

No. 714,772.

Patented Dec. 2, 1902.

P. H. BOOTHE & F. L. WOODS.

WELL DRILL.

(Application filed June 9, 1902.)

(No Model.)

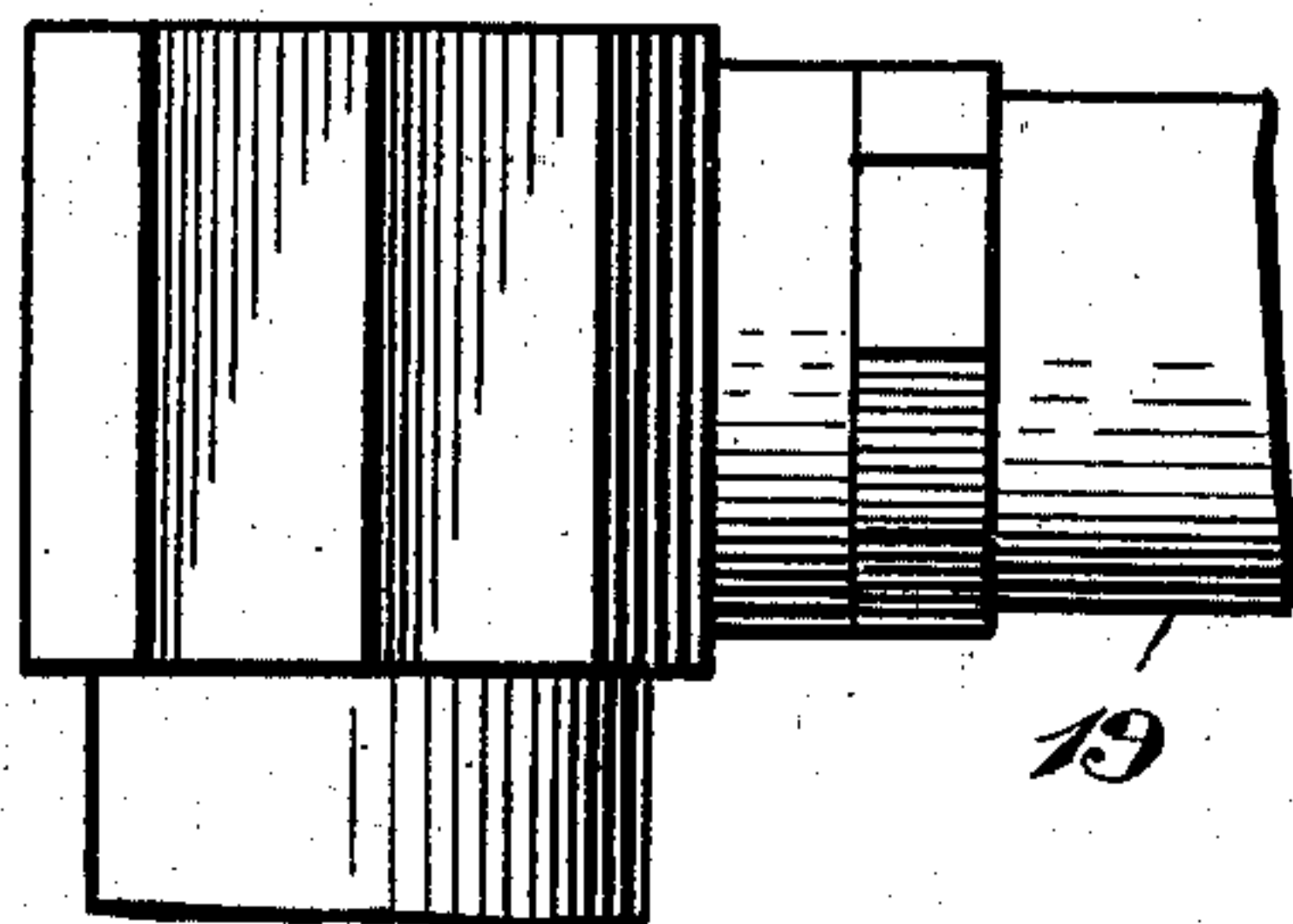


Fig. 1.

