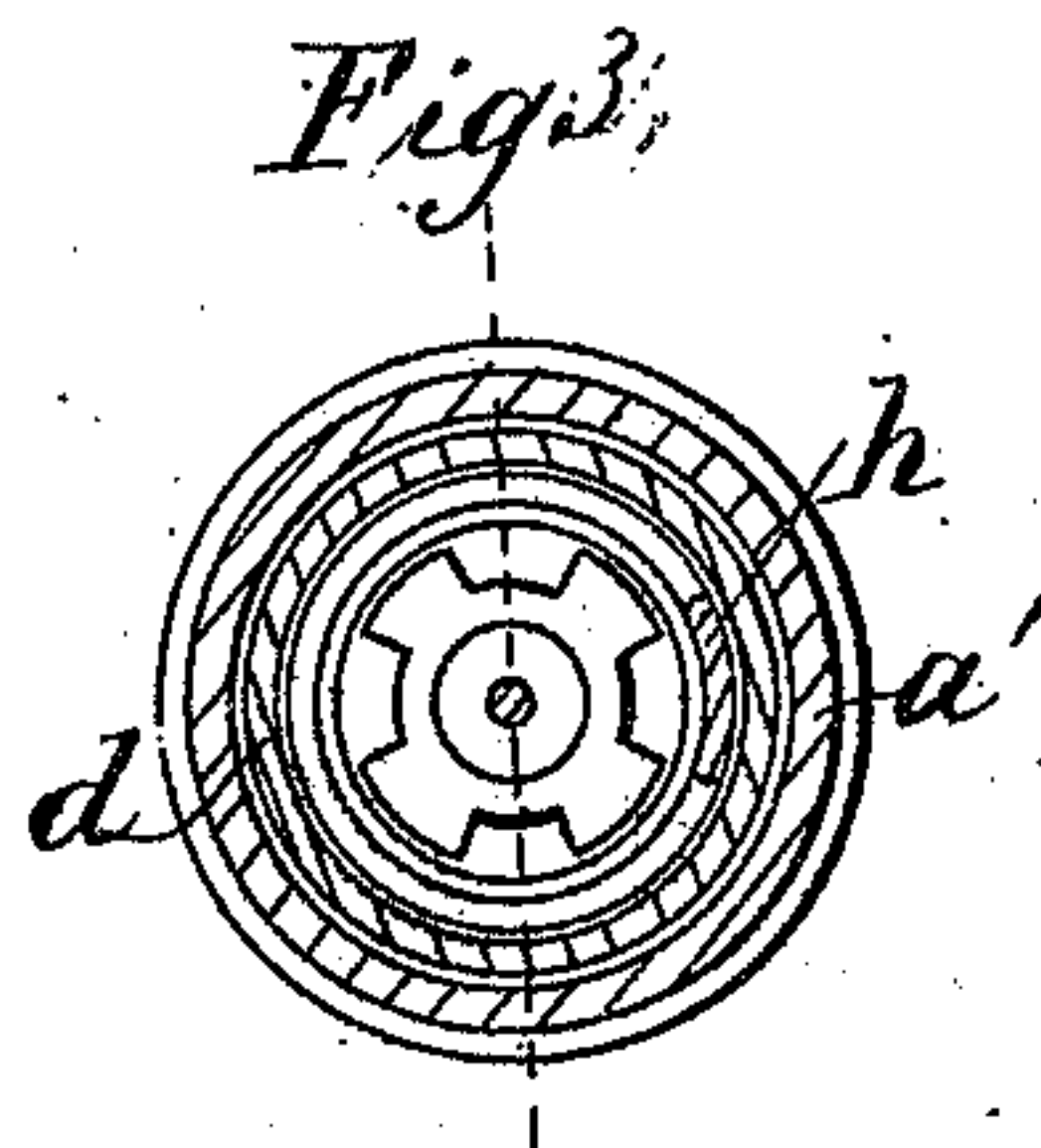
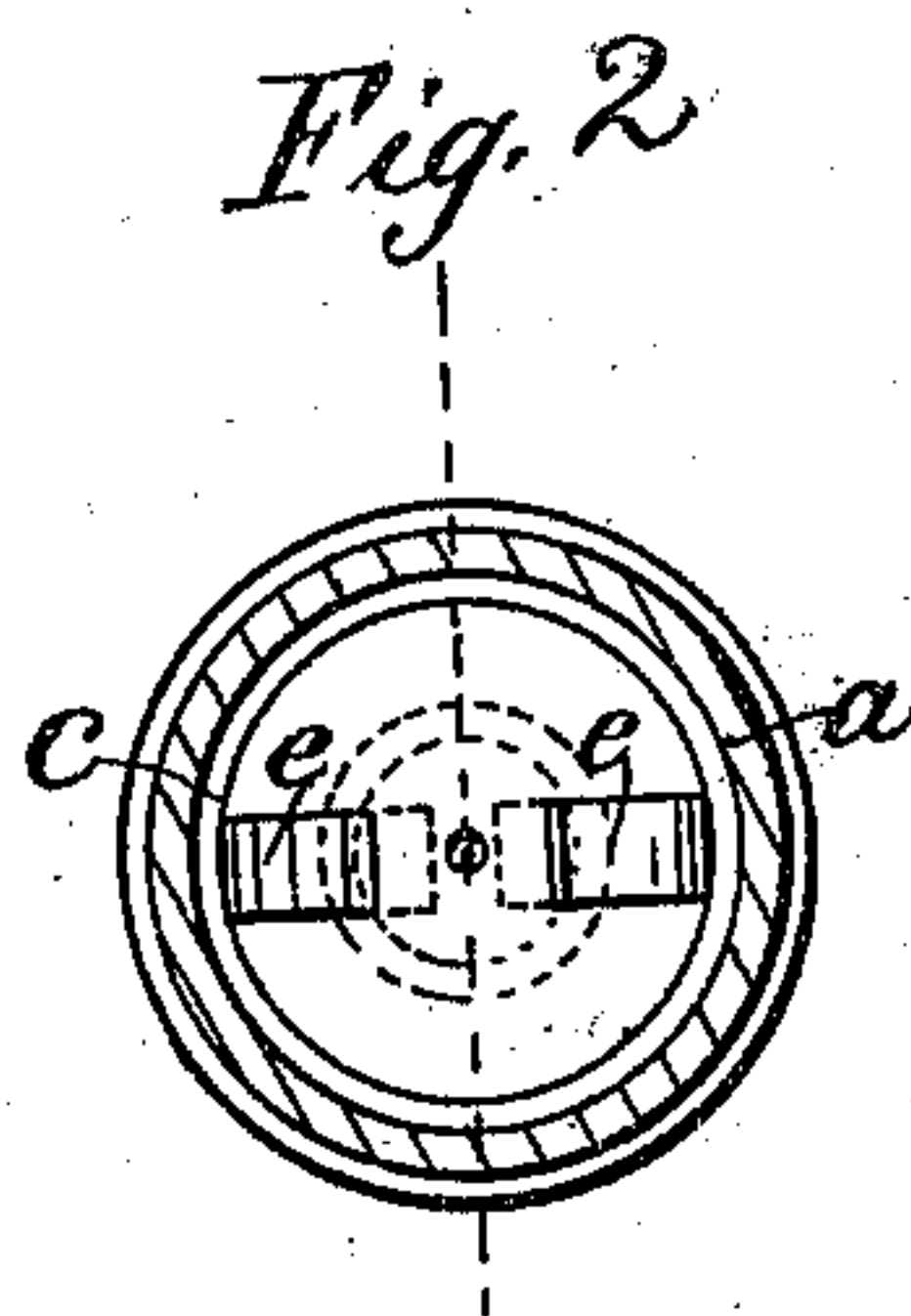
