

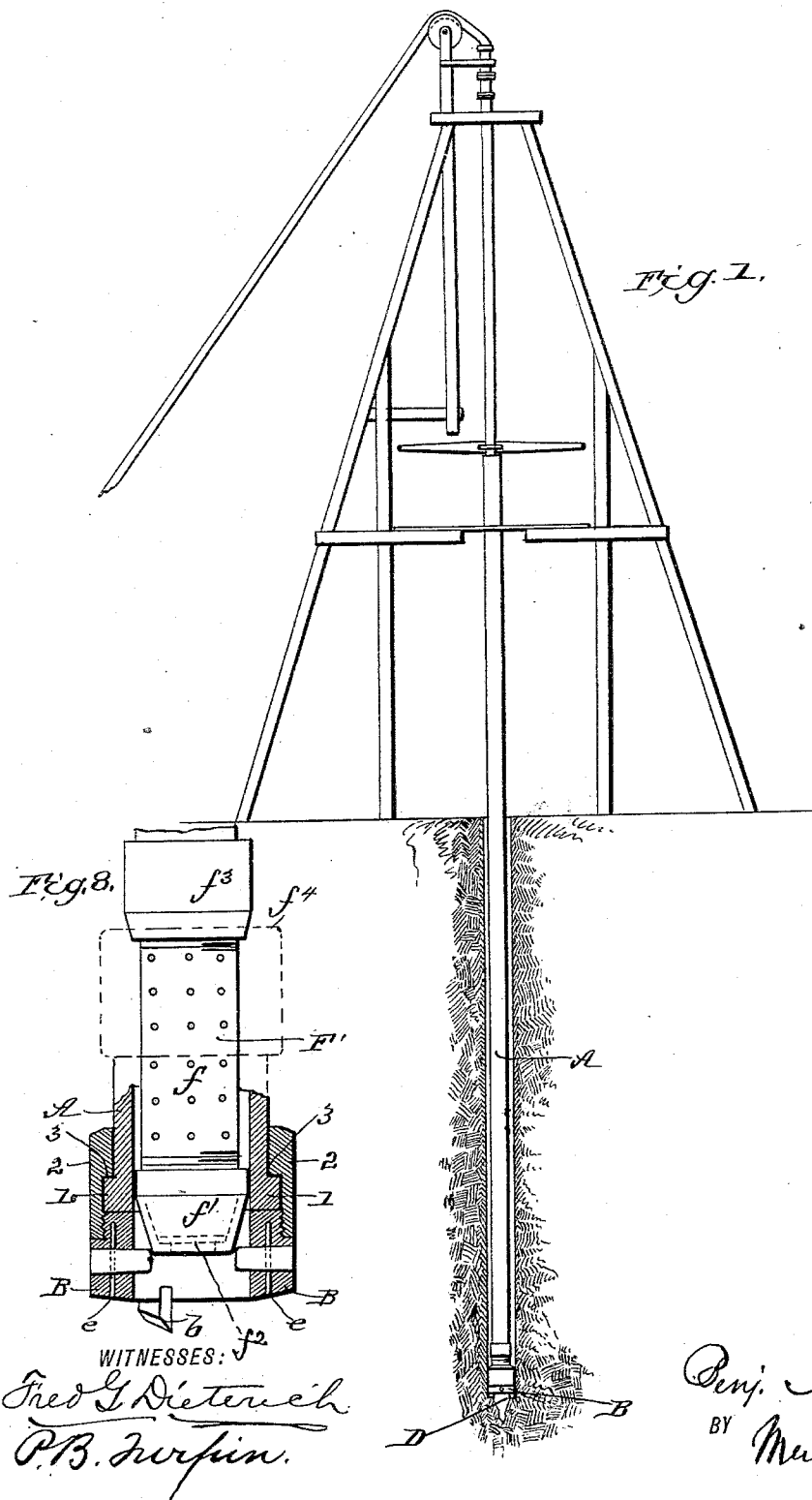
(No Model.)

2 Sheets—Sheet 1.

B. ANDREWS.
WELL BORER.

No. 401,404.

Patented Apr. 16, 1889.