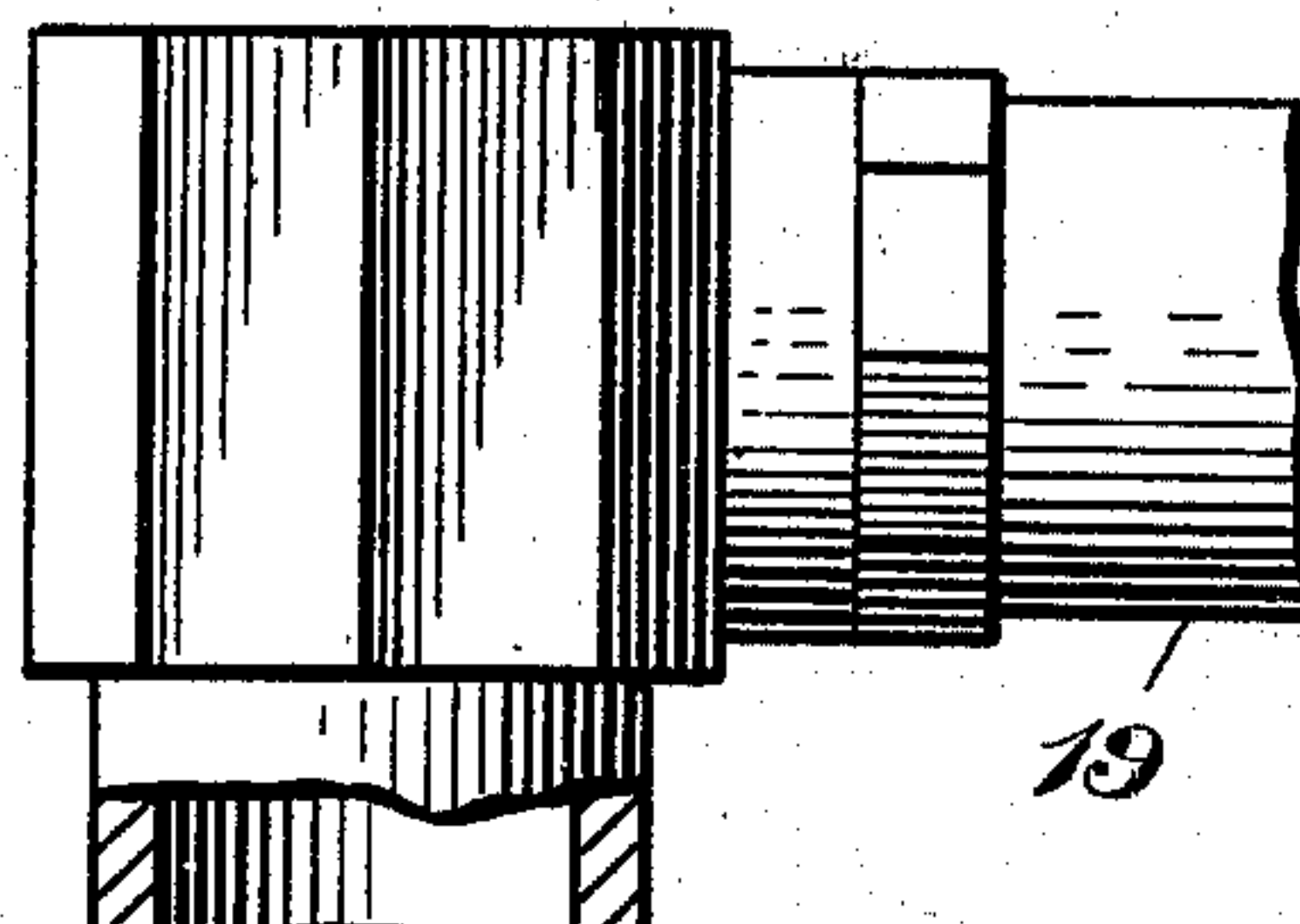


Fig. 2.

