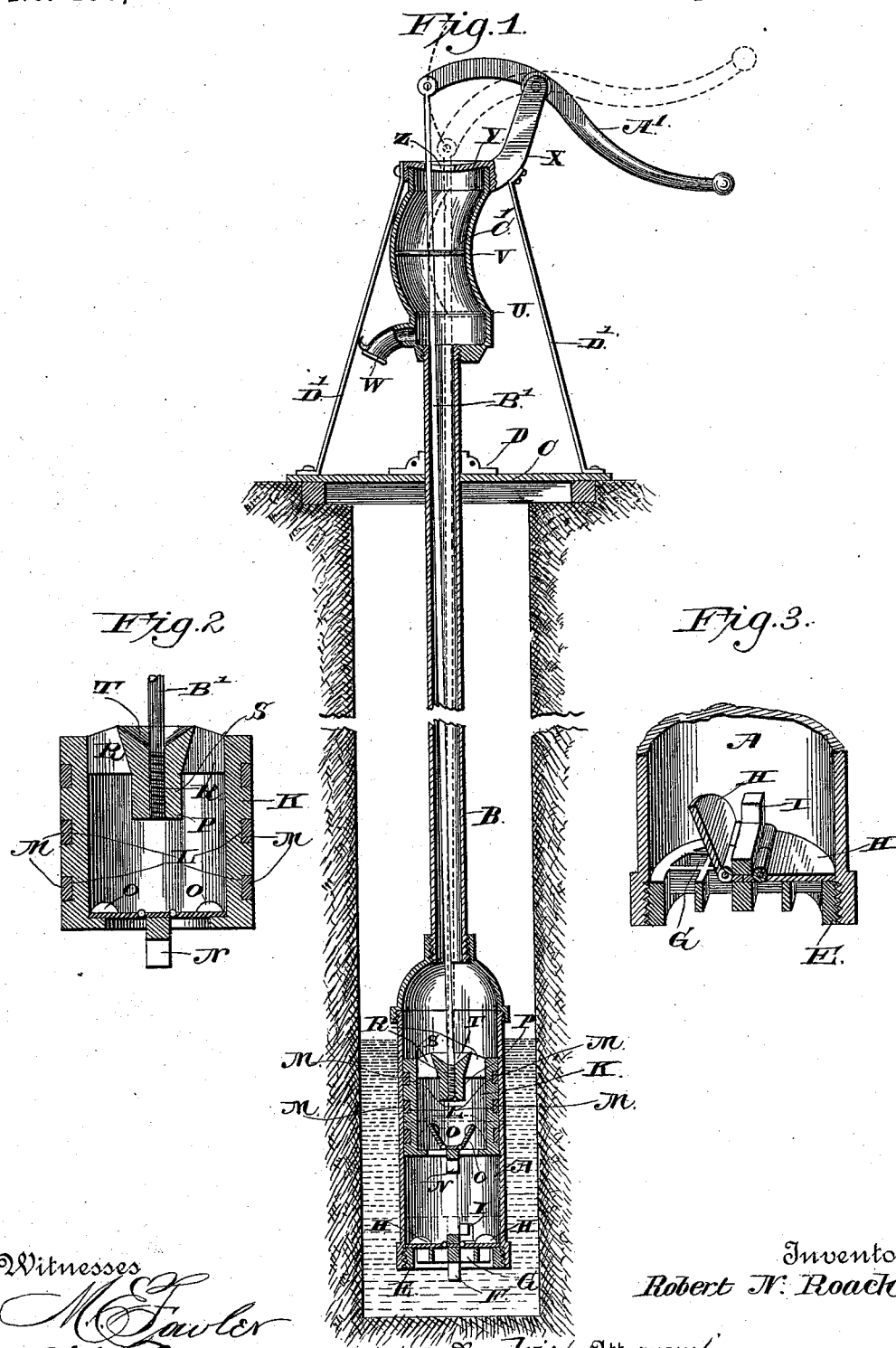


(No Model.)

R. N. ROACH.
LIFT PUMP.

No. 400,487.

Patented Apr. 2, 1889.



UNITED STATES PATENT OFFICE.

ROBERT N. ROACH, OF MONROE, IOWA.

LIFT-PUMP.

SPECIFICATION forming part of Letters Patent No. 400,487, dated April 2, 1889.

Application filed December 18, 1888. Serial No. 294,007. (No model.)

