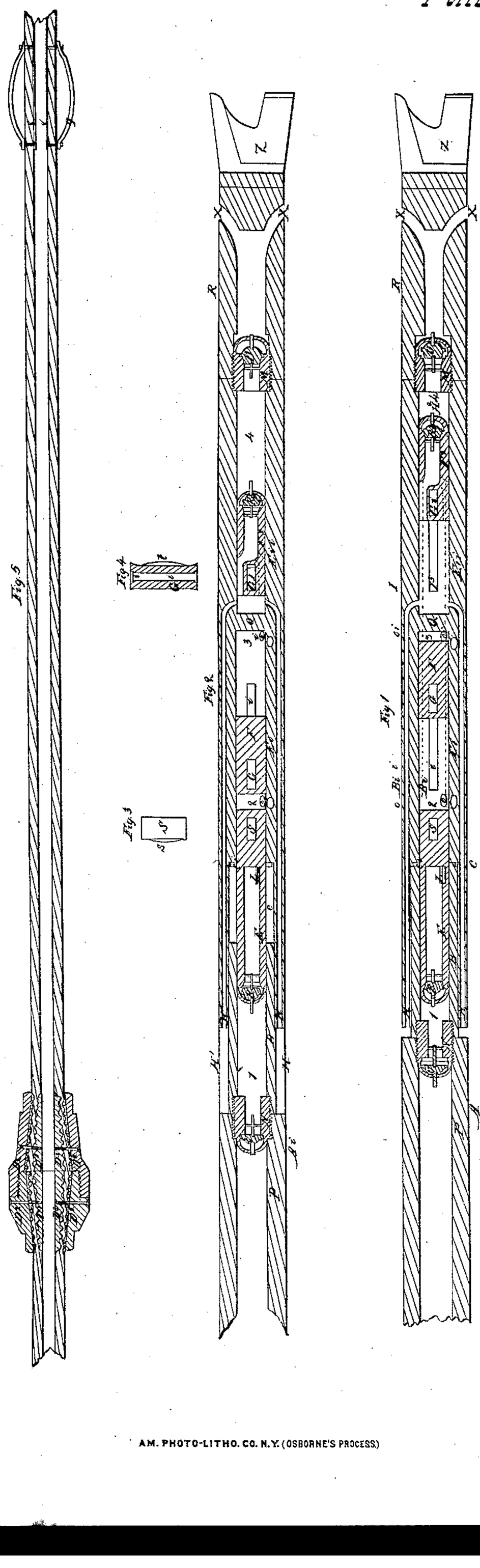
J. Taney,

Artesian Well Drill.

No. 27,935. Patented Apr. 17, 1860.



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UNITED STATES PATENT OFFICE.

JOHN TANEY, OF AUSTIN, TEXAS.

IMPROVEMENT IN APPARATUS FOR BORING ARTESIAN WELLS.

Specification forming part of Letters Patent No. **27,935**, dated April 17, 1860.

To all whom it may concern:

Be it known that I, JOHN TANEY, of Austin, in the county of Travis and State of Texas, have invented a new and useful Improvement in Pump-Drills for Boring Artesian Wells; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal central section through the pump-drill, showing the position of parts after the drill has struck the bottom of the hole. Fig. 2 represents a similar section, showing the position of parts when the drill has been lifted up. Figs. 3 and 4 are detached views of the piston-keys, and Fig. 5 is a view of a part of tubing to be attached to the pump-drill.

Similar letters of reference in each of the several figures indicate corresponding parts.

The nature of my invention consists in combining pump-valves and pistons with a drill for boring Artesian or other wells in such a manner that the usual way of lifting the drill and letting it fall will also be the means to admit clean water to the drill and pump up the water mixed with the products of the boring operation.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