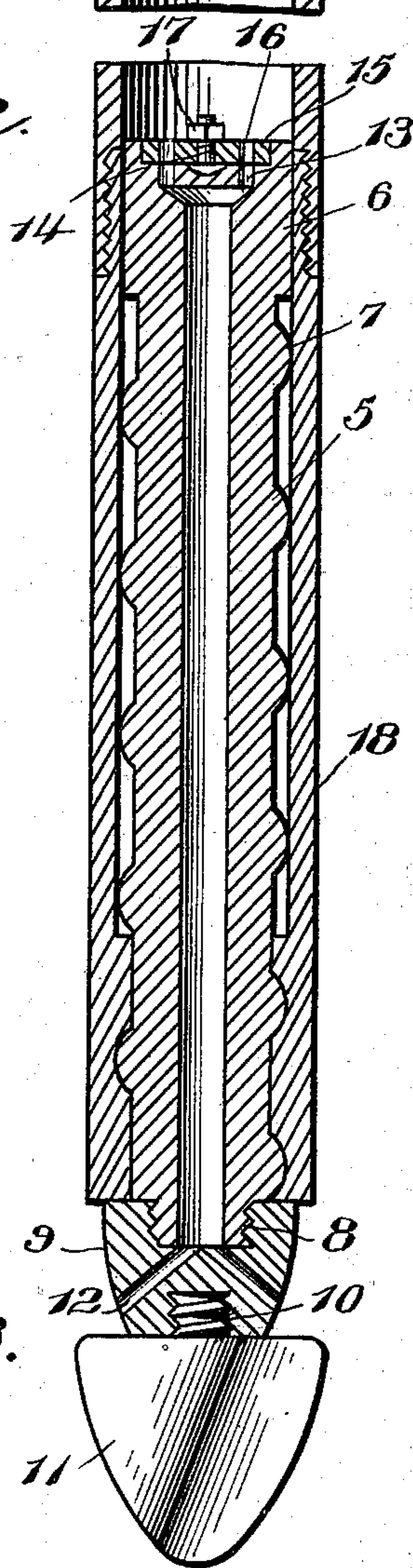
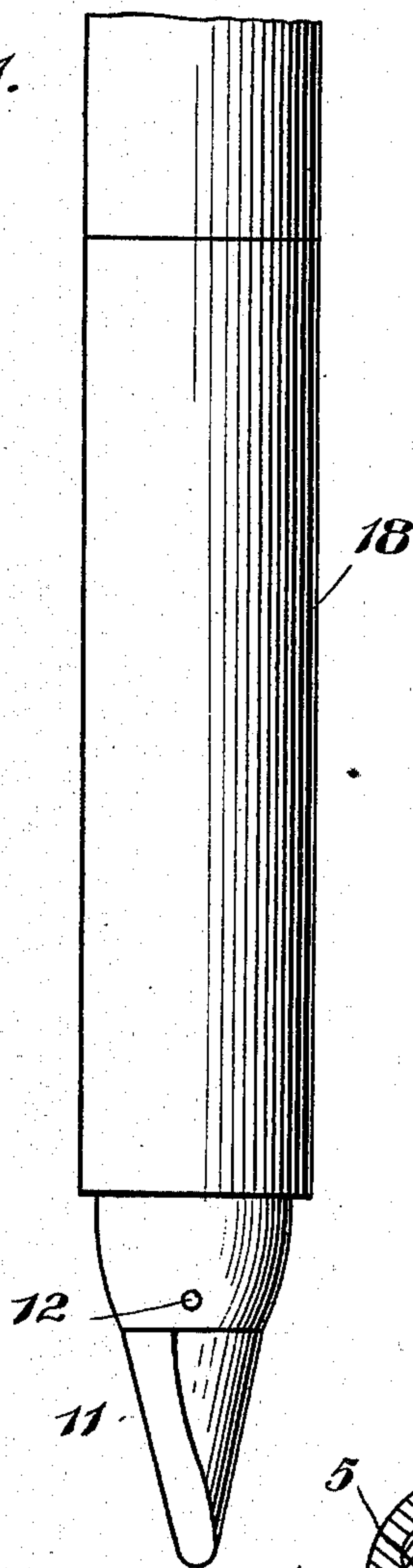
