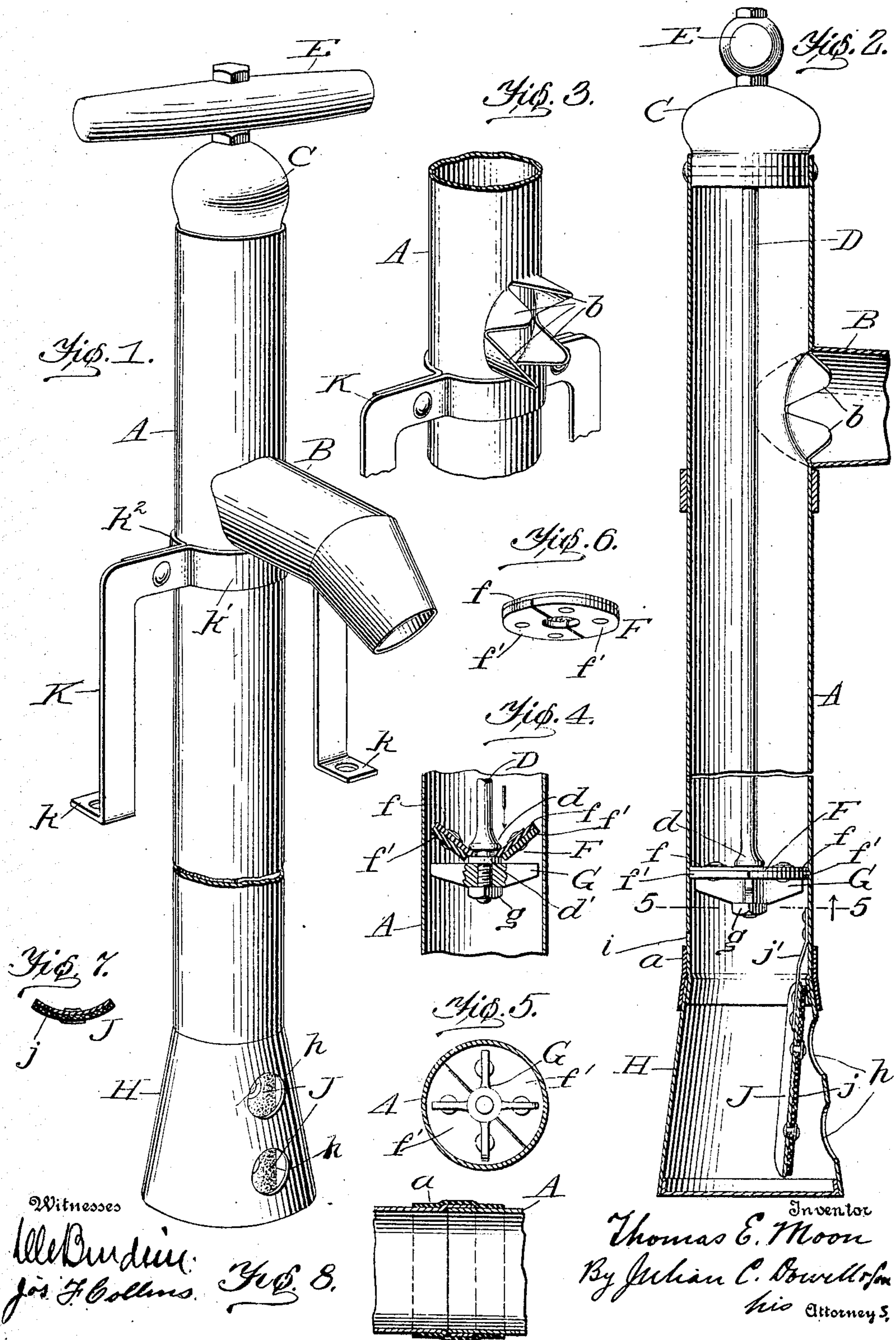


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T. E. MOON.
PUMP.

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UNITED STATES PATENT OFFICE.

THOMAS ELWOOD MOON, OF SABINA, OHIO.

PUMP.

No. 870,682.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS ELWOOD MOON, a citizen of the United States, residing at Sabina, in the county of Clinton and State of Ohio, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 The main object of this invention is to provide a very efficient, serviceable and practicable pump of simple and cheap construction, for use in cisterns, tanks and shallow wells, and for other relatively light service, which object is attained by the novel construction and 15 features of improvement hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of a pump embodying my invention, an intermediate portion of the pump-barrel being broken away and the parts being brought together for shortening the illustration. Fig. 2 is a central longitudinal section. Fig. 3 is a detail perspective view showing a fragment of the pump-barrel, this portion of the pump-barrel having 25 a lateral opening for exhaust of water through the spout or nozzle. Fig. 4 is a detail sectional view of a fragment of the pump-barrel and piston, representing the piston on the down stroke. Fig. 5 is a section on line 5—5 of Fig. 2, looking upward, showing the piston in 30 bottom plan view. Fig. 6 is a detail perspective view of the piston proper. Fig. 7 is a transverse section through the flap-valve at the lower end of the pump-barrel. Fig. 8 is a sectional view showing a joint between contiguous sections of a long pump.

35 The pump-barrel A is desirably made of light metal tubing, preferably galvanized sheet-metal. It may consist of one pipe section or tube, or in the case of a comparatively long pump-barrel it may comprise a number of pipe sections or tubes joined together by inserting the end of one tube in the adjacent end of another and soldering them, as shown in Fig. 8, with a 40 band or short sleeve *a* slipped over and fitting closely around the joint thus made, such band or sleeve *a* having its ends soldered to the contiguous pipe sections.

