May 3, 1932. H. M. WHEELER 1,856,896

DRILL BIT

Original Filed Aug. 10, 1929

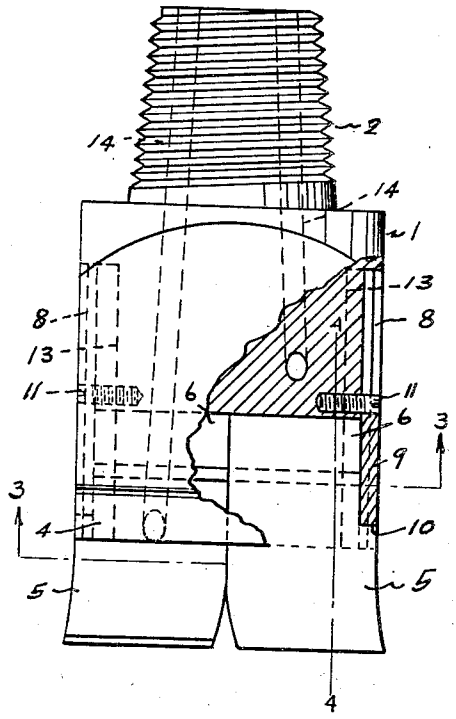


Fig. 1.

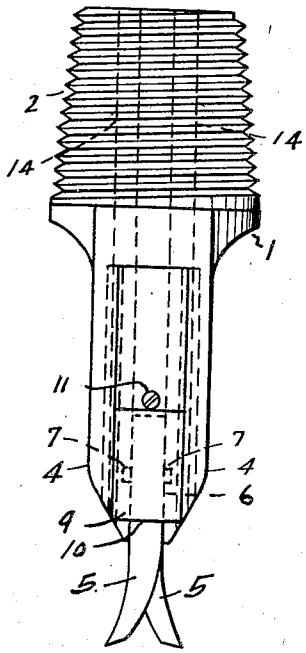


Fig. 2.

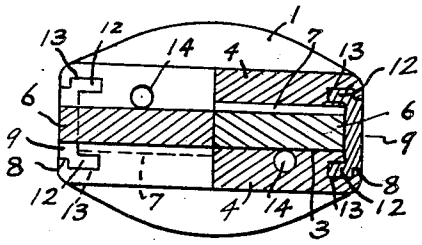


Fig. 3.

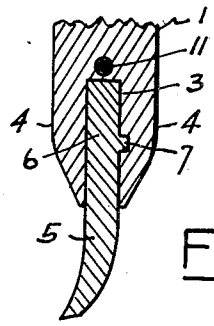


Fig. 4.

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# UNITED STATES PATENT OFFICE

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## DRILL BIT

Application filed August 10, 1929, Serial No. 384,941. Renewed March 7, 1932.

This invention relates to new and useful improvements in a drill bit.

One object of the invention is to provide a drill of the character described, embodying a head, and detachable cutters secured thereto in a novel manner, the cutter securing means being readily releasable to permit the detachment of the cutters from the head for repairs or replacements.

Another object of the invention is to provide a drill having a head formed with spaced prongs and cutting members insertable between the prongs of the head with releasable means for securing the cutting members in the head, said securing means also being formed so as to reenforce the prongs and to prevent the spreading or distortion thereof.

With the above and other objects in view the invention has particular relation to certain novel features of construction, arrangement of parts and use, an example of which is given in this specification and illustrated in the accompanying drawings wherein:

Figure 1 shows a side elevation of the drill partly in section.

Figure 2 shows a side view thereof taken at right angles to the view shown in Figure 1.

Figure 3 shows a transverse sectional view taken on the line 3—3 of Figure 1, and

Figure 4 shows a fragmentary vertical sectional view taken on the line 4—4 of Figure 1.

Referring now more particularly to the drawings wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the drill head whose upper end is reduced and formed into an outwardly threaded shank, adapted to receive a drill collar by means of which the drill may be attached to a drill stem. The lower end of the head has a deep transverse groove 3 therein, forming said lower end into the spaced prongs 4, 4, the outer sides of whose lower ends converge or taper downwardly as shown in Figure 2.

There are the cutting members 5, 5 of any desired type, the fish-tail blade type being shown, these cutting members have the flat shanks 6 insertable from opposite sides of the head into the deep groove 3 and into abutting relation. Each shank 6 has a transverse rib 7 on its rear side, which fits into a corresponding groove on the inner side of the adjacent prong 4. On each side of the head there is a vertical dove tailed groove 8, each groove extending from near the upper end of the head downwardly to near the lower ends of the prongs 4, and slidably mounted in the respective grooves 8 are the plate like keys 9, 9, which are provided to lock the cutting members 5 against detachment from the head. When in their lowered position, the lower ends of the keys 9 abut the lower ends of the corresponding grooves 8 and rest against the external shoulders 10 of said cutting members and said keys are retained by the set screws 11 which are screwed into the head and abut the upper ends of said keys and lock them in position. When the keys are so locked in place they abut the outer edges of the cutting members 5 and prevent their detachment. In order to remove the blades, the set screw 11 may be removed and the keys 9 elevated and the cutting members 5 then slipped out laterally from the groove 3. The keys 9 have the inwardly turned margins 12, 12, as shown in Figure 3, said inwardly turned margins working in the longitudinal grooves 13, 13 which extend inwardly from the side margins of the dove tailed grooves 8. When the keys 9 are in position to lock the cutting members 5 in place, these ribs 12 will also serve to reinforce the prongs 4 and to prevent the same from spreading or becoming distorted under the strain to which they are subjected by the cutting members while the drill is at work.

The bit head has the usual water courses 14, 14 leading downwardly therethrough, which extend on down through said prongs and discharge on the forward sides of the respective cutting members.

The drawings and description disclose what is now considered to be a preferred form of the invention, but by way of illustration only while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A drill including a drill head having a

transverse end groove forming one end of the head into spaced prongs, cutting means fitted into said groove and projecting out beyond the head, removable retainer plates on the head, on each side of the cutting means and forming means for securing the cutting means against detachment from the head, said prongs having longitudinal grooves forming seats, and said retaining means having longitudinal projections fitted into said seats and being effective to secure said prongs against spreading.

2. A drill including a drill head having a transverse groove across one end thereof forming said end into spaced prongs, cutting means seated in said groove between the prongs and extending beyond the head, retaining means on the head, one on each side of the cutting means, provided to retain said cutting means against detachment from the head, said retaining means comprising keys slidable on the head into active position to so retain said cutting means and into inactive position to permit the removal of said cutting means for the head, said head having longitudinal side keyways, in which the keys are seated, and being formed with longitudinal side grooves which extend along the prongs, longitudinal projections on the keys which are fitted into said prong grooves and are effective to secure the prongs against spreading.

3. A drill including a drill head having a transverse groove across one end thereof forming said end into spaced prongs, cutting means seated in said groove between the prongs and extending beyond the head, retaining means on the head, one on each side of the cutting means, provided to retain said cutting means against detachment from the head, said retaining means comprising keys slidable on the head into active position to so retain said cutting means and into inactive position to permit the removal of said cutting means for the head, said head having longitudinal side keyways, in which the keys are seated, and being formed with longitudinal side grooves which extend along the prongs, longitudinal projections on the keys which are fitted into said prong grooves and are effective to secure the prongs against spreading, and releasable means for locking said keys in such active position.

In testimony whereof I have signed my name to this specification.

HARVE M. WHEELER.