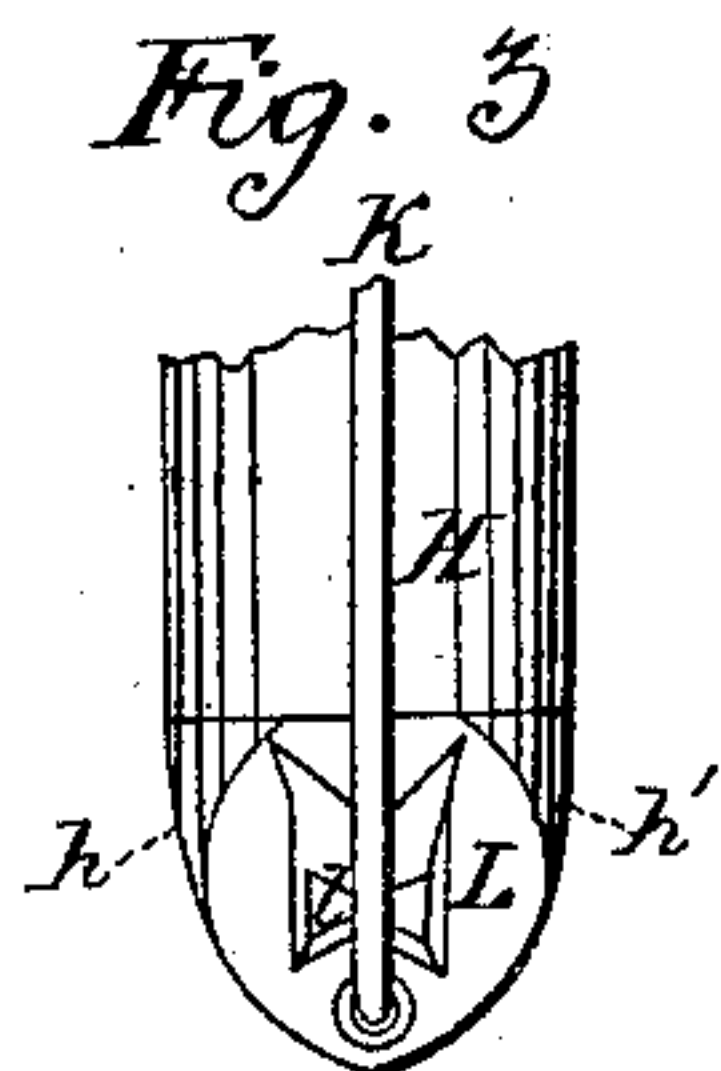
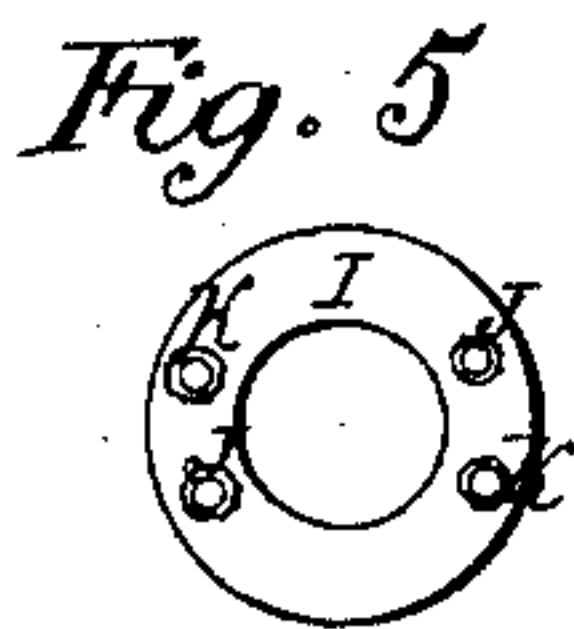
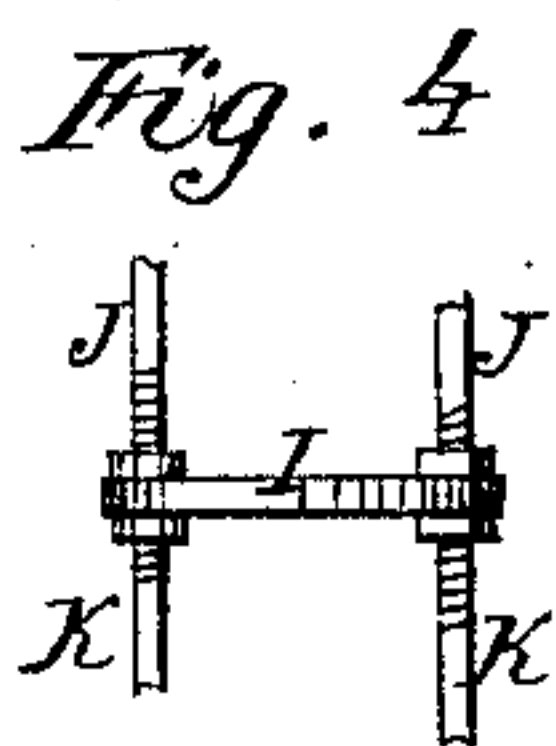
