

A. W. TAYLOR.
 DRILL BIT.
 APPLICATION FILED JULY 24, 1913.

1,088,481.

Patented Feb. 24, 1914.

Fig. 1

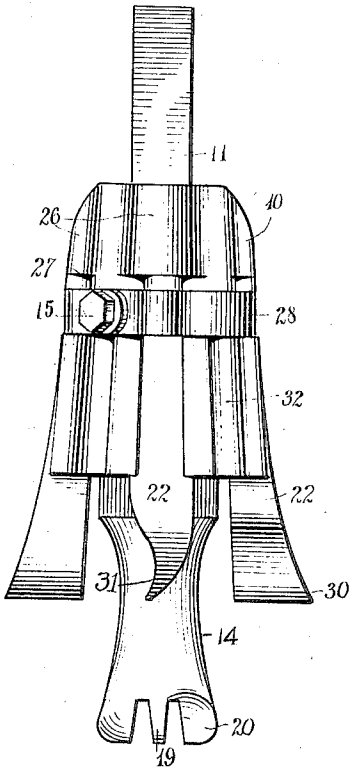


Fig. 6

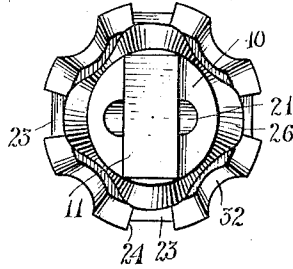


Fig. 5

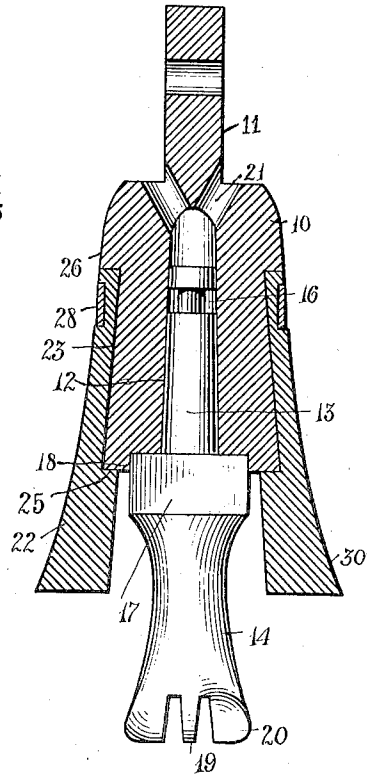


Fig. 7

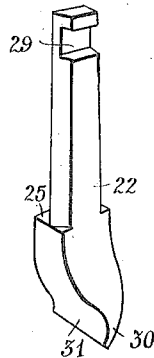


Fig. 2

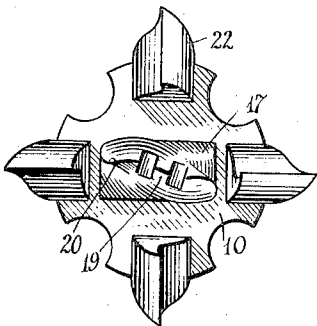


Fig. 4

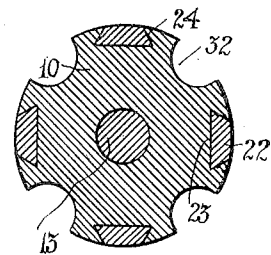
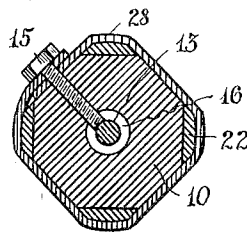


Fig. 3



WITNESSES
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ALBERT WALKENS TAYLOR, OF PECKVILLE, PENNSYLVANIA.

DRILL-BIT.

1,088,481.

Specification of Letters Patent.

Patented Feb. 24, 1914.

Application filed July 24, 1913. Serial No. 780,940.

To all whom it may concern:

Be it known that I, ALBERT W. TAYLOR, a citizen of the United States, and a resident of Peckville, in the county of Lackawanna and State of Pennsylvania, have invented a new and Improved Drill-Bit, of which the following is a full, clear, and exact description.

My invention, while useful in rock drilling, is more particularly designed for drilling coal in coal mining. Ordinary drills used in coal mining have a tendency to "run off" or be deflected when striking sulfur and various hard substances liable to be encountered, the result being that the hole produced is not straight for the ready insertion of the cartridge. The ordinary drill also does not turn easily.

It is a design of my invention to provide a drill that will readily cut through hard substances, and a drill that may be turned easily in the drill hole and that will produce a straight smooth hole to properly receive the cartridge.

