

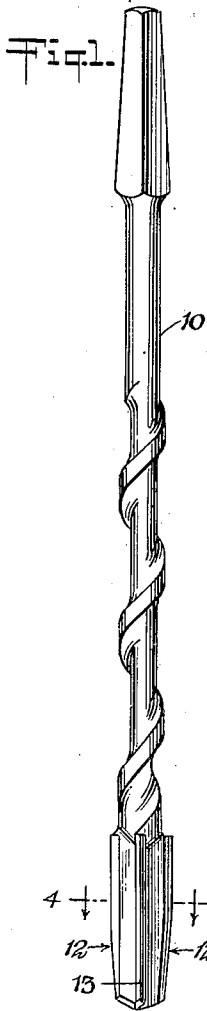
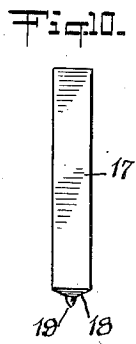
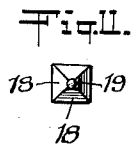
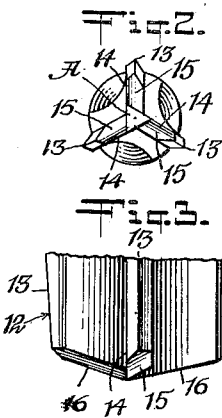
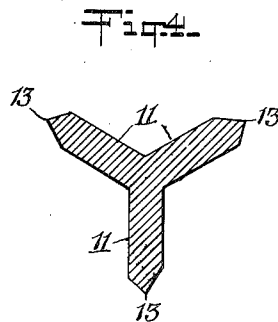
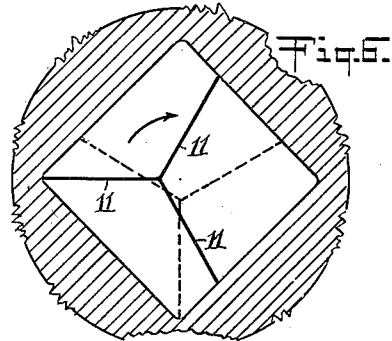
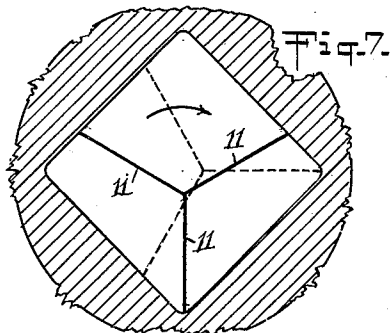
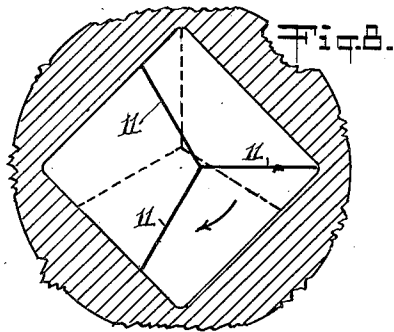
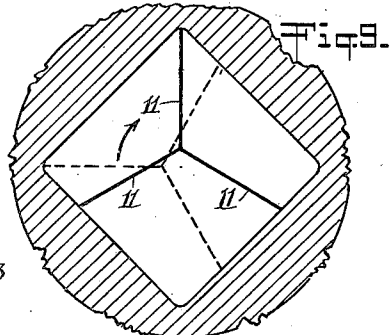
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2,586,084

BIT FOR DRILLING NONCIRCULAR HOLES

Filed May 8, 1948



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2,586,084

BIT FOR DRILLING NONCIRCULAR HOLES

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3 Claims. (Cl. 77—61)

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The main object of the invention is to provide a simple bit so shaped and constructed that, without the aid of other instruments or devices, it can be placed in a brace and used to drill non-circular holes.

In brief and general terms, the invention concerns a bit having a plurality of spaced wing plates or blades extending longitudinally along and radially from the longitudinal axis of the bit. The outer longitudinal side edges of these wing plates are double bevelled and tapered, and each plate is provided with a bottom surface having a leading cutting edge. These leading cutting edges at the bottom of the wing plates are disposed in a non-radial direction and are extended inwardly toward the center portion of the bit to intercept an adjacent leading edge of another wing plate. The radial width of each wing plate may vary from the others and the non-radial disposition of the leading cutting edges may also vary as desired but as shown herein they are equal and the angular distance between the wing plates is shown as equal.

The cutting surface at the bottom of each plate is bevelled back from the leading edge in an upward direction as shown. The slope of the leading cutting edge is from substantially the point backward and outward to the periphery of the bit.