45 Near the upper end of the pump-barrel, or at a suitable distance from the top, the nozzle or spout B is attached, the same being also desirably of light tubing or sheet-metal, and having its inner end fitted to the lateral opening in the wall of the pump-barrel and soldered around the same. Said opening in the pump-barrel is formed by making a cross-cut in the wall of the pump-barrel and then bending the quarters *b* thereof outwardly and apart, thereby providing a support 50 for the inner end of the spout, which fits over the quarters *b* or metal projections and may be soldered, riveted or otherwise attached thereto.

At the top of the pump-barrel is a cap C preferably of wood or other suitable material, which is attached to or in the upper end of the barrel, and is centrally bored to form a guide for the piston-rod D, the latter 60 being shown provided with a handle E for operating the pump.

The piston F is attached to the piston-rod D between the collar or shoulder *d* thereon and a spider or support G, which latter is fastened on the lower end of the rod 65 by the nut *g*, a washer *d'* being shown arranged between said spider and the bottom side of the piston. Said piston F comprises a disk *f* of thin flexible material, such as leather, to which is riveted or fastened two half-parts or semi-circular pieces *f'* of relatively 70 thicker or heavier or stiffer material, or if desired semi-circular pieces composed of a number of layers or thicknesses; whereby the piston acts as a double clack or butterfly-valve, comprising two semi-circular lobes or leaves hinged together at the middle. As the 75 piston descends, these leaves fold upward toward or against the piston-rod, allowing the water in the pump-barrel to pass above the piston; and when the piston is drawn upward, said leaves fall or drop back upon the support or spider G and come in contact with the 80 walls of the pump-barrel, forming a packing, and permitting the piston to raise the water and force it out through the spout or nozzle B. The semi-circular pieces *f'* may be composed of leather, rubber, or any suitable material, but preferably some material which 85 is impervious to or not affected by water, such as rubber, in order to preserve the form of the piston and avoid shrinkage or stretching, to which leather is ordinarily liable, and thereby preventing the piston from becoming either too tight or too loose. 90

At the lower end of the pump-barrel is a short conoidal or outwardly flaring section or part H, which is attached to the lower extremity of the tubular barrel B, as shown in Fig. 2, in the same manner as already 95 described with reference to the joint of contiguous pipe sections. This short section or tapered bottom piece H, which has a closed bottom, is preferably made of stronger, heavier or stiffer metal than the tube of the pump-barrel, thereby strengthening the lower end of the pump where the pressure is greatest, and allowing 100 the cutting of the lateral water inlet ports or orifices *h* without unduly weakening this lower part of the pump, and also permitting these orifices *h* to be larger and fewer in number. There are preferably two or more of such orifices *h* arranged vertically one above 105 another in the side of the bottom piece H. In service these ports or orifices are below the water line, and allow a free supply of water to the pump-barrel.

A valve J controls the inlet ports *h*. This valve consists of an oblong convex piece or strip of metal, covered on its convex side with leather, rubber or other 110 suitable material *j*, which may be riveted or otherwise

attached thereto. The valve is arranged to cover the ports or orifices *h* and is shown suspended by a flexible metal strap *j'* riveted or fastened to the upper end of the valve and to the wall of the pump-barrel, so that
 5 the valve hangs down over the ports and swings freely inward and outward, thus opening and closing the ports with the up and down movement of the piston, without remaining in close fitting contact. This prevents the lodging or holding of any particles or sub-
 10 stances that would usually be held by close-fitting valves, causing them to leak and requiring the pump to be primed before starting a flow.

This pump being of the single-acting valved reciprocating piston type, its operation is obvious, it being
 15 understood that as the piston *F* descends the valve *J* closes, while the folding or doubling up of the piston allows the water to pass above the same; and when the piston ascends, lifting up the water and discharging it through the nozzle, the suction created thereby
 20 opens the valve *J* and allows the water to follow the piston; maintaining a full and free flow of water throughout the length of the pump-barrel. The opening *i* below the piston also allows a back-flow of the water that is drawn up into the pump-barrel, so that
 25 when the pump is idle the water will gradually settle back to the water line, thereby liberating any gases, preventing the formation of odor and noxious constituents in the water, and preventing the pump from freezing.

30 A support or brace *K* is provided for the pump-barrel at a suitable distance above the cover of the cistern, well or tank. This support as shown comprises a yoke, whose legs are provided with feet *k* for attachment to the cistern cover; the yoke being formed with a semi-

circular or curved part *k'*, to which is bolted a similar
 part *k²*, the pump-barrel being clamped between the part *k'* and *k²* at a suitable height above the cistern cover. This form of brace is an improved feature to a pump of this character wherein the pump-barrel is made of light metal.

It will be understood that various changes may be made in the specific form and details of construction of the pump, and the invention may be embodied in modified forms.

Having thus fully described my invention, what I
 claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination of a cistern or shallow-well pump, of a sheet-metal pump-barrel having a cap at its upper end and a lateral opening near said end having surrounding portions of metal cut out in forming said opening projecting laterally and adapted for the attachment thereto of a discharge spout and also a frusto-conical portion at its lower end provided with inlet openings at one side thereof, together with an inwardly-opening valve controlling said
 55 inlet openings and a piston-rod extending through an opening in said cap and carrying an upwardly-opening valve, substantially as described.

2. In a cistern or shallow-well pump a pump-barrel composed of sheet-metal tubing having a frusto-conical portion
 60 at its lower end with closed bottom and valve-controlled inlet openings at one side, said pump-barrel near its upper end having a series of projections integral therewith for attaching a discharge spout thereto, said projections being formed by bending sections of the metal cut out in forming a discharge opening communicating with the spout,
 65 substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

THOMAS ELWOOD MOON.

Witnesses:

C. M. ROBINS,
 JOB HAINES.