

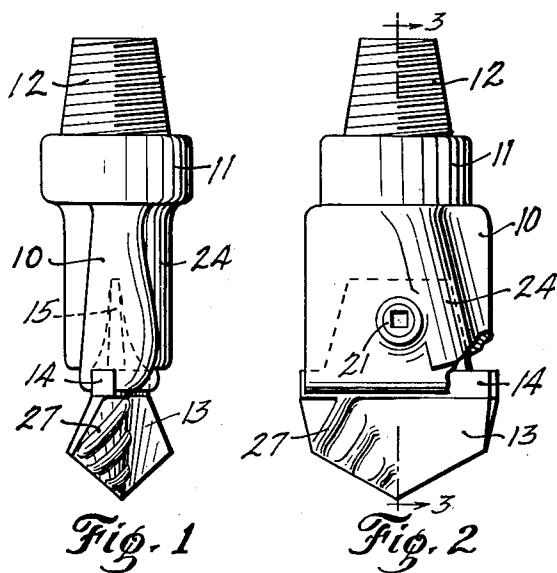
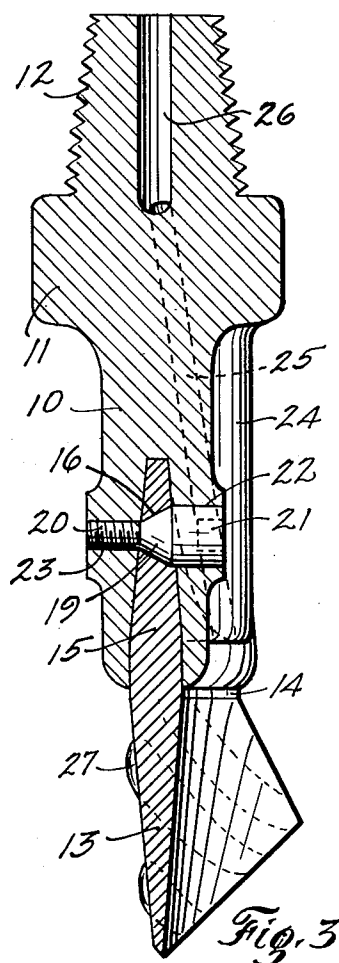
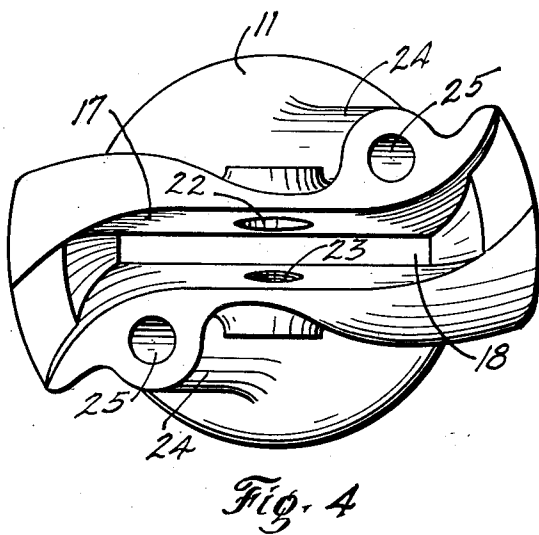
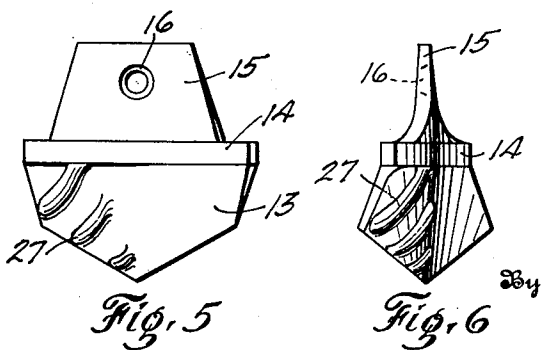
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DRILL BIT

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UNITED STATES PATENT OFFICE

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DRILL BIT

Application filed November 21, 1929. Serial No. 408,787.

This invention relates to new and useful improvements in drill bits. The invention has particularly to do with bits for drilling wells.

- 5 One object of the invention is to provide an improved drill bit having a removable cutting blade which may be readily detached either for dressing and sharpening or for renewal when worn.
- 10 A particular object of the invention is to provide a drill bit having a removable cutter blade and twisted vertically so as to increase its efficiency as a drilling tool and to impart to it the characteristics of the usual twist
- 15 drill now in common use.

An important object of the invention is to construct the bit so that the twist is initiated in the head or shank and continued in the blade, whereby a shorter blade may be used and the tool made much more rugged and substantial.

A further object of the invention is to provide the blade with heavy rounded shoulders at each end projecting beyond the shank so as to take the wear and ride on the wall of the hole, thus protecting the head from unnecessary wear.

Still another object of the invention is to provide reinforcing ribs on opposite sides of the blade for strengthening the same and preventing distortion.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

35 The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing in which an example of the invention is shown, and wherein:

40 Figure 1 is an end elevation of a drill bit constructed in accordance with the invention,

Figure 2 is a side elevation of the same,

Figure 3 is an enlarged vertical sectional view taken on the line 3—3 of Figure 2,

Figure 4 is an enlarged underside view of the head with the blade removed, and

Figures 5, 6 and 7 are details of the cutting blade.

