

1,258,972.

F. ALIN.
SQUARE HOLE BIT.
APPLICATION FILED JULY 9, 1917.

Patented Mar. 12, 1918.
2 SHEETS—SHEET 1.

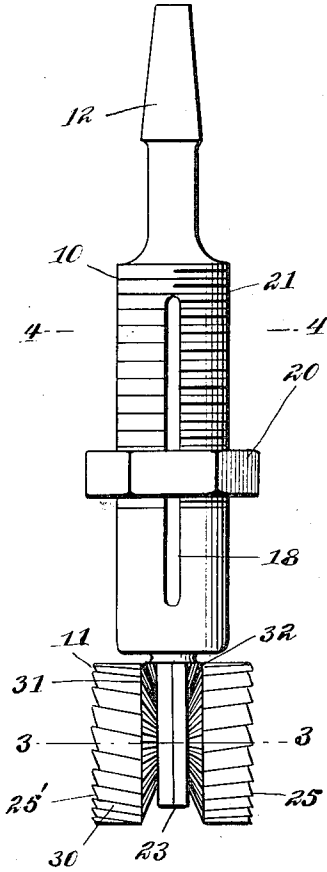


Fig. 1

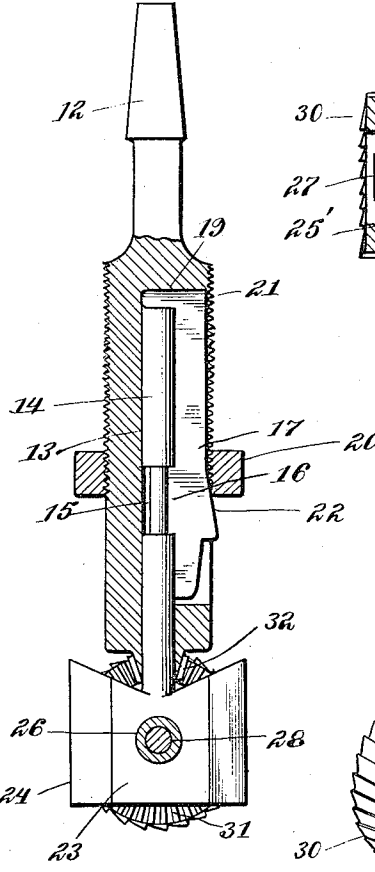


Fig. 2

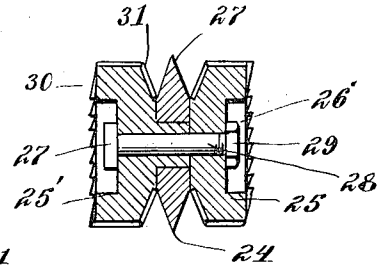


Fig. 3

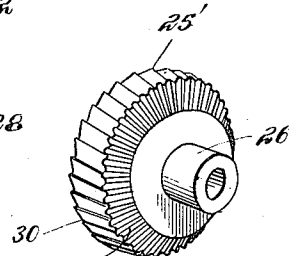


Fig. 8

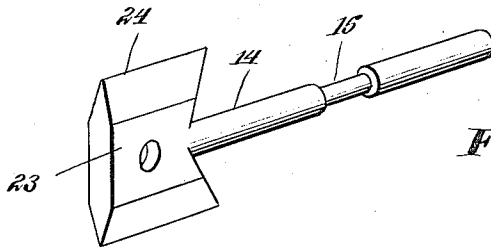


Fig. 6

WITNESSES

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Fig. 4

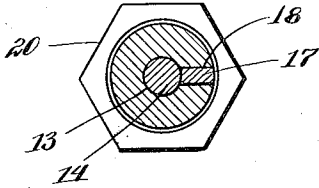


Fig. 5

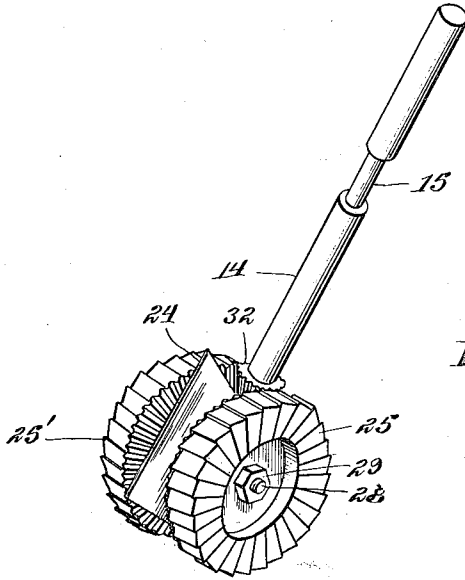


Fig. 7

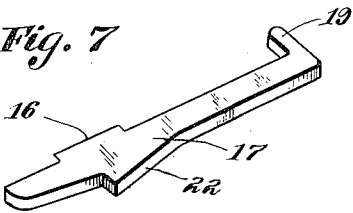
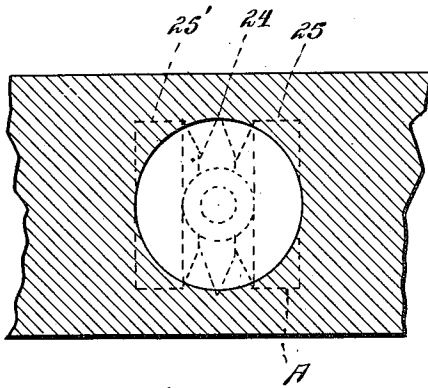


Fig. 9



WITNESSES

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UNITED STATES PATENT OFFICE.

FRED ALIN, OF COSMOPOLIS, WASHINGTON.

SQUARE-HOLE BIT.

1,258,972.

Specification of Letters Patent. Patented Mar. 12, 1918.

Application filed July 9, 1917. Serial No. 179,493.

To all whom it may concern:

Be it known that I, FRED ALIN, a citizen of Russia, residing at Cosmopolis, in the county of Gray Harbor and State of Washington, have invented new and useful Improvements in Square-Hole Bits, of which the following is a specification.

This invention relates to boring tools and particularly to bits adapted for engagement with a suitable operating handle or brace to bore or cut a hole.

The primary object of the invention is to provide a bit capable of attachment to a suitable brace for the purpose of boring a square or rectangular opening, in order to obviate the necessity of first boring a round hole and then chiseling out the fillets, thereby lessening the labor and providing a neater and better finish.

A further object is to provide a bit with removable cutting elements for the accomplishment of the above purpose, in order that the same shank may be used and cutting elements of various sizes secured thereto for making openings of different measurements.

