D. S. FOX.

EXPANSION DRILL.

APPLICATION FILED AUG. 14, 1919.

1,385,370.

Patented July 26, 1921.

Fig. 1.

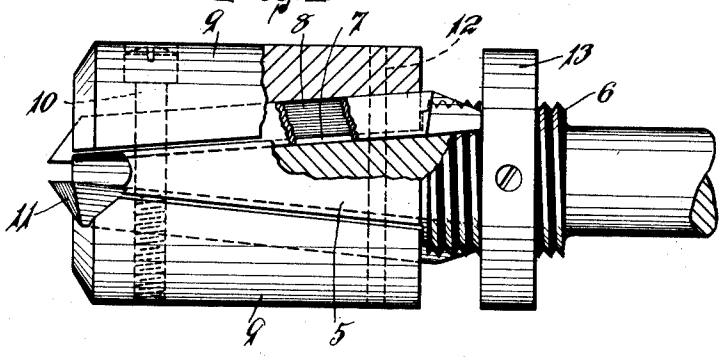


Fig. 2.

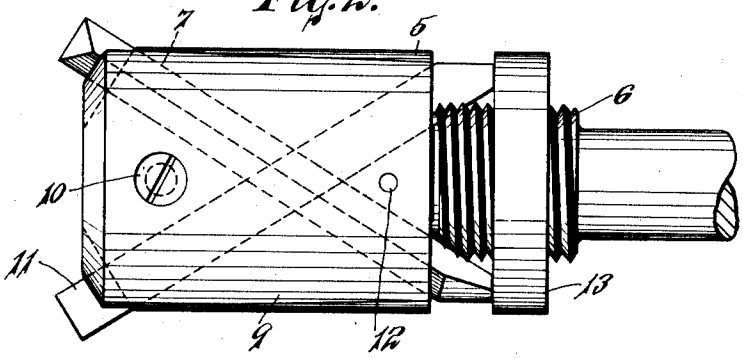


Fig. 3.

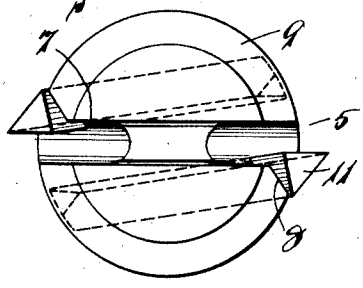
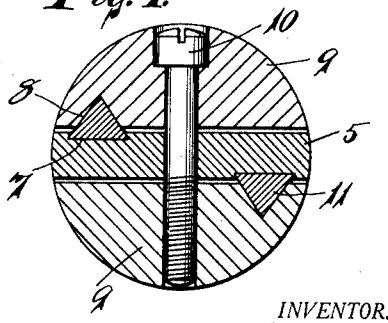


Fig. 4.



INVENTOR.

Daniel S. Fox.

BY

Arthur B. Jenkins.

ATTORNEY.

UNITED STATES PATENT OFFICE.

DANIEL S. FOX, OF DEEP RIVER, CONNECTICUT.

EXPANSION-DRILL.

1,385,370. Specification of Letters Patent. Patented July 26, 1921.

Application filed August 14, 1919. Serial No. 317,514.

To all whom it may concern:

Be it known that I, DANIEL S. FOX, a citizen of the United States, residing in Deep River, in the county of Middlesex and State of Connecticut, have invented a new and Improved Expansion-Drill, of which the following is a specification.

My invention relates to the class of boring tools that may be so changed as to produce holes of different sizes, and an object of my invention, among others, is to provide a tool of this class that shall be simple and cheap in construction and particularly efficient in its operation.

One form of drill embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a tool embodying my invention with parts broken away to show construction.

Fig. 2 is a similar view but on a plane located at right angles to the plane of view of Fig. 1.

Fig. 3 is an end view of the device.

Fig. 4 is a view in section on plane denoted by dotted line 4—4 of Fig. 2.

