J. M. CREAL.

WELL-BORER.

No. 177,378. Patented May 16, 1876.

Fig. 1.

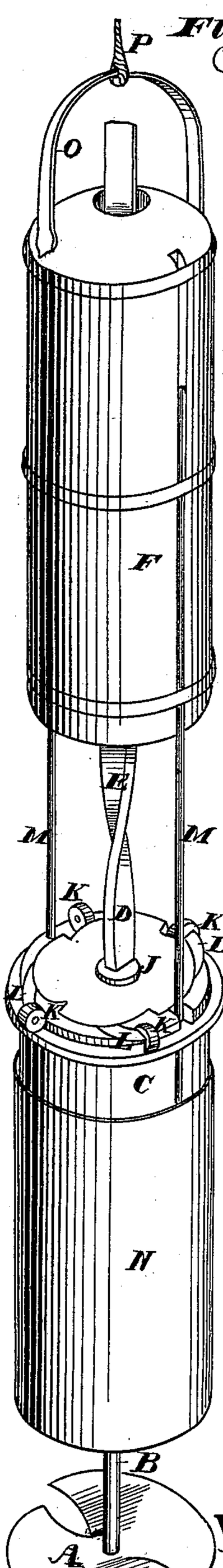
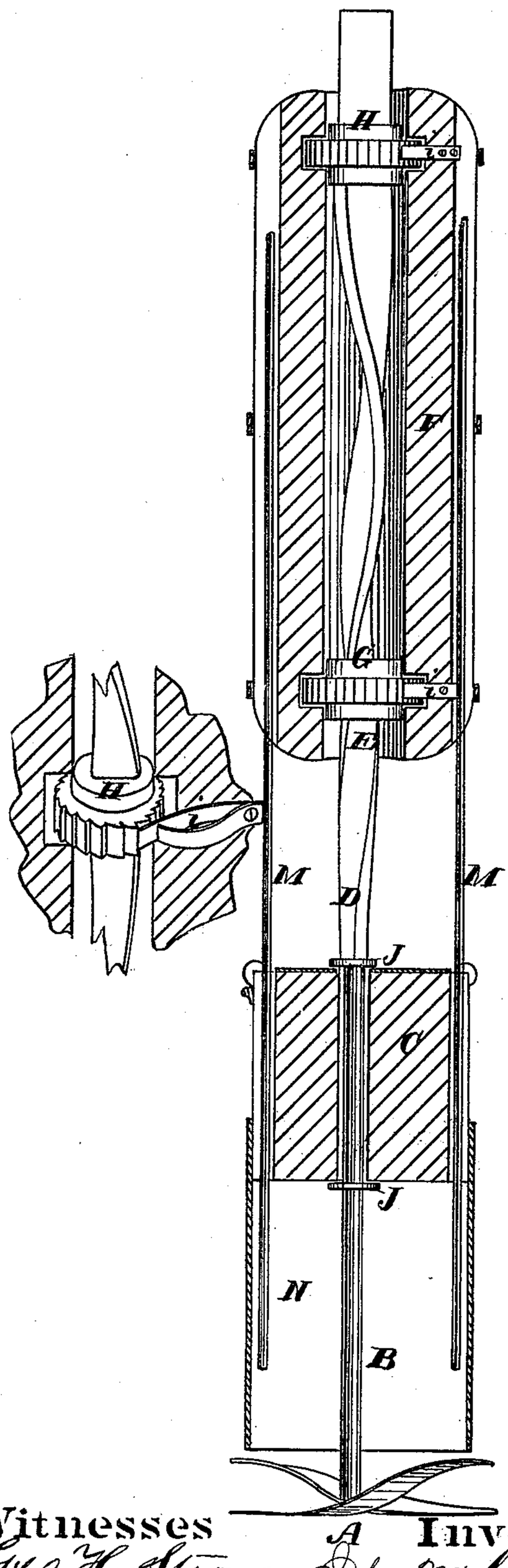


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN MILTON CREAL, OF LOS ANGELES, CALIFORNIA.

IMPROVEMENT IN WELL-BORERS.

Specification forming part of Letters Patent No. **177,378**, dated May 16, 1876; application filed March 24, 1876.