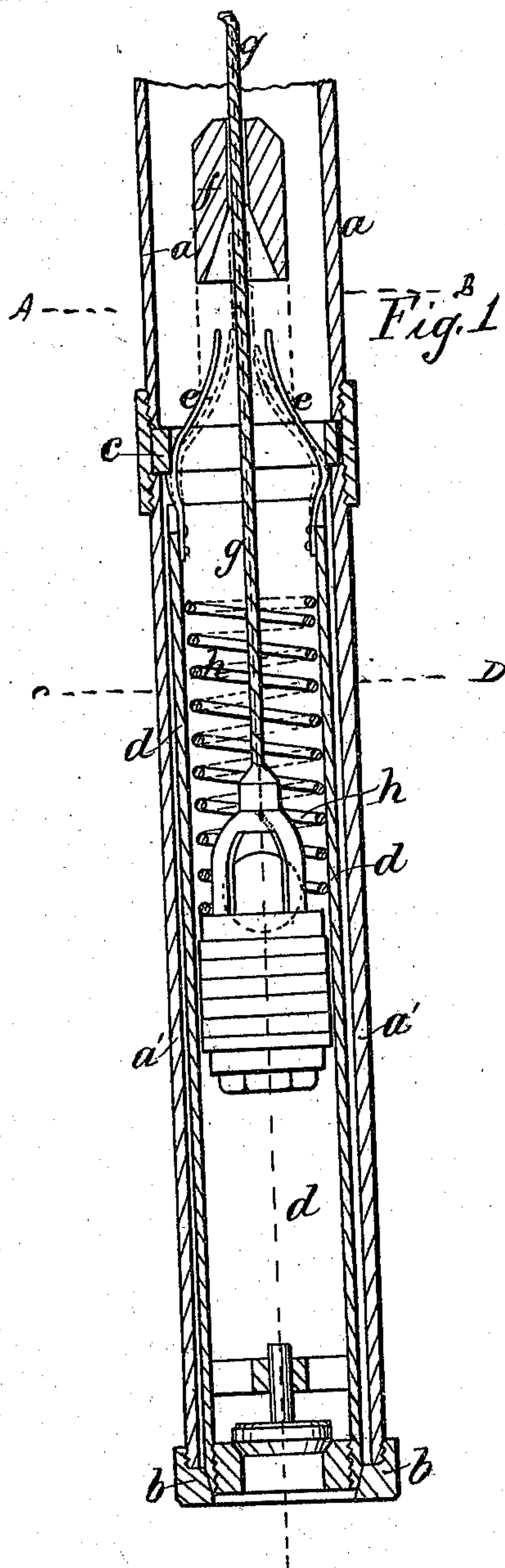


