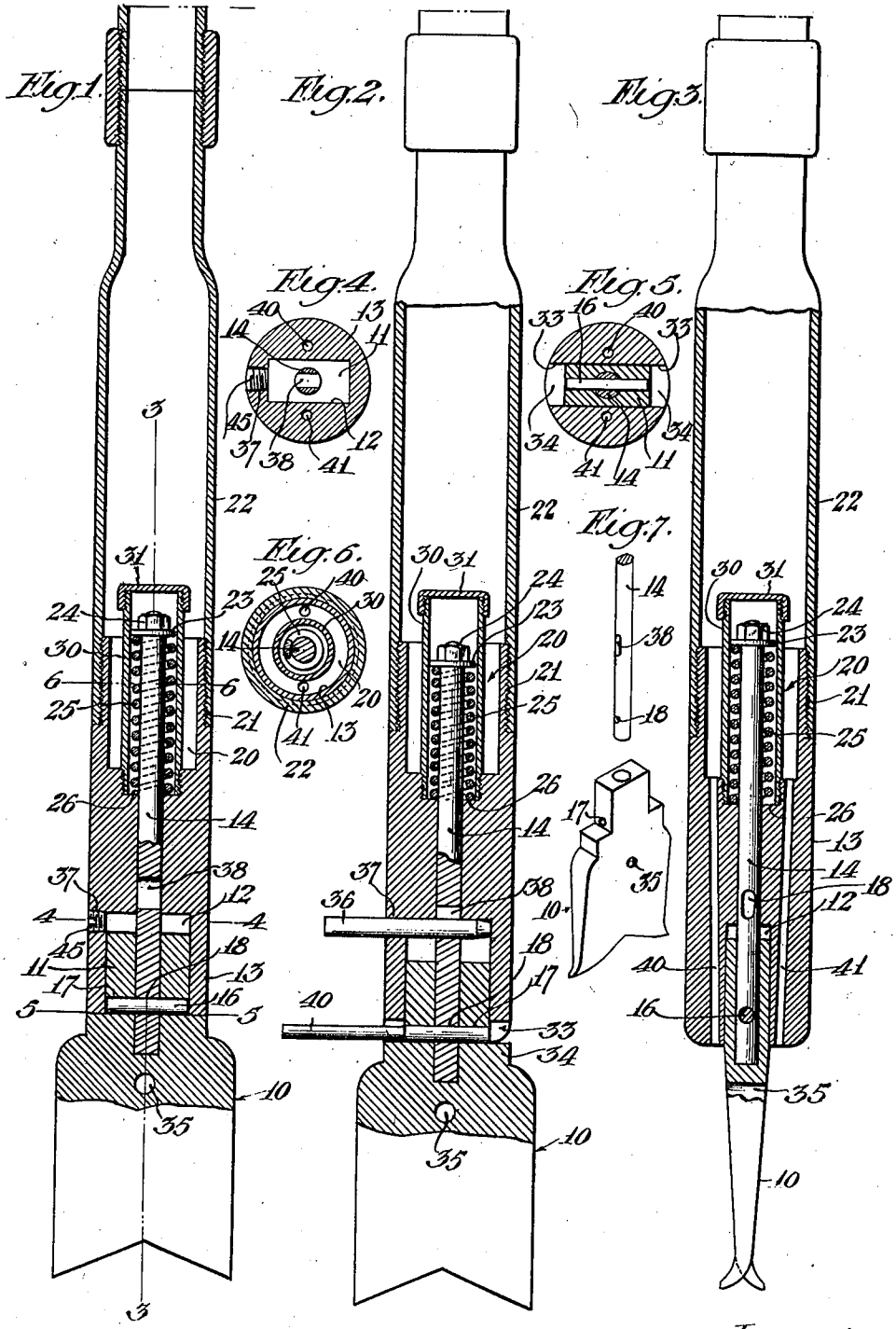
C. P. MAYNER.

ROTARY DRILLING TOOL.

APPLICATION FILED MAR. 4, 1918.

1,292,842. Patented Jan. 28, 1919.



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UNITED STATES PATENT OFFICE.

CHARLES P. MAYNER, OF MONTEBELLO, CALIFORNIA.

ROTARY DRILLING-TOOL.

1,292,842. Specification of Letters Patent. Patented Jan. 28, 1919.

Application filed March 4, 1918. Serial No. 220,388.

To all whom it may concern:

Be it known that I, CHARLES P. MAYNER, a citizen of the United States, residing at Montebello, in the county of Los Angeles and State of California, have invented a new and useful Rotary Drilling-Tool, of which the following is a specification.

My invention relates to rotary drills, being more particularly a form of fish tail bit, and the mounting of the same. In common forms of fish tail bits the bits are provided at their upper end with a threaded shank which is threaded into a collar mounted on the lower end of the drill pipe. This shank is of considerable size, and when the bit is worn down to a point where the same is useless for drilling purposes the discarding of such a bit entails a loss of considerable metal.

One of the main objects of my invention is to produce a bit which may be quickly attached and detached, the bit being of extremely simple form and construction, having therein a minimum amount of metal.