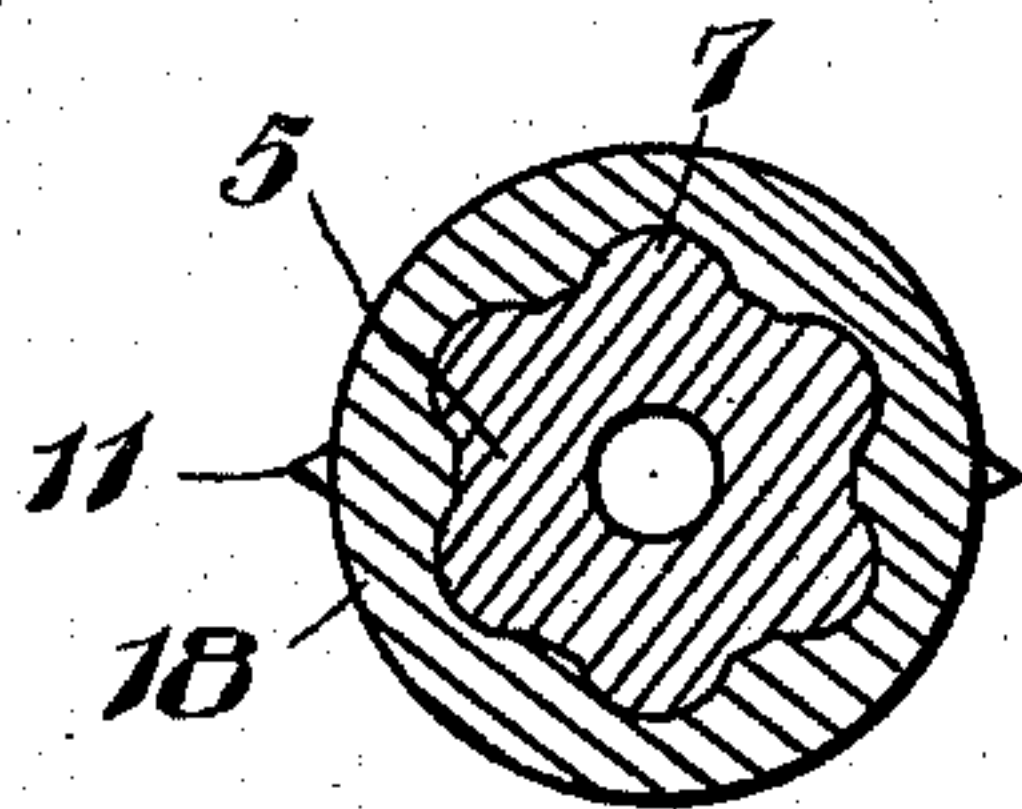


