

Sept. 10, 1929.

J. R. DECKER

1,727,752

DRILL

Filed May 6, 1926

Fig. 1.

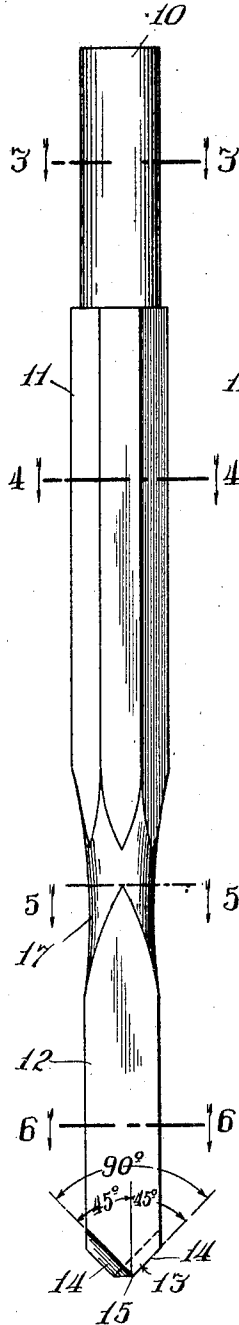


Fig. 3.



Fig. 4.

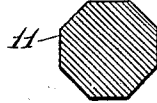


Fig. 5.

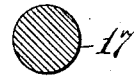


Fig. 6.

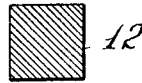


Fig. 7.

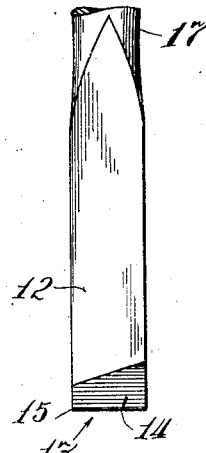
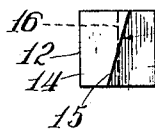


Fig. 2.



Witnesses

Milton Lenoir

W. H. Howell

Inventor

John Robert Decker,

by George Heideman

Attorney

UNITED STATES PATENT OFFICE.

JOHN ROBERT DECKER, OF LA JUNTA, COLORADO.

DRILL.

Application filed May 6, 1926. Serial No. 107,026.

My invention relates to drills more especially adapted for forming holes in masonry, concrete and the like, although, of course, being applicable for use in other connections or uses; the invention having for its object the provision of a drill adapted to operate at high speed and with the least amount of care necessary to be exercised by the operator in its use.

The invention contemplates a drill adapted to produce a smooth round hole in the masonry or concrete of the type especially intended for the reception of wires and the like; the construction being such that the drilling operation may be performed with comparatively great rapidity.

The objects and advantages of my improved drill will be readily comprehended from the detailed description of the accompanying drawing, wherein—

Figure 1 illustrates my improved drill in elevation.

Figure 2 is an end view of the cutting point or edge of the drill.

Figure 3 is a cross-sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a cross-sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a cross-sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a cross-sectional view taken on the line 6—6 of Figure 1.

Figure 7 is an end elevation of the lower ends of the drill, looking at one of the tapered sides.

In the particular exemplification of the invention as disclosed in the drawing, it is especially intended for use in connection with a well known type of air hammer and for that reason the upper end of the drill is shown round in cross section at 10 and as clearly shown in Figure 3, in order that this end may properly fit into the socket of an air hammer. It will be understood, of course, that where the drill is to be operated manually with a hand hammer, this upper end may have any cross-sectional configuration. The intermediate portion 11 is shown octagonal in cross-section, see Figure 4, although any other convenient configuration or shape may

be employed which enables the operator to obtain a suitable grasp or hold on the drill.

My improved drill is made of especially prepared steel adapted to the operations for which it is intended and the lower or cutting end 12 is preferably made square in cross-section as shown in Figure 6 in order to provide a plurality of sharp cutting edges, namely four cutting edges in the exemplification shown, with the end 13 ground from opposite sides of the drill, as shown at 14 in Figure 7, to provide a ninety degree angle as shown in Figure 1. These bevels or tapers are so arranged relative to the opposite vertical faces of the drill that the immediate cutting point or edge 15 at one of the uncut or non-tapered vertical sides of the drill is disposed toward one side of the transverse axis indicated in dotted lines at 16, while the edge or cutting tip on the opposite uncut side of the drill is disposed to a similar extent or degree on the opposite side of the transverse axis 16, so that the cutting edge 15 is at a fifteen degree angle to the center line. As a result of the bevels being arranged in this tangent manner, the cutting tip or edge 15 is not disposed diametrically or straight across the lower end of the drill; the cutting edge 15, however, being arranged to intersect the center of the transverse axis 16 and with the center of the edge coincident with the axis of the drill. Arranging the cutting point in the manner shown and stated, with the short sides of the two bevels measuring forty-five degrees, removed from the vertical center line of the drill as shown in Figure 1,—namely a ninety degree included angle in the taper of the point—will induce the drill to automatically rotate with each blow of the hammer, with the result that the drill will produce a cut at a different spot with each successive stroke of the air hammer, while at the same time producing a practically perfect hole.

The cutting point or end of the drill is suitably tempered for a distance of say at least a half inch in order to adapt it to the operations for which it is especially intended.

The portion of the drill intermediate of the main octagonal body portion 11 and the drilling end 12, is somewhat reduced and

preferably made circular in cross section as shown at 17, in order to provide clearance for the chipped or cut material during operation.

5 My improved drill when used in connection with an air hammer is automatically caused to rotate to a small extent with each blow of the hammer by reason of the angularity given to the cutting edge 15 shown
10 in Figure 2, with the result that with each blow imparted to the drill, the cutting edge is presented to a different spot in the concrete or masonry, causing a practically perfect hole to be cut and the operation therefore produced in a comparatively short interval of time.

While I have described my improved drill in its preferred form, in so far as the formation of the main or body portion thereof is
20 concerned, it is apparent that the major portion of the drill may be given any suitable cross-sectional configuration at various points above the cutting tip, without, however, departing from the spirit of my invention which
25 has been described in terms employed merely as terms of description and not as terms of limitation.

What I claim is:

A drill of the character described, the bit
30 portion whereof is square in cross-section, with its ends beveled or tapered from two opposite sides to provide a substantially ninety degree angle, said tapers being cut relative to the centers of the untapered sides
35 so that the ends of the cutting edge are off-set from opposite sides of the transverse axis of the drill, while the intermediate point of the cutting edge intersects the vertical axis of the drill and two of the sides at points removed
40 from the adjacent sides, the shank of the drill at a point removed from the cutting end being reduced to take the torsional stresses.

JOHN ROBERT DECKER.

45

50

55

60

65