The effect of this relation and construction of the blades is to cause a transverse thrust on the lower end of the bit as it is rotated which thrust may vary in amount and direction in accordance with the degree of deflection of each blade and the length of the blade transverse to the axis of the bit. It is apparent that by varying these factors the variation in the transverse thrust may be changed to produce many different forms of non-circular holes to be drilled.

The present preferred form which the invention may assume is shown in the drawings, of which—

Fig. 1 is an elevation of a bit for cutting wood;

Fig. 2 is an inverted plan view of the bit;

Fig. 3 is an enlarged side view of the cutting ends of the blades;

Fig. 4 is a horizontal cross section taken on the line 4—4 of Fig. 1;

Fig. 5 is an elevation of the lower end of a bit for cutting metal;

Figs. 6, 7, 8, and 9 are diagrams of the positions assumed by the blades in cutting a square or non-circular hole;

Fig. 10 is an elevation of the lower end of a punch used to start the hole especially in metal; and

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Fig. 11 is an inverted plan view of the punch.

Referring now merely to the specific form of the bit shown in the drawings, it is seen that bit 10 has a lower portion formed of a plurality of blades 11, in the form shown being wing plates spaced equidistant around the bit, each plate provided with a slight taper as at 12 and having its side cutting edges double bevelled as at 13. The lower cutting surfaces of each plate 11 has a leading edge 14 from which the surface slopes as shown upwardly and backwardly as indicated at 15. The leading edge 14 also slopes at an angle to the line drawn at right angles to the axis of the bit as indicated at 16, and from substantially the point of the bit backward and outward to the periphery of the bit.

Viewing the cutting ends of the blades or plates 11 as shown in Fig. 2, it is seen that the leading edges 14 of the plates 11 thereof are swung slightly clockwise away from the axis of the bit and extended to intercept the adjacent leading edge of the preceding adjacent blade. In this manner there is created a thrust on the axis of the bit which is transverse thereto and which varies as the bit is rotated to produce a non-circular hole and the character of the shape of the hole will depend upon the number of and transverse width of the blades relative to each other and to the degree to which the leading edges 14 of the blades are off-set from the axis in the manner above mentioned. The off-set leading edges 14 intercepting each other form and enclose an area A which in the form shown is triangular.

Thus the lower end of the bit has a tip which is an area of formation determined by the degree of off set of the blades and their leading edges and is not a point as is usually the case and, therefore, the bit may more readily be laterally moved in response to the transverse thrusts placed upon it during its rotation.

In Figs. 6 to 9 inclusive are shown diagrammatically the successive positions of the plates or blades as the bit is rotated. It appears, in the form shown, that as the bit is rotated clockwise the axis of the bit revolves in a determined path counter-clockwise.

The punch shown in Figs. 10 and 11 has a shank 17 and a lower face square shaped with downwardly tapered sides 18 meeting at a point 19. This punch is used to start the bit in metal and may or may not be used in drilling in wood.

While the invention has been described in detail and shown with respect to the accompanying drawing, it is not to be limited to such details, since many changes and modifications may be

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made in the invention without departing from the spirit and scope thereof. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language and scope of any one or more of the appended claims.

What I claim as my invention is:

1. A bit which includes a plurality of wing plates extending radially from the center of the bit, the bottom surfaces of said plates being formed with leading cutting edges disposed in a non-radial line with respect to the axis of the bit, said surfaces being bevelled backwardly and upwardly from the leading edges thereof, the leading edges of said surfaces sloping substantially from the point of the bit backward and outward to the periphery of the bit.

2. A bit which includes a plurality of wing plates extending radially from the center of the bit, the bottom surfaces of said plates being formed with leading cutting edges disposed in a non-radial line with respect to the axis of the bit, said surfaces being bevelled backwardly and upwardly from the leading edges thereof, the leading edges of said surfaces sloping substantially from the point of the bit backward and outward to the periphery of the bit, said leading

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edges being extended beyond the axis to intercept an adjacent cutting leading edge.

3. A bit which includes a plurality of wing plates extending radially from the center of the bit, the bottom surfaces of said plates being formed with leading cutting edges disposed in a non-radial line with respect to the axis of the bit, said surfaces being bevelled backwardly and upwardly from the leading edges thereof, the leading edges of said surfaces sloping substantially from the point of the bit backward and outward to the periphery of the bit, the leading edges of the plates being extended beyond the axis of the bit to intercept an adjacent cutting edge, the side edges of the plates being double bevelled and tapering along their length with respect to a plane passing through the longitudinal axis of the bit.

SAMMY ROE POWELL.

REFERENCES CITED

The following references are of record in the file of this patent:

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