

W. KAMMERER.
ROTARY DRILL BIT.

APPLICATION FILED AUG. 31, 1910. RENEWED APR. 10, 1913.

1,063,450.

Patented June 3, 1913.

Fig. 1

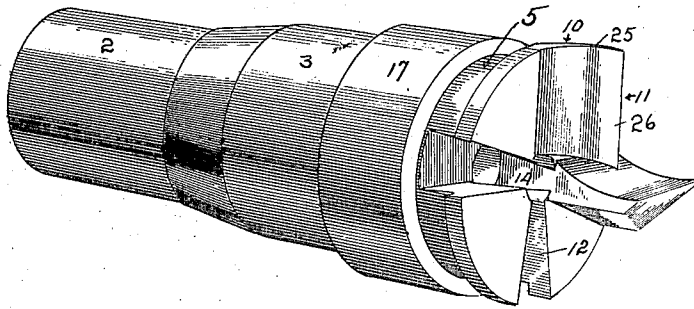
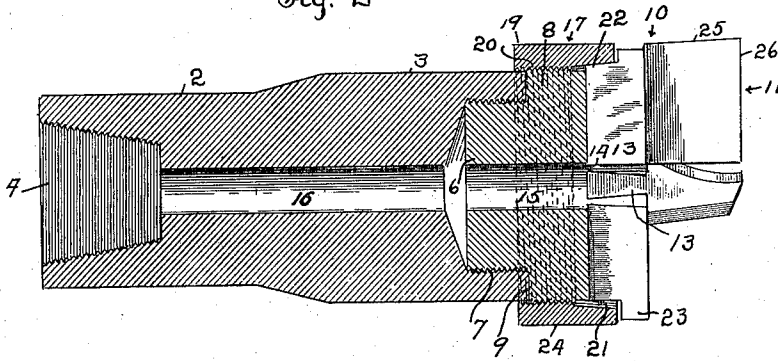


Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

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ROTARY DRILL-BIT.

1,063,450.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM KAMMERER, a citizen of the United States of America, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a certain new and useful Rotary Drill-Bit; and I 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 drill bits, more particularly to such as are actuated by rotation thereof; and it may be said to consist in the novel construction, arrangement and combination of the parts of the bit, as will appear from the description and claims hereinafter.

Objects of the invention are to provide an improved drill bit which is durable in use, effective in action on hard rock, economical as to the cost of machine work thereon in manufacture, and the construction of which permits of the parts thereof being quickly assembled, and of such parts as are subject to wear being easily replaced when necessary.

Other objects and the advantages of the invention will be apparent to those skilled in the art from a consideration of the following description of one form of construction in which the invention may be embodied, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a drill bit constructed to embody the invention, and Fig. 2 is a central longitudinal section of the same.

The shank 2 of the bit is preferably made of soft steel, in order to economize in the cost of machine work thereon, and may be cylindrical in form and of increased diameter in its lower portion 3, and have a tapered, threaded socket 4 in the top thereof, whereby it may be connected to the screw end of a member of the mechanism (not shown) for rotating the bit. The lower end of the shank has removably mounted thereon a hard steel head 5, preferably by means of the upper portion 6 of the head being formed and adapted to screw into the threaded socket 7 in the lower portion of the shank. The portion 8 of the head 5 contiguous to portion 6 thereof may be made to be of slightly increased diameter as compared with the lower end portion of shank

2, and thereby is provided the annular shoulder 9 on which the lower end of the shank may rest when the head is mounted on the shank. At the lower end of the head 5 are removably mounted a plurality of cutters 10, which may have the cutting portions 11 thereof of any suitable or approved configuration. The construction whereby the cutters 10 are removably mounted on the head may be as follows: Radial dovetail grooves 12, each made converging inwardly, are provided in the lower end portion of the head 5 and the cutters are each made to have the upper portion 13 thereof in the form of a tenon adapted to fit in the grooves to hold the cutters to the head, as will be understood. The inner ends 14 of the upper portions 13 of the cutters preferably terminate at the central passageway 15 in the head, which passageway registers with the passageway 16 in the shank, the passageways being adapted to carry water to facilitate drilling operations.

To retain the cutter 10 in place on the head, a sleeve 17, having its upper portion 19 interiorly threaded, is adapted to be turned on the left hand threads 20 on the upper part of portion 8 of the head to bring the lower tapered interior portion 21 thereof into engagement with the tapered upper portions 22 of the outer end faces of the cutters. It will be seen that with the construction just described the sleeve 17 may be turned farther down to have the cutters fit in the grooves 12 in case of wear causing them to work loose therein; and any of the cutters can be readily replaced when desired by first turning the sleeve to move it upwardly, and after substituting the new cutters turning the sleeve to move it downwardly to place it over the tapered upper portion of the outer ends of the cutters.

As shown, the lower end part of the head preferably has a portion or head 23 extended to be substantially in line with the exterior surface 24 of the sleeve 17, and the outer faces 25 of the cutting portion of the cutter preferably taper downwardly and outwardly to have the outer end of the cutting edge 26 of the cutters extended beyond the exterior surface 24 of the sleeve.

While one form of construction in which the invention may be embodied has been illustrated and described, there are many changes and modifications that will occur to those skilled in the art, and the right is

therefore reserved to all such changes and modifications as do not depart from the spirit and scope of the invention.

I claim:

- 5 1. In a rock drill, the combination of a head formed with a circular cross section and provided with a central longitudinal bore, one end of the head being constructed for engagement with a stock while the opposite end is provided with a series of inwardly converging radially disposed dove-tail recesses extending from the central bore to the periphery of the head, a series of cutters provided with dove-tail tenons adapted to be received within the before mentioned dove tail recesses, the inner ends of the tenons being substantially flush with the walls of the bore through the head while the outer ends of the tenons project slightly beyond the head, and a sleeve threaded upon the exterior of the head, one edge of the sleeve being designed to project over the outer ends of the tenons and being inclined so as to force the tenons inwardly and cause them to be securely wedged in the dove-tail recesses.
- 10 2. In a rock drill, the combination of a head having a circular cross section and provided with a central longitudinal bore, one end of said head being surrounded by a bead and provided with a series of inwardly con-
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verging radially disposed dove-tail recesses extending from the bore toward the exterior of the head and having a uniform depth, a series of cutters provided with dove-tail tenons adapted to be wedged within the said recesses, the inner ends of the tenons being substantially flush with the walls of the central bore through the head while the outer ends of the tenons project slightly beyond the head and have the base thereof cut away beyond the bead surrounding the head, and a retaining sleeve threaded upon the exterior of the head, one edge of the sleeve being adapted to engage the cut away portions of the tenons upon the cutters and being inclined so as to force the tenons inwardly toward the center of the head and cause them to be wedged within the dove-tail recesses, the working edges of the cutters extending radially beyond the sleeve.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses at Los Angeles, county of Los Angeles, State of California, this 26th day of August A. D. 1910.

WM. KAMMERER.

Witnesses:

DAVE F. SMITH,
A. H. LIDDERS.