Referring to the drawings, which are for illustrative purposes only,

Figure 1 is a vertical sectional view of a drilling device embodying a form of my invention.

Fig. 2 is a view similar to Fig. 1 showing the bit in the position for removing the same.

Fig. 3 is a vertical sectional view on line 3—3, Fig. 1.

Fig. 4 is a sectional plan view on line 4—4 of Fig. 1.

Fig. 5 is a sectional plan view on line 5—5, Fig. 1, and

Fig. 6 is a sectional plan view on line 6—6 of Fig. 1.

Fig. 7 is a fragmentary perspective view of the bit and its supporting rod.

10 designates a bit, the blade of which is of the common fish tail variety, having a flat shank 11 which fits into a recess 12 formed in the lower end of a head 13. 14 designates a rod which slidably extends through a central bore in the head 13, the lower end of the rod 14 extending into a hole formed in the upper end of the bit. 16 designates a pin which extends through a hole 17 formed in the shank 11, the pin 16 extending through a hole 18 formed in the rod 14 thereby fixing the bit to the rod 14. The head 13 is recessed at its upper end, as indicated at 20, and is exteriorly threaded, as indicated at 21, for attachment to the lower end of a barrel 22 which may be secured in any suitable manner to the drill pipe, not shown.

The rod 14 is provided with a washer 23, held in place by a suitable nut 24, the washer 23 serving as a retaining means for a coiled spring 25 placed about the rod 14, the lower end of the coiled spring 25 abutting against a shoulder 26 formed in the head 13, the tension of the spring 25 being sufficient to hold the shank 11 firmly in the recess 12 in the lower end of the head. The upper end of the rod 14 and the spring 25 are preferably protected from dirt and other objectionable matter by means of a section of pipe 30 threaded into the upper end of the head 13, the upper end of the pipe 30 being closed by a cap 31. The lower end of the head 13 is slotted as indicated at 33 which receives a shouldered portion 34 of the bit 10, such construction giving additional strength in the connection between the bit and head.

When it is desired to replace a bit, the bit is pulled downwardly from the position shown in Fig. 1 to that shown in Fig. 2 by placing a hook or other suitable fastening means through an eye 35 formed in the bit. When the bit is so extended a bar or pin 36 is inserted through an opening 37 in one side of the head 13, the bar 36 extending into an elongated slot or opening 38 in the rod 14, as shown in Fig. 2, in which position the tension of the spring 25 is taken by the bar 36. The pin 16 may now be easily removed as the same is in the slotted portion 33 of the head 13, a suitable tool, as indicated at 40, being placed in the position shown and the pin 16 driven out after which the bit 10 may be removed from the rod 14 and a new one placed upon the rod, the pin 16 being driven into place, the tension against the bar 36 relieved by pulling the bit slightly downwardly, the bar 36 removed and the shank of the bit allowed to enter the recess in the lower end of the head until the shouldered portion 34 of the bit is seated in the slotted portion 33 of the head 13.

A bit so made and mounted may be very quickly replaced and the amount of

metal in the shank 11 being materially reduced over that in the common forms of bit. A bit so formed is economical and superior to the common forms of bit now in use.

41, 41 designate water passages which extend from the recess in the upper end of the head downwardly through the head to points on each side of the bit as shown in Fig. 3.

45 designates a screw plug adapted to close the opening 37 in the head for the purpose of preventing dirt from entering the same.

What I claim is:—

1. A drilling tool comprising a head having a recess in its lower end, a bit, a shank on the bit slidably extending into the recess, means for securing the bit to the head, said means comprising a rod slidably extending into the head, elastic means for holding the rod in upward position and a removable pin extending through the shank and rod, and means for holding said rod in extended position to permit said bit to be removed from the rod.

2. A drilling tool comprising a head having a recess in its lower end, a bit, a shank on the bit slidably extending into the recess, means for securing the bit to the head, said means comprising a rod slidably extending through the head, a removable pin extending through the shank and rod, a coiled spring on said rod, and means on the upper end of said rod for confining said spring to exert an upward tension on the rod, and means for holding said rod in extended position to permit said bit to be removed from the rod.

3. A drilling tool comprising a head having a recess in its lower end, a bit, a shank on the bit slidably extending into the recess, and means for securing the bit to the head, said means comprising a rod slidably extending through the head, a removable pin extending through the shank and rod, a coiled spring on said rod, and means on the upper end of said rod for confining said spring to exert an upward tension on the rod, said rod having an elongated opening therein and said head having a tool receiving opening therein to register with the elongated opening in the rod when the bit is in extended position.

4. A drilling tool comprising a head having a recess in its lower end, a removable bit, a shank on the bit slidably extending into the recess, means for securing the bit to the head, said means comprising a rod slidably extending centrally into the head, elastic means for holding the rod in upward position and a removable pin extending through the shank and rod, a shouldered portion on said bit, said head having a slotted portion adapted to receive the shouldered portion of the bit, and means whereby said rod may be retained in extended position in the head to permit said bit to be removed from the rod.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 20th day of February, 1918.

CHARLES P. MAYNER.