To all whom it may concern:

Be it known that I, JOHN M. CREAL, of Los Angeles city and county, State of California, have invented a Well-Boring Device; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The object of my invention is to provide certain improvements in apparatus for boring, and it is more especially applicable to the sinking of Artesian wells. It consists of a heavy cylinder, through which the stem passes, and carries at its lower end a boring-tool. Above the weight this stem is twisted so as to form a right-hand spiral for a short distance, and then a left-hand spiral for another short distance. A weighted cylinder surrounds this double spiral, and a nut at each end fits the spiral, so that when the cylinder is drawn up the stem and tool will be revolved, and when it is let down the action is repeated by the other spiral, so that it is continuous. Ratchets and pawls surround each nut, so as to prevent the stem from rotating backward, and pawls upon the lower weight prevent it from rotating. The upper cylinder is operated simply by a rope from the top of the well. A cylindrical bucket, open at both ends, surrounds the stem above the boring-tool, and this receives the earth bored out, and brings it to the surface.

Referring to the accompanying drawing for a more complete explanation of my invention, Figure 1 is a perspective view of my boring apparatus. Fig. 2 is a vertical section. Fig. 3 is an enlarged view of the nut and ratchet.

A is the cutter or auger which bores the well, and it is secured to the lower end of the stem B, which extends up through a short heavy cylinder, C, and turns loosely in it. Above this cylinder the stem is made flat, and is twisted so as to form a spiral to the right for a short distance, as at D. Above this spiral it is twisted so as to form a left spiral, E. A cylinder, F, of the same diameter as the cylinder C, fits around these two spirals, and has a nut at each end, the nut G fitting the lower spiral, and the nut H fitting the upper spiral. The outside of each nut is circular, and formed into a ratchet, as shown, and pawls *i i* serve to hold each ratchet at the point to which they are alternately revolved by the vertical reciprocating motion which is given to the cylinder F, as will be more fully described hereafter. Collars J upon the stem, on each side of a plate at the top of the cylinder C, serve to retain the stem in place. The cylinder C has rollers K around the top, to guide it and relieve friction when it is drawn up or let down through the pipe, and these rollers are mounted upon the ends of levers L, which are held out by springs, so that the corners of the rollers act as pawls against the rough inside of the pipe, and thus prevent the device from turning around when it is operated. Rods M extend up on each side of the cylinders C and F in grooves, and these serve as guides to prevent the upper cylinder from turning as it moves up and down. A hollow cylinder or bucket, N, surrounds the lower part of the cylinder C, remaining up out of the way of the tool while at work; but it slides down so as to rest upon the boring-tool when the device is drawing up, and this serves to hold the earth that is cut out by the tool, so that when full it may be all drawn up to the surface without being washed out. A bail, O, is secured to the upper cylinder F, and a rope, P, is attached to it, extending to the top of the well.

The operation will then be as follows: The cylinder F, being alternately raised by the rope, and allowed to drop back again by its weight, will turn the stem B, both in rising and falling, with a continuous motion, by means of its contained mechanism and the right and left spirals upon the stem, as before described. The weight of the cylinder C exerts a continuous pressure upon the boring-tool A, causing it to enter and take up the earth which is retained within the hollow cylinder N until the latter is filled, when the whole apparatus can be withdrawn and emptied by simply winding the rope upon a windlass. The rollers K, acting as pawls, and the guiding-rods M, will prevent the cylinder from turning with the auger, and insure the perfect working of the latter. A part of this stem above the spirals may be straight, so as to give the cylinder some impetus at its start.

It will be manifest that modifications of this mechanism can be used for dentists', rock, and other drills, and in many other places where it is desired to convert rectangular into continuous rotary motion.

By this mechanism I am enabled to do away entirely with the cumbrous arrangement of rods which must be joined and separated every time an ordinary auger is put down or withdrawn, and which are objectionable also on account of their weight. Their size causes an overflow of water when put down, and when drawn out, if there is quicksand in the well, the pressure of water, to restore an equilibrium, forces the sand in, so as to practically stop operations. This is avoided by the use of the rope, which, being only three-fourths or seven-eighths inch in diameter, will not cause any overflow, and the cylinder N will retain all the earth or sand, so that whatever is bored out can be drawn up to the surface. This mechanism will illustrate many applications of my invention, which will need but slight changes to adapt it.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The weighted cylinder C, with its spring-arms L and pawl-rollers K, and the guide-rods M, in combination with the reciprocating cylinder F, substantially as and for the purpose herein described.

JOHN M. CREAL.

Witnesses:
GEO. H. STRONG,
JNO. L. BOONE.