A still further object is to provide a bit having a shank with one or more novel cutting elements, said shank carrying means for operating said elements to cut open, said bit also having a novel form of guiding means to aid in its operation and to prevent the cutting elements further rotating axially of the bit.

With the above and other objects in view, the invention consists of the following novel combination and arrangement of parts, hereinafter more fully described and illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a bit embodying the present invention;

Fig. 2 is a central longitudinal sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a similar view on the line 4—4 of Fig. 1;

Fig. 5 is a detailed perspective view of the cutting elements removed from the shank;

Fig. 6 is a detailed perspective view of the guide upon which the cutting elements are secured;

Fig. 7 is a detailed perspective view of the key used for securing the cutting elements to the shank;

Fig. 8 is a similar view of one of the rotary cutting elements; and

Fig. 9 is a plan view illustrating the manner in which a round opening is converted into a rectangular opening by means of the invention, the position of the said impression being illustrated in dotted lines above this opening.

The invention in the form illustrated comprises a bit, which is formed of a shank and a removable and rotatably mounted cutting element 11.

The shank 10 includes the usual tapered end 12, which is preferably square in cross-section, by means of which the said shank is secured to a suitable brace or other operating handle. The shank has a central bore 13 for the purpose of receiving the shank 14 by means of which the cutting element 11 is secured thereto.