This apparatus consists of two pairs of metal tubes, P and B, screwed together at N, and E *i i* and R, screwed together at M. The hollow nuts M and N, which connect the tubes, are each provided with a valve, D U, the first opening downward, the other upward. The tube E *i i* terminates into a fork or two arms, H H, which fit and slide in dovetail grooves H′ H′ in the surface of tube B. Tube B terminates into a similar fork or two arms, which slide in corresponding dovetail grooves in the surface of tube E *i i*. One of these arms is represented in Fig. 1 in dotted lines at H^2. The short tube E is fastened to the tube E *i i* at its upper end and between the two arms H H, and is provided with an opening, L, in its lower portion. The upper end of tube E is closed with a valve, R, opening upward. The key S, with which the tube E is fastened to the end of tube E *i i*, is provided with an elliptic spring, *s*, bearing against the upper edge of the key-slot in tube E, so as to relieve partially any sudden shock which would otherwise come on the valve U alone. A piston, F, is fastened to the arms H^2, entering from tube B by means of a key, G, which passes through a slide in long slots I in the upper portion of the tube E *i i*. The hollow space of tube E *i i* is divided in two by a solid partition, Q, and a piston, F^2, plays in the hollow space below said partition. The piston F^2 is also fastened to the arms H^2, similar to piston F, by means of a key, G *i*, passing through and sliding in long slots I^3 in tube E *i i*. The tubular space 2 between E and F communicates with the outside by means of a hole, O, through the body of the tube E *i i*. A similar hole, O *i*, serves as a means of communication between the outside and the tubular space 3 between F and Q. The tubular space between Q and F^2 communicates from the outside through channels leading from said space upward through the arms H H.

The operation of this apparatus is as follows: Suppose the drill Z to rest on the bottom of the well and the latter to be filled with water up to the surface of the earth. On lifting the tube P or tubes connected with it the weight of tubes E *i i* R and drill Z will cause this portion of the apparatus to remain at rest, while the tube P draws the tube B and arms H^2 with it. The pistons F F^2 rise together with the arms H^2. When the keys G and G′ have arrived at the upper end of slot I and I^3, the tubes E *i i* R and drill Z will be lifted, together with tubes P B. The ascent of piston F forces the water contained in space 2 out at O, while the water enters at O *i* and fills space. This piston F, acting against the water either above or below the piston, contained in spaces 2 and 3, in combination with the elliptic springs *s t*, serves to protect the whole apparatus from the effects of sudden jerks when lifting or violent shocks when dropping it. As the tube B rises the valve R opens, and the water, filled with the substance drilled up and required to be removed, is sucked through openings L and valve R into space *i*. As the piston F^2 rises the valve R *i* opens, and a portion of the water with which the channels H H and space above the piston are filled is allowed to pass through the valve R *i* and fill space 4.

When the apparatus has been lifted high

enough, it is let fall. As soon as the drill Z strikes the bottom, the parts return from their relative position represented in Fig. 2 into the one represented in Fig. 1. As tube B slides back over tube E, valve R closes, valve U opens, and a portion of the contents of space *i* is forced up into tube P above valve U. A corresponding quantity of water is forced out of space 4 into hollow space of tube R, and out at X X immediately above the drill, in consequence of the descent of piston F^2, closing of valve R *i*, and opening of valve D. As the piston F descends water enters the space 2 through O, and the water contained in space 3 is forced out through O *i*.

As the capacity of valves R and R *i* is the same and the stroke of tube B equal to the stroke of piston F^2, it will be understood that at each stroke of the apparatus the same quantity of liquid is forced up into tube P as is forced out of X X. As the water cannot fill with sediment above the level of hole L, because here it is sucked into tube E and forced up into tube P, and as the water forced out at X X to supply the drill enters at the upper end of channels H H above the said level of hole L, consequently the water supplied to the drill at X X′ is always clean water, while the water forced up into the tube P is filled with the substance drilled up.

It is proposed to attach india-rubber-cloth tubes to the upper end of tube P of a sufficient length to reach to the surface of the earth. 7 in Fig. 5 represents the joints of the tubes, and 9 one of a series of wooden or metal ferrules, which (in combination with short metal tubes 8) are fastened to the india-rubber-cloth tubes at certain distances from each other for the purpose of guiding, protecting, and stiffening the india-rubber-cloth tube in the well-hole.

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

Combining with the tubes B and E *i i*, which are provided with arms H H and H^2, and with dovetail grooves in their surfaces, valves U, R, and D, valve-piston F^2, and solid piston F, in the manner and for the purposes described.

JOHN TANEY.

Attest:
O. FLUSSER,
THOS. I. RANDOLPH.