The invention also has for its design to provide a plural bit, the elements of which may be readily removed and renewed.

The invention will be more particularly explained in the specific description following.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a drill bit embodying my invention; Fig. 2 is a front view thereof; Fig. 3 is an inverted cross section taken through the clamp band for the outer bit elements; Fig. 4 is an inverted cross section taken below the clamp band; Fig. 5 is a vertical section; Fig. 6 is a top plan view; and Fig. 7 is a perspective view of one of the outer bit elements.

In forming a bit in accordance with my invention, a head or body 10 is provided, having a shank 11 adapted for ordinary drill sockets, and said head has an axial bore 12 to receive the stem 13 of the central bit element 14. A set screw 15 passes transversely into the head 10, its inner end being adapted to enter an annular groove 16 in the stem 13, and to bind against the stem 13 at said groove. At the base of the stem 13 the element 14 has a polygonal or equivalent

angular enlargement 17, which is received in a recess or depression 18 formed in the under side or face of the head 10 complementary to the axial bore 12, to assist in preventing the turning of the bit 14 in the head. The cutting members of the bit 14 include a central tooth 19, and broader lateral cutters 20, which are preferably so forged and ground that the front total cutting edge of the bit 14 is of general spiral form, as seen in the front view, Fig. 2.

Diagonal openings 21 lead upwardly and outwardly from the axial bore 12 at the top through which a nail or other tool may be entered to drive out the stem 13, should the bit break and the stem bind.

In connection with the central bit I employ a series of lateral bit elements 22, preferably four in number. The bits 22 seat against lateral faces or seats 23 formed on the sides of the head 10, the said seats inclining downwardly and outwardly to correspondingly dispose the bit elements 22. The side walls 24 of the seats 23 form with said seats dove-tail grooves for the bit elements 22, and the latter are correspondingly dovetailed in cross section, as clearly shown in Fig. 4. At the inner side of each bit element 22 an upwardly facing shoulder 25 is produced, adapted to come to a bearing against the under side or face of the head 10 outside of the central bit element 14. The upper ends of the bit elements 22 are adapted to lie beneath the lateral protuberances 26 that overhang the seats 23 at the upper ends, presenting shoulders 27 against which the upper ends of the bit elements may abut. A split clamp band 28 encircles the head 10 and embraces the several bit elements 22, being received in transverse grooves 29 in the upper ends of the said bit elements. The ends of the clamp band 28 overlap and have holes adapted to aline and receive the binding screw 15, whereby the said binding screw serves to fasten the clamp band of the lateral bit elements, and also the central bit element 14.

The cutting point of each of the drill elements 22 is broadened toward the lower edge and extends laterally to present the greatest total width at the cutting edge, the outer sides 30 being preferably formed on rounding lines, as best seen in Figs. 1 and 5. The cutting edge 31 of each bit element 22 is concavo-convex, the result being that the lat-

eral bits effectively cut the material left by the central bit elements and produce a hole in which the drill has perfect clearance.

To provide clearance passages for the cuttings produced by the drills, depressions or longitudinal grooves 32 extend along the sides of the head 10 between the lateral bit elements 22, and between the protuberances 26.

10 I have found in practice that a drill formed in accordance with my invention has a greatly increased speed of performance in drilling holes in coal. The construction also makes possible the ready and convenient repair or renewal of the bit elements.

15 Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A drill bit, comprising a head having
20 an axial bore, a central bit element having a stem fitting said bore, a series of lateral bit elements on the head outside the central bit element, a clamp band embracing the outer bits, and a transverse set screw in said head
25 forming a fastener for said band and adapted also to engage the stem of the central bit.

2. A drill bit, comprising a head having

an axial bore, a central bit element having a stem fitting said bore, a series of lateral bit elements on the head outside the central bit element, a clamp band embracing the outer bits, and a transverse set screw in said head forming a fastener for said band and adapted also to engage the stem of the central bit, the outer bit elements having transverse 35 grooves for receiving said band, and the stem of the central bit having an annular groove for receiving the end of the said screw.

3. A drill bit comprising a head, a central 40 bit element formed with a central cutting tooth and broader lateral teeth, the several teeth presenting a total cutting edge of general spiral form, a series of bit elements seated on lateral faces of the head outside of 45 the central bit, and means for fastening the several bits.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT WALKENS TAYLOR.

Witnesses:

FREDERICK R. KRUPP,
GEO. G. JAY.