To all whom it may concern:

Be it known that I, ROBERT N. ROACH, a citizen of the United States, residing at Monroe, in the county of Jasper and State of Iowa, have invented a new and useful Improvement in Lift-Pumps, of which the following is a specification.

My invention relates to an improvement in lift-pumps; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a lift-pump embodying my improvement. Fig. 2 is an enlarged detail sectional view of the plunger. Fig. 3 is a sectional perspective view of the cylinder-valve.

A represents the pump-cylinder, which is submerged at the bottom of the well or cistern, and from the upper end of which extends a pipe, B, that passes through a central opening in a platform, C, over the mouth of the well. A circular plate, D, formed of separable sections bolted together, embraces the pipe B, and is screwed or otherwise secured on the platform.

In the lower end of the cylinder A is screwed a valve-seat, E. The said valve-seat is provided on its lower side, at diametrically-opposite points, with depending studs F, adapted to be engaged by a suitable wrench to adapt the valve-seat to be screwed into the bottom of the cylinder, and said valve-seat is provided with a strainer, G, and has on its upper side a pair of weighted clack-valves, H, which open upwardly. On the upper side of the valve-seat, at diametrically-opposite points, is a pair of lugs, I, the purpose of which will be hereinafter stated.

K represents the plunger, which is cylindrical in form, fits snugly in the cylinder A, and is provided in its perimeter with a series of annular grooves, L, in which tack-packings M are secured, which serve to effect a water-tight joint between the plunger and the cylinder. From the lower side of the plunger, at diametrically-opposite points, depends a pair of studs, N, and in the bottom of the plunger is arranged a pair of upwardly-opening weighted clack-valves, O.

In the upper end of the plunger, which is interiorly bored, is a spider, which is provided with the central integral portion, P, and radial arms R. The central portion of the spider has a vertical threaded opening, S, and in the upper side of the said portion of the spider is an inverted flared or conical opening, T, which communicates with the opening S.

To the upper end of the pipe B is screwed a head, U, which is cylindrical in shape and has its central portion curved outward, as at V. At the lower end of the head is a discharge-spout, W. Formed at the upper side of the head, on the inner side of the same, is a curved standard, X. A cap-plate, Y, covers the upper end of the head and has a central transverse slot, Z.

A' represents a lever, which is fulcrumed to the upper end of the standard X, the inner end of the lever being arranged over the upper end of the head and describing an arc of the same radius as the curved portion V of the head.

B' represents the plunger-rod, which is passed down through the head and through the pipe B, and is caused to enter the cylinder A after the latter has been arranged in the well and before being attached to the plunger. The latter by its own gravity will sink to the bottom of the cylinder A, and its studs N, by engaging the studs I on the upper side of the valve-seat E, will hold the plunger against axial rotation. When the rod is lowered in the cylinder, its lower threaded end will be directed by the conical recess T into the opening S, and by turning the said rod the same will be screwed into the said opening S, and thereby cause the plunger to be firmly connected to the lower end of the rod. The upper end of the latter passes through the slot Z, and is pivoted to the inner end of a lever, A'.

Rigidly secured to the rod B', at a suitable distance from the upper end thereof, is a disk, C', which travels in the curved portion of the cylindrical head when the plunger is operated and moves in unison with the said plunger, the function of the said disk being to prevent water from spurting upward through the opening Z. The head is firmly secured in place on the upper end of the pipe by a series

of inclined brace-rods, D', which have their lower ends screwed or bolted on the platform.

It will be understood that my plunger is adapted to be used in any species of lift-pump, whether of wood or metal; and I do not therefore wish to limit myself to its use in connection with a metal pump, such as shown and described herein. Other modifications may be made in the pump without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. The pump having the submerged cylinder, the valve-seat E, screwed to the lower end thereof and having the strainer G, the clack-valves H and the lugs I on its upper side, the hollow plunger K in the cylinder having the clack-valves O in its lower side, the depending lugs N, for the purpose set forth, the

opening S and flared opening T, communicating therewith, and the plunger-rod adapted to be screwed into the opening S, substantially as described.

2. The combination, with the cylinder having the valve-seat in its lower end with the lugs I on its upper side, of the plunger in the cylinder, and the lugs N on the plunger to engage the lugs I, said plunger being further provided with the threaded opening S, and the plunger-rod adapted to be screwed in the said opening, substantially as described.

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

ROBERT N. ROACH.

Witnesses:

JOHN ROBERTS,
G. W. HERTZOG.