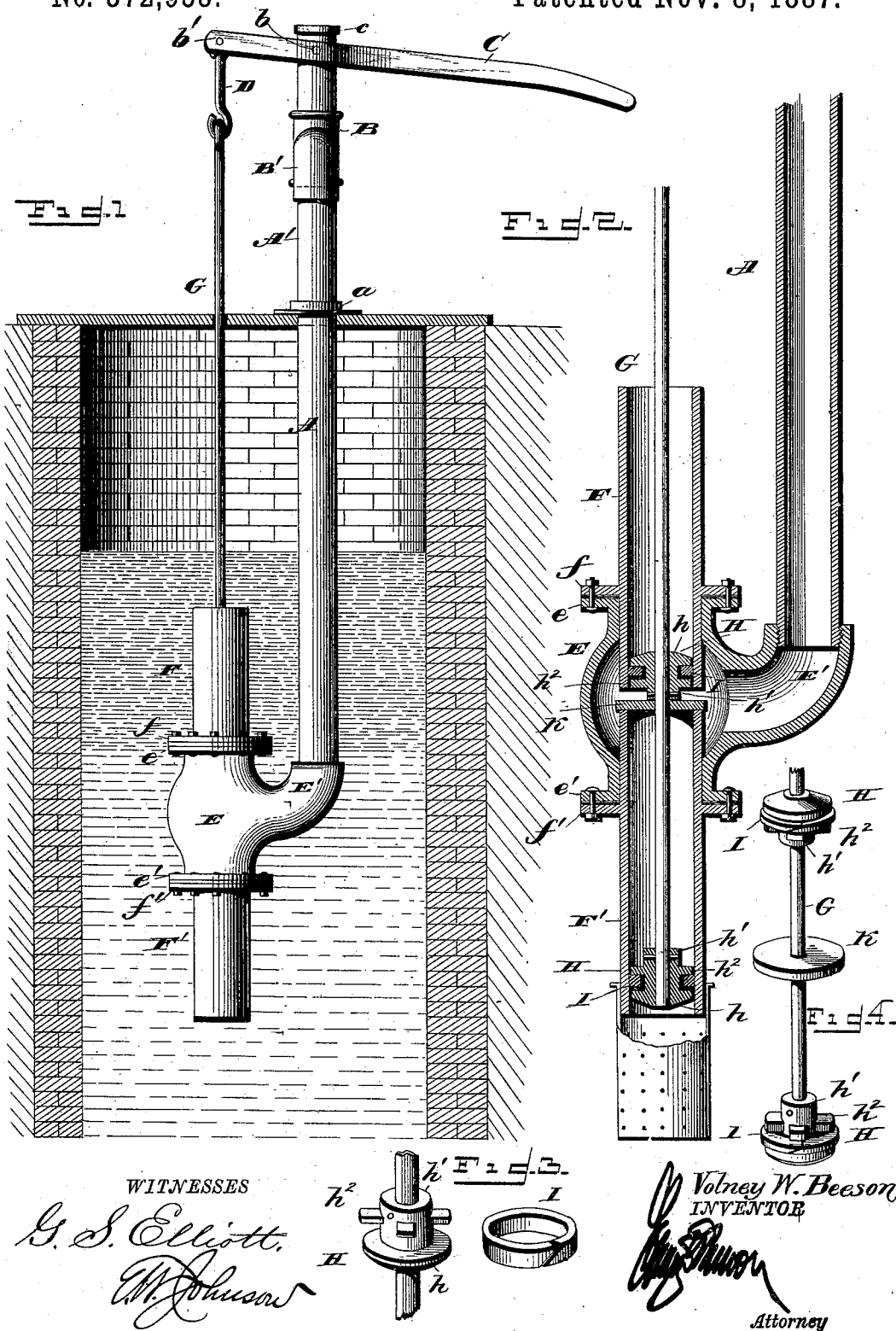


(No Model.)

V. W. BEESON.
SUBMERGED FORCE PUMP.

No. 372,953.

Patented Nov. 8, 1887.



UNITED STATES PATENT OFFICE.

VOLNEY W. BEESON, OF PERRY, IOWA.

SUBMERGED FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 372,953, dated November 8, 1887.

Application filed May 5, 1887. Serial No. 237,253. (No model.)

To all whom it may concern:

Be it known that I, VOLNEY W. BEESON, a citizen of the United States of America, residing at Perry, in the county of Dallas and State of Iowa, have invented certain new and useful Improvements in Submerged Force-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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in force-pumps, the object being to provide a cheap, simple, and effective pump, which is so constructed that the parts are not liable to get out of order, and by which water may be elevated to a considerable distance.

With the above end in view my invention consists in the special construction of a submerged force-pump, as will be hereinafter fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side view of a pump, showing the same applied to a well, said pump being constructed in accordance with my invention. Fig. 2 is a vertical sectional view. Fig. 3 is a detail view of the valves and pistons; and Fig. 4 is a detail perspective view of the pump-rod, showing the valves attached thereto.

A refers to the main pipe, which is provided at a suitable point with a flanged collar, *a*, which flanged collar is adapted to rest upon the platform which covers the well. This flanged collar is attached to the main pipe A, so as to be adjustable thereon, and bolts are passed through the flange thereof so as to provide attaching means to the platform of the well. This flanged collar may, if desirable, be internally screw-threaded, so as to engage with the external screw-threads of the main pipe or barrel A and the extension A' thereof. At the upper end of the extension A' is attached a three-way joint, B, the upper and lower ends being internally screw-threaded, while to the projecting portion of this three-way joint the spout-branch B' is secured, said

spout-branch having external screw-threads which engage with the internal screw-threads of the aforesaid three-way joint.