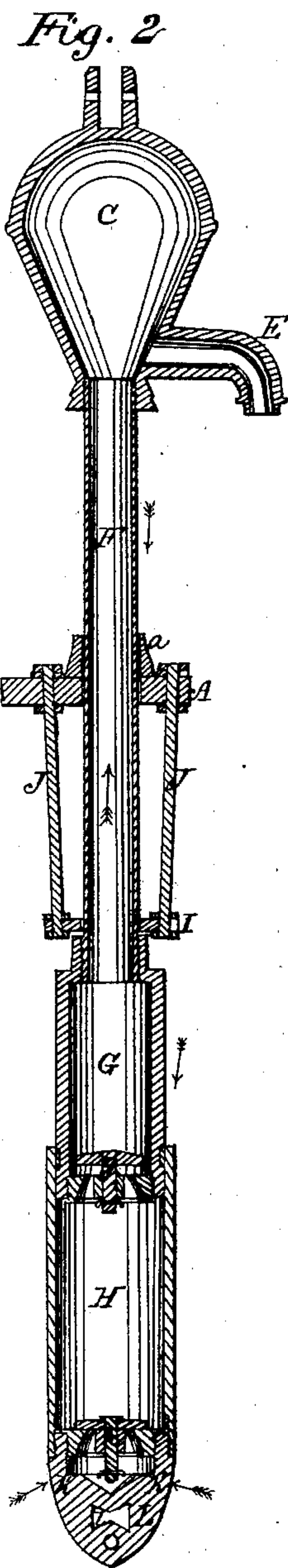
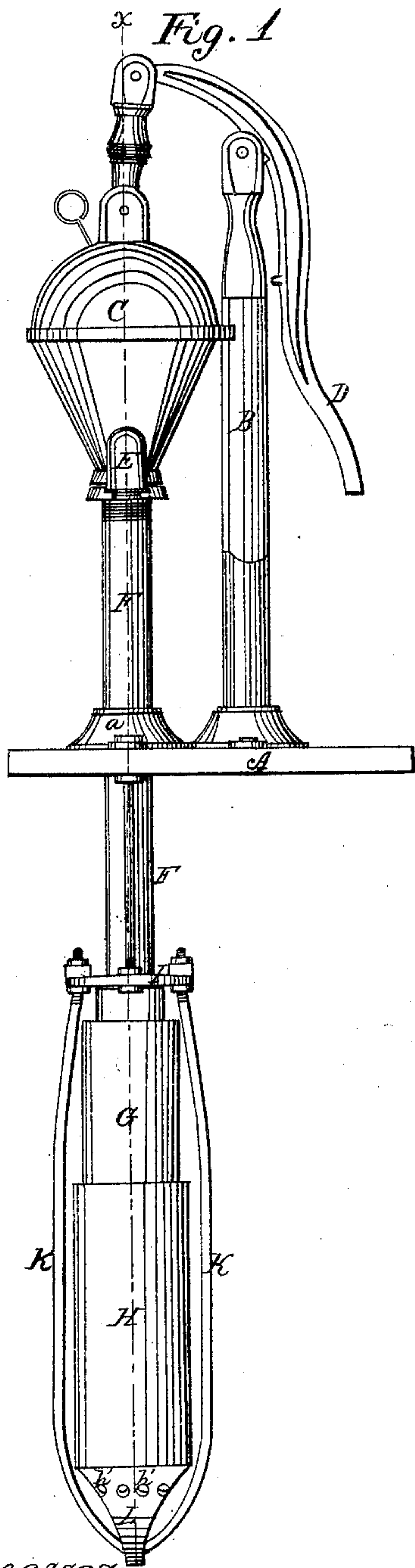