WITNESSES:
Fred G. Dietrich
P. B. Turpin

INVENTOR,
Benj. Andrews.
BY *Munn & Co.*
ATTORNEYS

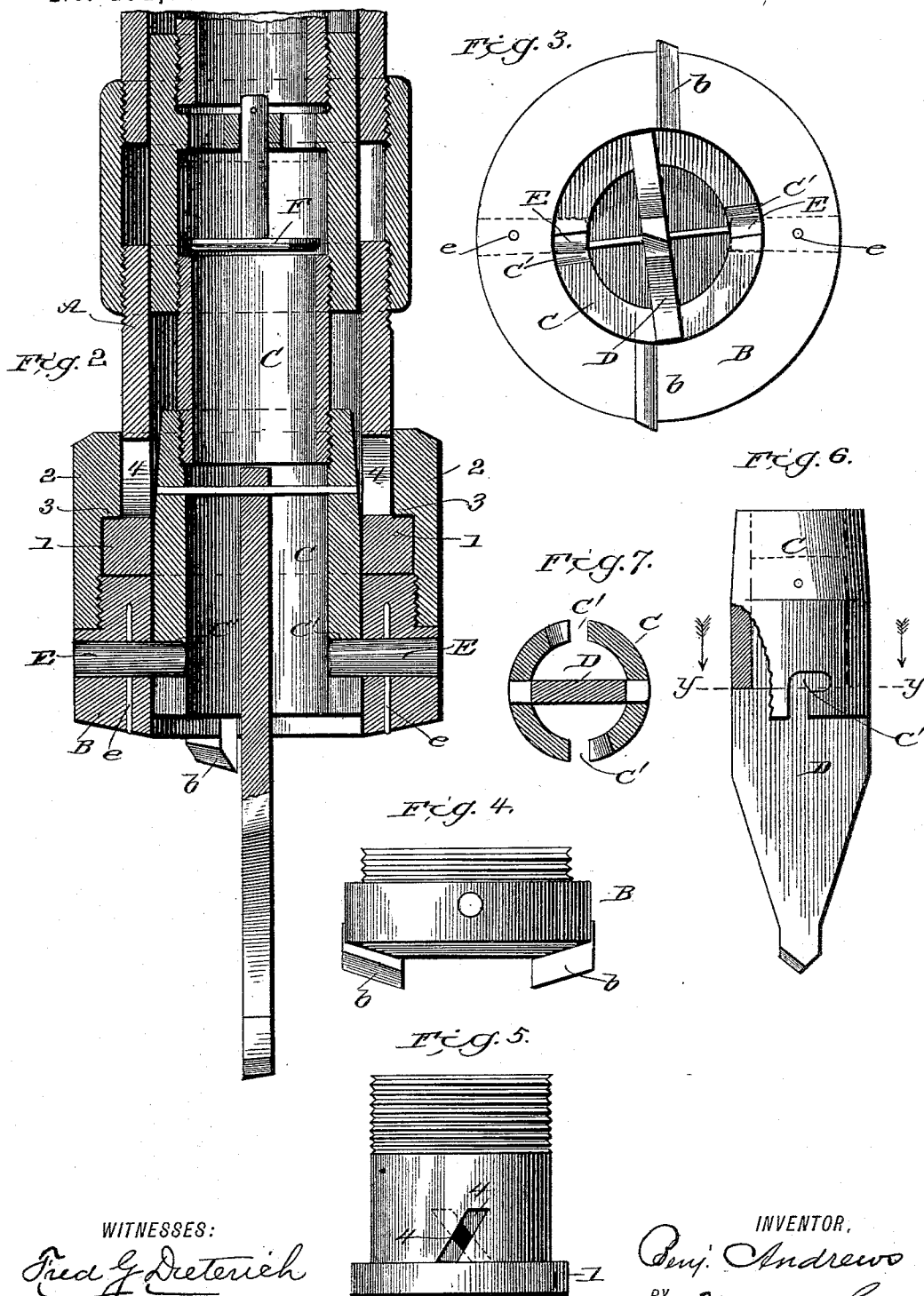
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UNITED STATES PATENT OFFICE.

BENJAMIN ANDREWS, OF NEW ORLEANS, LOUISIANA.

WELL-BORER.

SPECIFICATION forming part of Letters Patent No. 401,404, dated April 16, 1889.

Application filed August 25, 1888. Serial No. 283,815. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN ANDREWS, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Well-Borers, of which the following is a specification.

This invention is an improvement in apparatus for boring Artesian wells, and may be said to seek to provide improvements on the construction described in a former patent issued to me October 23, 1888, No. 391,501.

In the drawings, Figure 1 is a side view of the apparatus in position for use. Fig. 2 is a longitudinal section of the boring devices and the lower end of the well-tube. Fig. 3 is a bottom view thereof. Fig. 4 is a side view of the boring-head. Fig. 5 is a side view of the lower portion of the well-tube. Fig. 6 is a side view of the lower section of the turning-stem. Fig. 7 is a section on about line *y y*, Fig. 6; and Fig. 8 is a side view of the strainer in connection with the sectional representation of the lower end of the well-tube and the boring-head thereon.

The invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

On the lower end of the well-tube A, I journal the boring-head B, which is provided with cutters *b*, extending from its lower edge. The central opening or bore of this head is the same as that of the well-tube, while its external diameter is greater than that of such tube, so the head will bore a hole larger than the well-tube, and so form a channel up alongside of said tube for the upward flow of the water forced into the well to aid the cutting and to assist in removing the cuttings.

The boring-head is preferably secured on the well-tube in the same manner as described in the former patent—that is to say, by providing a ring or flange, 1, on the well-tube, and a sleeve, 2, having at its upper end a ring or collar, 3, to engage the ring or flange 1, and connected at its lower end with the boring-head, as shown. In the present construction, however, I provide a vent or vents, 4, through the well-tube leading from between the rings 1 and 3 into the said well-tube, to permit the escape thereof of any sand or other obstruction that may get between said rings 1 and 3.