The shank 14 is formed with a reduced portion in the shape of an annular groove 15, which is adapted for engagement with a lug 16 formed upon one face of the key 17, which is adapted to be inserted within the slot 18 formed in the shank 10 and communicating with the bore 13. The key 17 is further provided with a lug 19 which is adapted to enter the bore 13 and engage over the end of the shank 14 in the manner shown.

The key 17 is held within the slot 18 and in engagement with the shank 14 by means of a lock nut 20, which nut is adapted to engage threads 21 formed upon the outer surface of the shank 10.

By reference to Fig. 2 of the drawings, it will be seen that when the key 17 is positioned within the slot 18 and holds lug 16 engaged with the annular groove 15, the nut 20 may be moved along the outer edge of the key until it engages a shoulder 22 formed upon the said key, when the shank 14 will be securely located within the bit shank 10 in a manner to permit it to rotate therein, but held against longitudinal movement.

Carried upon the outer end of the shank 14 is a guide member, in the form of oppositely disposed means 23, formed with cutting edges 24 for the purpose hereinafter apparent.

This guide has mounted upon opposite sides thereof rotary cutting members 25, 25' which form the cutting element of the improved bit. One of these members 25' is

provided with a sleeve 26, which extends from one face thereof and is adapted to pass through an opening 27 formed in the guide member. Each of the members 25, 25' is recessed as shown at 26', one of said recesses being adapted to receive a head 27 of the assembling bolt 28, the shank of which passes through the sleeve and has secured upon its opposite threaded end a nut 29, which lies within the recess 26 of the other cutting member.

Both of the cutting members are formed upon their working faces with obliquely disposed teeth 30, the teeth of one member extending in a direction opposite to that of the other member. Also formed upon the cutting members are gears 31, which are adapted to engage the gear teeth 32 formed upon the lower end of the shank 10.

In the operation of the invention a hole is first bored by means of an ordinary bit, of a diameter equal to the size of the square hole or opening desired. This leaves the fillets A to be removed in order to convert the circular opening into a square or rectangular opening as shown in Fig. 9 of the drawings. In order to remove these fillets the improved bit is placed centrally above the hole in a manner shown by dotted lines in the said figure, the guiding member having its cutting edges 24 slightly biting into the wall of this opening. The bit is then operated by means of the members in the usual manner, the teeth 30 of the cutting element 11 cutting into the material to remove the fillets A. The cutting members 25, 25' are caused to rotate in opposite directions by the engagement of the gears 31 with the gear 32 formed upon the lower end of the shank 10, the guiding member preventing any lateral movement of the cutting member 11 with respect to the shank.

It is thought the above description taken in connection with the accompanying draw-

ings will enable persons skilled in the art to readily understand the advantages of the invention and that a further description is unnecessary. The right is reserved to make such changes in the form and proportion of the device as will properly fall within the scope of the appended claims.

Having described the invention, what is claimed is:

1. A tool comprising a shank rotary with reference to a positioning member carried thereby, said member comprising oppositely disposed engaging edges located at one end of said member, rotary cutting elements mounted upon opposite sides of said positioning member and means carried by said shank for rotating said elements.

2. A tool comprising a shank rotary with reference to a positioning member carried thereby, a diametrically and longitudinally disposed positioning member secured to one end of said shank, engaging portions formed upon opposite edges of said member, rotary cutting elements mounted upon each side of said positioning member and means carried by said shank whereby a rotary motion may be imparted to the cutting elements.

3. A tool embodying a hollow shank having a slot therein, said shank being rotary with reference to a positioning member carried thereby, cutting elements carried by the positioning member, a key adapted for insertion in the slot of the shank and engageable with the positioning member, a longitudinally movable element carried by the shank and engageable with the key to hold the parts associated and means carried by the shank and engageable with the cutting elements to operate the latter upon rotation of the shank.

In testimony whereof I affix my signature.

FRED ALIN.