H. H. Palmer,

Force Pump.

N^o 35,108.

Patented Apr. 29, 1862



Witnesses:

J. Snowden Sell
Joe V. Mergs.

Inventor:

Henry H. Palmer
by his Attorney
Wm. D. Baldwin

UNITED STATES PATENT OFFICE.

HENRY H. PALMER, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 35,108, dated April 29, 1862.

To all whom it may concern:

Be it known that I, HENRY H. PALMER, of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in elevation of a pump embracing my improvements. Fig. 2 represents a vertical section through the same at the line *xx* of Fig. 1. Fig. 3 represents a view in elevation of the lower portion of the cylinder of the pump. Figs. 4 and 5 represent views of a modified arrangement of the guide-collar and suspension-rods of the pump.

My improvements, although applicable to most pumps, relate more especially to those intended to be used in drilled or bored wells, which are usually of great depth, but of such small diameter as to render it a matter of some difficulty to adjust a pump properly within them; and my invention consists in certain novel devices for facilitating the proper adjustment of the several parts and their efficient working when so adjusted, as hereinafter described.

In the accompanying drawings, A represents the floor or platform of the well, upon which a standard, B, is firmly bolted. This standard has a broad base to give it steadiness, is cast hollow for the sake of lightness, and is provided with a flange or rib which acts as a guide for the air-chamber C, which is provided with a corresponding groove in one side. A suitable handle, D, is pivoted to the standard B and to the top of the air-chamber. A spout, E, projects from the lower portion of this chamber. A hollow tube or piston-rod, F, extends down through the platform A to a piston, G, which is also hollow. This tube plays through a collar, *a*, which is bolted to the platform A, and acts both as a guide to steady the piston-rod and to prevent dirty water from running into the well. The water chamber or cylinder H is adjusted and held stationary in the following manner: A ring or collar, I, is suspended below the platform by means of screw-rods J, having nuts both above and below both the platform and

collar in order to adjust them properly. This collar acts as a guide for the piston-rod, and also sustains the cylinder by means of a bent rod or strap, K, which passes through a hole in the bottom of the solid part of the cylinder, as shown in the drawings, its ends being secured to the collar I by means of nuts and screws. The distance between this collar and the top of the water-chamber is somewhat less than the length of the piston G, which prevents the latter from being drawn out of the cylinder on the upstroke of the pump. The different parts are united by screws in such manner as to admit of their being readily connected and disconnected. In order to diminish the strain upon the collar I as much as possible, I place the suspension-rods J and K as close together as is compatible with the proper facility of adjusting the nuts upon them, as shown in Figs. 4 and 5 of the drawings.

A cap or hollow piece, L, is screwed upon the lower end of the cylinder and carries an ordinary spindle-valve, *h*, upon it. A similar valve is secured upon the bottom of the piston G.

The operation of the pump is as follows: We will assume the parts to be in the position shown in the drawings—that is, at the commencement of the downstroke of the piston. The blue arrows represent the direction of the movement of the plunger, while the course of the water is indicated by the red arrows. The cylinder H is intended to be suspended near the bottom of the well. The water flows into the cylinder through the openings *h'* in the cap L. As the piston descends, the valve *g* lifts and the water passes through it, while the lower valve, *h*, remains closed; but when the piston ascends, the lower valve opens and the upper one closes. As the mouth of the spout E and the upper valve, *g*, always rise and fall together, and thus always remain at the same distance apart, it follows that the water is discharged only on the downstroke of the pump. One of the great defects in pumps of this class has been the great liability of the cylinder to get out of line with the piston and piston-rod, and thus cause the parts to strain and work hard and wear out rapidly. By my improved arrangement it will be seen that the flanges

or collars *a* and *I* form two fixed guides, through which the plunger or piston-rod *F* plays, while the cylinder *H* is capable of sliding freely on its rod *K*, which arrangement permits it readily to accommodate and adjust itself to the position of the piston, thus insuring the proper working of the pump.

When economy of space is an object, a strap passing through the opening *l* in the cap *L* may be substituted for the rod *K* with equally good effect.

I do not claim, broadly, under this patent any of the constituent parts of the pump when considered by themselves, as I am aware that they have been used before, but under a mode of arrangement and operation differing from mine; but,

Having thus fully described the construction and operation of my improved pump, what I do claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the water-chamber *H* with the suspension-rod *K*, when arranged and operating as herein described, for the purpose set forth.

2. Suspending the water-chamber from the platform *A* by means of the rods *J* and *K* and guide-ring *I*, as and for the purpose described.

3. The combination of the flanged standard *B*, air-vessel *C*, piston-tube *F*, piston *G*, and water-chamber *H*, when the whole are arranged for joint operation, substantially in the manner herein described.

In testimony whereof I have hereunto subscribed my name.

HENRY H. PALMER.

Witnesses:

ISAAC UTTER,

ORLANDO CLARKE.