The upper end of the three-way joint B, hereinbefore referred to, has attached thereto a short section of pipe, A², through the upper end of which passes a bolt or pin, *b*, which provides a means for attaching the handle C thereto. The upper end of the section of pipe A² is closed by suitable screw-caps, *c*, thus providing an air-chamber above the spout-branch B'. The handle C is bifurcated, and at its end is provided with a bolt, *b'*, to which a connecting-link, D, is secured, said connecting-link having its ends formed into eyes, as shown.

E refers to the main casting, which is preferably in the form of a three-way joint, two of the openings therein being on a line with each other, while the other opening, E', is to one side of the body portion. The projecting member, having the opening E' therein, is internally screw-threaded, and the main pipe or barrel A is secured thereto. The other openings may be, if desirable, internally screw-threaded, though I prefer to construct them in practice with flanges *e* and *e'*, as shown, which flanges are perforated. The central portion of the main casting E is enlarged, so as to provide a space therein of a capacity larger than the internal opening in the body portion E'. Above and below the casting E are attached pipes F and F', the ends of which project within the main casting, so that there will be but a comparatively small space between the upper and lower ends of these pipes, and the ends of the aforesaid pipes are turned or dressed so as to be comparatively flat or straight. These pipes F and F' may have external screw-threads for engaging with the casting instead of flanges *f* and *f'*, as shown, and these flanges are provided with perforations, through which pass bolts for rigidly securing them to the main casting. The outer ends of the pipes F and F' may be provided with strainers or perforated sections of pipe, though in practice I may use only one strainer at the bottom of the pipe F', said strainer being desirable to protect the valves from foreign substances.

G refers to the piston-rod, which is pivotally attached to the connecting-link D at its upper end, and to this piston-rod are rigidly secured

the valves H, which valves consist of a disk, *h*, which is of less diameter than the pipes F F', and from this disk extends a central portion, *h'*, which is provided with projecting portions or stops *h''*, which extend outwardly therefrom.

I refers to a metallic packing-ring, the interior of which is of greater diameter than the center portion, *h'*, of the valve, while its outer portion is of such a size that it will fit snugly within the pipes F or F'. The width of this metallic packing-ring I is less than the distance between the horizontal portion of the disk *h* and the projecting arms *h''*, and the upper edge or face of the disk *h* is perfectly smooth, so that the edge of the split ring I will slide closely upon the same.

The portions H H, hereinbefore referred to, are attached to the piston-rod, as shown in Figs. 2 and 4 of the accompanying drawings, and between the same, so as to lie loosely upon the piston-rod, is a flat valve, K, which consists merely of a circular plate of metal having a central perforation, through which the rod passes, the seats of this valve being the inner ends of the pipes F and F'.

The operation of my invention is as follows: The pump is first placed in a well so that both ends of the pipes F and F' will be below the water-level, and when the piston is reciprocated the water will flow alternately into the pipes and be elevated by the action of the piston-rod. For instance, when the piston-rod finishes its downward stroke the valves will be in the position shown in Fig. 2, the valve K being moved so as to rest upon the upper edge of the pipe F'. On this downstroke the metallic packing-ring I in the pipe F will be forced by the downward movement of the piston-rod against the face of the disk *h*, so that no water can pass by the same. This forces the water which has previously entered the pipe F into the casting E and out of the discharge-spout. The lower valve at the commencement of its downward stroke is opened by the ring I moving against the arms *h''*, and the water passes around the edges of the disk *h* under the split ring I and up into the pipe, the water rushing into the open space as the piston descends. On the upward movement of the piston-rod the action is reversed and the

valve K moves upon the seat at the lower end of the pipe F, the valve being held in place principally by suction, though partially by the water which is forced against the under side of the same.

I am aware that it is not broadly new to provide a double-acting lifting and force pump with upper and lower cylinders within which valved pistons reciprocate, the piston-rod carrying a sliding valve, as shown in patent granted to E. Barnes, February 17, 1880, and I do not claim such as my invention; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a submerged force-pump, of the cylinders and casting connecting the same, a piston-rod, G, provided with valves H H, rigidly attached to the same, consisting of disks *h*, a central portion, *h'*, which embraces the piston-rod, and projecting arms *h''*, which parts are of less diameter than the cylinders within which they move, split metallic rings I, adapted to fit snugly within the cylinders and be actuated by the movement of the piston-rod, said packing-rings forming part of the valves, and a valve, K, mounted on the piston-rod so as to be seated upon the inner ends of the cylinders, substantially as shown.

2. The combination, in a submerged force-pump, of a casting, E, provided with a projecting portion, E', to which the main pipe is attached, a discharge-spout connected with said main pipe by a three-way casting, which three-way casting has attached a closed section of pipe which forms a support for the handle, and an air-chamber, a piston-rod attached to said handle, cylinders F and F', secured to the main casting so that their ends project within the same, a disk-valve having its seat upon the inner ends of cylinders, and pistons carrying split rings which serve as packing-rings and valves, the parts being organized substantially as shown, and for the purpose set forth.

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

VOLNEY W. BEESON.

Witnesses:

W. E. WILLIS,
FRED. A. BAKER.