In the accompanying drawings the numeral 5 indicates the body of my improved tool that is of wedge shape, as illustrated in Fig. 1, and that has an enlarged threaded end 6. Tool receiving grooves 7 are formed on opposite sides of the wedge shaped body, said grooves extending diagonally across the body and in opposite directions, as denoted by dotted lines in Fig. 2. These grooves are preferably somewhat shallow as compared with a mating part 8 of each groove located in retaining plates 9 secured to opposite sides of the body as by means of a clamp screw 10. The retaining plates are tapered to correspond to the body, and from a larger dimension at the outer end to a smaller dimension at the inner end, so that the body and retaining plates when assembled will form a structure substantially cylindrical in shape, and as clearly shown in Fig. 4 of the drawings.

Cutting tools 11 are located in the grooves 7 and 8, these cutting tools preferably being triangular in shape in cross section, and the receiving grooves 8 in the retaining plates are of a shape in cross section to correspond to the cutting tools. The shape of these cutting tools forms an important part of my invention, as they may be produced from a bar of indefinite length and triangular in shape in cross section, and this triangular shape is of peculiar value in a cutting tool when arranged as provided for in my improved drill, it being necessary simply to bevel off the end of the tool on one side only, and as illustrated in Fig. 2 of the drawings.

As a means of firmly retaining the clamp plates in position, a dowel 12 may be employed extending through the body and retaining plates at a point near the opposite ends of the body and retaining plates from that in which the clamp screw 10 is located.

A feeding nut 13 is fitted upon the screw threaded end 6, the ends of the tool 11 extending out at this end of the body and clamping plates, and by turning the feeding nut the tools may be simultaneously forced along the body toward the outer end thereof to project them to the required distance beyond the working end of the tool.

I claim—

1. An expansion drill comprising a body having grooves on opposite sides extending diagonally each of the other, retaining plates removably secured to opposite sides of the body and having mating parts of said grooves therein, and means for securing the retaining plates in place.

2. An expansion drill comprising a wedge-shaped body having grooves on opposite sides extending diagonally each of the other, retaining plates removably secured to opposite sides of said body and having tapered facing surfaces to fit the wedge-shaped surface on the body, said body and retaining plates having mating grooves on their mating surfaces, and means for securing the retaining plates in place.

3. An expansion drill comprising a body tapered from a larger dimension at its inner end to a smaller dimension at its outer end and flat on opposite sides with tool receiving grooves diagonally arranged in said opposite faces, retaining plates removably secured to opposite sides of the body and tapered from a larger dimension at their outer ends to a smaller dimension at their inner ends to correspond with the taper of said body, said retaining plates having grooves mating with those on the body to receive cutting tools, and means for securing the retaining plates in place.

4. An expansion drill comprising a body having grooves on opposite sides extending

diagonally each of the other, retaining plates fitting opposite sides of said body and having mating grooves of triangular shape in cross section, cutting tools of triangular shape located in said grooves, and means for holding said retaining plates in place.

5. An expansion drill comprising a body having flat surfaces oppositely arranged thereon and with shallow grooves extending diagonally each of the other on said faces, retaining plates having grooves of triangular shape in cross section to mate those on opposite sides of the body, cutting tools of triangular shape in cross section located in said grooves, the flat sides of the cutting tools resting on the flat bottom of the grooves in said body, and means for retaining the clamping plates in position.

6. An expansion drill comprising a body having grooves on opposite sides thereof extending diagonally each of the other, said body having an enlarged threaded end clamping plates fitting the body and removably secured to opposite sides thereof and having mating grooves therein to receive cutting tools, means for securing the clamping plates in position, and a feeding nut secured to the threaded end of the body and adapted to engage the ends of tools to force them along the grooves in the body and retaining plates.

7. An expansion drill comprising a body of wedge shape thicker at its inner than at its outer end to provide sloping faces on opposite sides of said body and with grooves in said sloping faces extending diagonally each of the other, retaining plates removably secured to the sloping faces on opposite sides of the body to engage tools in said grooves and hold them therein, and means for securing the retaining plates in place.

DANIEL S. FOX.