Devirs & Gravatt,

Pump.

No. 90157.

Patented May 18. 1869.



Attest

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United States Patent Office.

JAMES H. DEVIRS AND DANIEL GRAVATT, OF PLEASANTVILLE
PENNSYLVANIA.

Letters Patent No. 90,157, dated May 18, 1869.

IMPROVEMENT IN TUBE-WELL PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JAMES H. DEVIRS and DANIEL GRAVATT, of the borough of Pleasantville, county of Venango, and State of Pennsylvania, have invented certain new and useful Improvements in Pumps; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

In working artesian wells, a frequent source of annoyance and delay is the breaking of pump-rods and rivets, which, together with bits of worn-out valve-packing, often drop into and obstruct the working of the pump, and necessitate its removal.

Under the present system this can only be done by withdrawing and uncoupling both the pump-rods and tubing, usually two to four hours' hard work of three or four men.

The object of our invention is to obviate the necessity of withdrawing the tubing in such cases, by so arranging the wearing-surface or "working-barrel" of the pump, that it can be drawn up inside of the tubing, and lowered again to its seat, without displacing the tubing, and to effect such removal the more readily, we substitute a wire cable for the ordinary pump, or "sucker"-rods.

In the drawings—

Figure 1 represents a vertical section of our improved pump-barrel;

Figure 2 is a transverse section on line A B; and

Figure 3, a transverse section on line C D.

a represents the ordinary tubing of the well, the lower joint *a'* of which is provided with an internal shoulder, *b*, at the bottom; and a small ring, or collar, *c*, is inserted between the tubes *a* and *a'*, for the purposes hereinafter mentioned.

d is a piece of plain tubing, bored smooth on the inside, to form a "working-barrel" for the valves, and made of a little less diameter than the tubing *a*, so that it can be passed through it.

The outer surface of the lower end of the barrel *d*, and the inner surface of the shoulder *b*, are turned in a lathe, so as to make a slightly-tapering water-tight joint, and the barrel *d* is dropped or lowered into the tube *a'* resting upon the shoulder *b*, as shown.

Upon the upper end of the barrel *d*, we provide and attach two or more springs, *e e*, so arranged that when said barrel is lowered to its seat, a shoulder, or projection upon the springs, shall engage with the lower projecting edge of the ring, or collar *c*, and hold the barrel securely down to its place, while the pump is in motion.

When in this position, the upper ends of the springs *e e* are curved inwardly, as shown.

When it becomes necessary to draw out the barrel *d*, a small annular weight, *f*, of the sectional form shown, is slipped over the cable at the top of the well, and, dropping upon the tops of the springs *e e*, presses them together, and disengages them from the ring, or collar *c*, as shown in dotted lines, when the barrel *d*, together with both valves, may be drawn to the top of the well, and any defect remedied, without removing or displacing the tubing *a*.

In operating oil and other artesian wells, the pump-rods have heretofore been made of wood, (very rarely of iron gas-pipe,) screwed together in sections of from twenty to twenty-five feet in length.

These wooden rods and their iron couplings are continually getting out of repair, and their frequent removal for repairs of rods, valves, &c., causes much loss of time, and, consequently, of oil, but thus far it has been thought necessary to use said rods, to insure the proper working of the pump.

To overcome these objections, we substitute for the usual rods a small wire cable, *g*, attached directly to the upper valve, and to the working-beam above; and in drawing out the pump-barrel, or valves with said cable, it is only required to detach it from the working-beam, and wind it upon a pulley, or drum, driven by steam-power, when the valves and barrel can be drawn out, repaired or renewed, and replaced, ready for pumping, in a few minutes' time.

On the upward stroke the cable operates precisely as do the ordinary rods, but in order to insure the instant motion of the valve on the downward stroke, we place a coiled spring, *h*, within the barrel *d*, firmly secured to the barrel at its upper end, the lower end thereof resting upon the valve, all as shown.

This spring gives the necessary impetus to the valve to overcome any pressure of gas from below, and, as thus arranged, the cable *g* serves all the purposes of rigid rods, without their liability to breakage, or loss of time in withdrawal of valves, &c.

Having thus described our improvements,

What we claim as our invention, and desire to secure by Letters Patent, is—

The described arrangement and combination of the detachable inner barrel *d*, tube *a'*, springs *e e*, ring, or collar *c*, and weight *f*, substantially as and for the purposes set forth.

JAMES H. DEVIRS.
DANIEL GRAVATT.

Witnesses:

A. B. HOWLAND,
H. J. ESLER.