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

PHILIP H. BOOTHE AND FOUNT L. WOODS, OF COLLINS, MISSISSIPPI.

WELL-DRILL.

SPECIFICATION forming part of Letters Patent No. 714,772, dated December 2, 1902.

Application filed June 9, 1902. Serial No. 110,925. (No model.)

To all whom it may concern:

Be it known that we, PHILIP H. BOOTHE and FOUNT L. WOODS, citizens of the United States, residing at Collins, in the county of Covington, State of Mississippi, have invented certain new and useful Improvements in Well-Drills; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to drills for drilling wells; and it has for its object to provide a construction wherein a bit will be positively rotated, so that it will have a boring action and in which this boring action may be obtained without raising the bit from the work.

A further object of the invention is to provide a construction wherein when desired the bit may be raised from the work and dropped onto the work, then rotated, and finally struck, or may be rotated and struck without raising from the work.

Other objects and advantages of the invention will be understood from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is an elevation of a drill embodying the present invention. Fig. 2 is a central longitudinal section through the drill and the nut in which the drill-shaft is rotated. Fig. 3 is a transverse section through the nut and the drill-shaft therein.

Referring now to the drawings, the drill proper comprises a tubular stem 5, the upper portion 6 of which is in the form of a plain cylinder, below which the stem is provided with threads 7, having a very steep pitch, and below the threaded portion the stem is reduced in diameter and is threaded, the diameter of the stem through the threads 7 being the same as the diameter of the upper end portion 6. Upon the threaded lower portion 8 of the stem is screwed a thimble 9, the upper portion of which is slightly greater in diameter than the stem thereabove, and into the lower end of the thimble is screwed the stem 10 of the bit 11. Through the thimble 9 are formed openings 12, which are the discharge-openings for water that is forced through the stem 5,

it being understood that the openings 12 communicate with the interior of the stem, as illustrated. The upper end of the portion 6 of the stem is recessed, and in the bottom of this recess are formed the openings 13, while centrally of the recess is the spindle 14, on which is mounted the valve-disk 15. The valve-disk 15 has openings 16 therethrough, which are adapted to register with their respective openings 13, and by adjusting this disk the perforations may be caused to register to a greater or lesser degree, so as to get the proper flow of water into the tubular stem. A nut 17 upon the spindle is adapted to clamp the disk in its adjusted position.

Engaged with the threaded portion of the stem 5 of the drill is an elongated nut 18, with the upper end of which is engaged the drill-shaft, which is in the form of a pipe, and when the nut is reciprocated by raising and lowering the drill-shaft the passage of the nut over the threads of the drill-stem will effect a positive rotation of the stem and therewith the drill. In practice a hose 19 is connected to the upper end of the drill-shaft to supply water therethrough to the drill-stem, from which it is discharged through the orifices of the thimble. With this construction it will be seen that if the nut is reciprocated with the proper length of stroke the drill will be oscillated without raising it from its work, and, if desired, by dropping the nut a sufficient distance it will strike upon the upper end of the thimble and the whole weight of the shaft and nut will give a hammer-blow to the drill. Furthermore, the nut may be raised sufficiently far to raise the drill from the work, and the drill may be lowered onto the work with a picking action and subsequent rotation or may be lowered to give a picking action, then a rotation, and finally a blow.

It will be understood that in practice modifications of the specific construction shown may be made and that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. A drill comprising a reciprocatory nut, a tubular drill-stem having threads engaged with the threads of the nut, a thimble at the lower end of the stem and having discharge-

openings communicating with the bore of the stem, a drill engaged with the thimble and a regulating-valve at the upper end of the stem.

5 2. A drill comprising a nut, a tubular drill-stem having threads engaged with the threads of the nut, a thimble at the lower end of the stem and having discharge-openings communicating with the bore of the stem, a drill engaged with the thimble said stem having a
10 perforated valve-seat in its upper end and a valve-chamber thereabove, and a valve in the seat and having perforations for movement into and out of registration with the
15 perforations of the seat to vary the supply of water through the openings in the thimble.

3. A drill comprising a tubular shaft having a lower internally-threaded portion, a tubular threaded drill-stem engaged with the
20 threads of the shaft for rotating the stem when the shaft is reciprocated with respect thereto,

and a drill-bit carried by the stem, the stem having discharge-openings leading therefrom to discharge the water received from the shaft.

25 4. A drill comprising a tubular shaft having a lower internally-threaded portion, a tubular threaded drill-stem engaged with the threads of the shaft for rotating the stem when the shaft is reciprocated with respect
30 thereto, a drill-bit carried by the stem, the stem having discharge-openings leading therefrom to discharge the water received from the shaft and means carried by the stem for regulating the flow of water therethrough.
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In testimony whereof we affix our signatures in presence of two witnesses.

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FOUNT L. WOODS.

Witnesses:

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