In the drawing the numeral 10 designates a head surrounded by an annular collar 11

carrying an upright tapered and screw-threaded pin 12. As is shown in Figures 1 to 4 inclusive, the head below the collar has greater width than thickness, the width extending from end to end and the thickness 55 extending from side to side.

A cutting blade 13 is removably seated and fastened in the lower end of the head. The head and blade are twisted axially or vertically of the bit and one of the features of the invention resides in starting the twist in the head and continuing the same twist in the blade. This enables the bit to be made shorter because the blade can be amply twisted on a short length and the twist di- 65 minished into the head.

The blade 13 has a transverse shoulder 14 and an upwardly extending wedge shaped tongue 15 provided with an aperture 16. The blade and tongue are twisted to conform to 70 the twist of the head 10 and said head has a twisted socket 17 conforming to the twist of the blade, as is shown in Figure 4. The socket is merged into a seat 18 shaped to snugly receive the tongue 15 so that the head on each side of said seat will rest upon the shoulder 14 and thus form a substantial connection.

The opening 16 is flared to receive the conical shank 19 of a bolt 20. This bolt has a socket head 21 fitting in a cylindrical opening 22 in one side of the head. The bolt 20 is screw-threaded and engages in a screw-threaded aperture 23 in the opposite side of the head. By snugly fitting the blade and its tongue in the head the bolt has very little 85 work to do other than to prevent the parts from disengaging.

The head is provided with inclined bosses 24 on opposite sides and also on opposite sides of the bolt to provide material for forming inclined ducts 25 extending through the head from a well 26 and discharging on opposite sides of the blade 13. The ducts are located so as to discharge onto that end of the blade which is twisted toward the duct. 95

It will be noted that the shoulders 14 extend beyond the ends of the head 10 and these extensions take the wear and act as gages, whereby the bit rides on the side walls of the hole. To strengthen the blade and 100

thus permit it to be made comparatively thin, curved reinforcing ribs 27 are formed on opposite sides, as is shown in the drawing, but it is obvious that these ribs could be omitted without affecting the invention.

This application is filed as a continuation in part of my co-pending application Serial No. 349,853, filed March 25, 1929.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

What I claim, is:

1. In a drill bit, a head having greater width than thickness and provided with a transverse twist extending through its width, said twist being less than ninety degrees, a socket in the bottom of the head conforming to the twist of the head, a wedge-shaped seat extending up into the head from the top of the socket, a twisted blade having a transverse shoulder fitting in the socket, a flat wedge tongue extending from the shoulder of the blade and fitting in the seat, and a fastening passing through the head and the tongue of the blade.

2. A drill bit as set forth in claim 1, wherein the head has divergent fluid bosses on opposite sides of the fastening and discharging onto the blade.

3. In a drill bit, a head elongated transversely and having a transverse socket in its bottom, the ends of the socket being curved in opposite directions and having shoulders at their curved ends, the head also having a transversely elongated seat extending upwardly between the shoulders of the socket, a twisted blade having a transverse shoulder curved to fit in the socket of the head and engaging the shoulders at each end of the socket, a flat tongue extending upwardly from the shoulder of the blade and engaging the side and top walls of the seat, and a fastening penetrating the tongue and the head, the head having a twist in continuation of the blade.

4. A drill comprising a spiral member having one of its ends provided with an elongated spiral slot and having its core provided with a spiral recess extending axially from the slot, the slot being open at its ends and greater in length than the width of the recess and extending in opposite directions beyond the recess, the width of the slot and the thickness of the recess being similar and small as compared with the thicknesses of the end and core of said member, a second drill member having a thin spiral portion snugly fitting in said slot and bearing against the bottom wall thereof, and a spiral tang extending axially from said second drill member and equal in thickness to said portion thereof and fitting snugly in said recess.

5. A drill comprising a spiral member

having one of its ends provided with an elongated spiral slot and having its core provided with a spiral recess extending axially from the slot, the slot being open at its ends and greater in length than the width of the recess and extending in opposite directions beyond the recess, the width of the slot and the thickness of the recess being similar and small as compared with the thicknesses of the end and core of said member, a second drill member having a thin spiral portion snugly fitting in said slot and bearing against the bottom wall thereof, and a spiral tang extending axially from said second drill member and equal in thickness to said portion thereof and fitting snugly in said recess, the recess decreasing in width in the direction of its closed end and the tang decreasing in width in the direction of its free end to permit the drill members to be readily assembled.

6. A drill comprising a spiral member provided at one of its ends with a spiral slot and a spiral recess, the slot being located outwardly beyond and communicating with the recess and extending laterally beyond the recess, a bit provided with a spiral shank having an end portion thereof fitting in said slot and bearing against the bottom wall thereof, and a spiral tang extending axially from said end of the bit and having a width less than that of said end and fitting in said recess, the recess decreasing in width in the direction of its inner end and the tang decreasing in width in the direction of its free end.

7. In a drill bit, a head elongated transversely and having a transverse socket in its bottom, the ends of the socket being curved in opposite directions and having shoulders at their curved ends, the head also having a transversely elongated seat extending upwardly between the shoulders of the socket, a twisted blade having a transverse shoulder curved to fit in the socket of the head and engaging the shoulders at each end of the socket, a tongue extending upwardly from the shoulder of the blade and engaging the side walls of the seat, and a fastening penetrating the tongue and the head, the head having a twist in continuation of the blade.

In testimony whereof I affix my signature.
CHARLES EUGENE LANG.

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