In order to turn the boring-head, I provide a turning-stem, C, extended down within the well-tube, and made, preferably, tubular, to constitute the water-conducting pipe. This turning-stem is provided at its lower end with the center cutter or bit, D, which extends below the boring-head proper, and at its lower end the said stem or tube is detachably connected with the boring-head, preferably by providing such stem with L-shaped slots C', and the head with inwardly-projected studs E to enter such slots, the studs E being held in radial openings in the boring-head by means of fragile fastenings, (shown as pins *e*), so such studs may be easily forced outward by pressure against their inner ends, as presently described.

The L shape of the slots, it will be seen, is useful, as it prevents any longitudinal displacement of the turning-stem when properly engaged with the studs.

It will be understood that the part C may be referred to broadly as the stem and specifically as the tube, and that the tubular construction of such part is preferred. At or near its lower end the tube C fits so closely within the well-tube that water, dirt, and the like cannot pass up between such parts, and in the tube C, near its lower end, I provide a check-valve, F, which permits the free flow of water down through the tube C, and yet prevents back-pressure of the water, sand, dirt, &c., up into such tube C when changing the tube or adding other sections thereto. It will be understood both tubes A and C are made in sections or lengths, and that such lengths are added and coupled as the boring proceeds.

In the operation of boring a suitable framing is erected to support the well and stem-tube, and also the means for turning and supplying water to said stem-tube, as will be understood from Fig. 1, the said framing, turning devices, &c., being substantially the same as shown in my former patent.

It will be seen that in the present case I support the center cutter or bit on the turning-stem, so it can be removed with such stem, and thus be renewed or repaired, if desired, at any time before the boring is completed, and at the completion of such boring may be

removed, and thus avoid any possibility of presenting any obstruction to the passage of water up through the well-tube.

In the operation of boring, the turning-stem 5 is detachably connected with the boring-head, and the center cutter on said stem projects below the said boring-head, as shown. By turning this stem the boring-head is rotated. At the same time water is forced down through 10 the stem C and passes up outside of the well-tube, its passage up between the well-tube and stem C being prevented by the fitting of said stem snugly in the well-pipe, as shown. This construction prevents the dirt, &c., passing 15 up through the well-tube and aids in keeping said pipe clean and unobstructed. This passage of the water up along the outside of the well-tube also renders the descent of such pipe easier by reducing the friction 20 against its said outer side, so that less resistance is offered to its movement into the ground. After the well has been bored to the desired depth, the stem C may be removed and the strainer F' inserted, such strainer consisting of perforated tubular portion *f* and a 25 head, *f'*, at the lower end, such head *f'* being tapered to engage and force out the studs E. Such lower end of the strainer is valved at *f*². At its upper end the strainer has an enlarged 30 portion or collar, *f*³, tapered to fit tightly and clamp within the lower part of the well-tube at *f*⁴, as shown in Fig. 8.

Having thus described my invention, what I claim as new is—

35 1. In a well-boring apparatus, the combination of the well-tube, the boring-head journaled thereto, and the water-tube connected with said boring-head and constructed to fit snugly therein, whereby water forced down 40 said water-tube will be prevented from passing up between the same and the boring-head, all substantially as and for the purposes specified.

45 2. The combination, in a well-boring apparatus, of the well-tube, the boring-head journaled thereto, the turning-stem detachably connected with said head, and the center cut-

ter or bit supported on said turning-stem, substantially as set forth.

3. The combination, in a well-boring apparatus, of the well-tube, the boring-head journaled thereon, and the turning-stem made tubular or having a passage formed through it for the water and provided with a check-valve, substantially as set forth. 55

4. In a well-boring apparatus, the combination of the well-tube, the boring-head journaled thereon and provided with inwardly-extended studs or projections, and the turning-stem having at its lower end slots arranged to receive said studs or projections, 60 substantially as set forth.

5. In a well-boring apparatus, the combination, with the well-tube and the boring-head journaled on the well-tube, of the studs projected into the bore of said head for engagement 65 by the turning-stem, and fragile fastenings for said studs, substantially as set forth.

6. In a well-boring apparatus, the well-tube having the boring-head journaled on its lower 70 end, and having a vent or vents, 4, formed through it, substantially as described, and for the purposes specified.

7. The well-tube and the boring-head journaled on the lower end thereof and provided 75 with inwardly-projected studs, combined with the turning-stem, having slots made L shape and engaged with said studs, substantially as set forth.

8. The improvement in well-boring apparatus, substantially as herein described, consisting of the well-tube, the boring-head journaled thereon, the studs projected into the bore of said well-tube, fragile fastenings for said studs, the turning-stem fitted at its lower 85 end tightly in the well-tube and provided at such end with slots constructed to engage the studs, and the center cutter or bit supported on said turning-stem, substantially as set forth.

BENJAMIN ANDREWS.

Witnesses:

B. F. PETERS,
E. L. DOWTY.