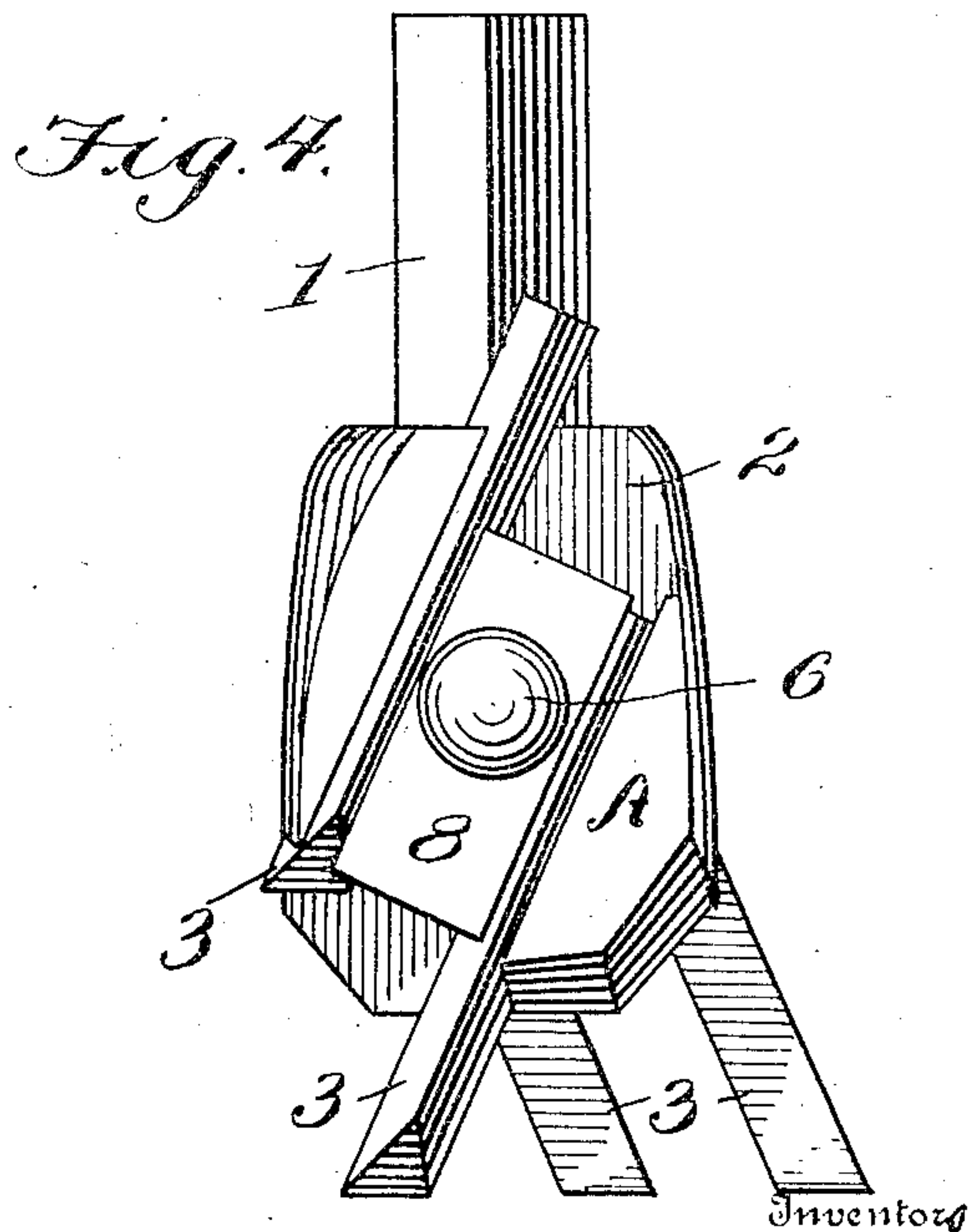
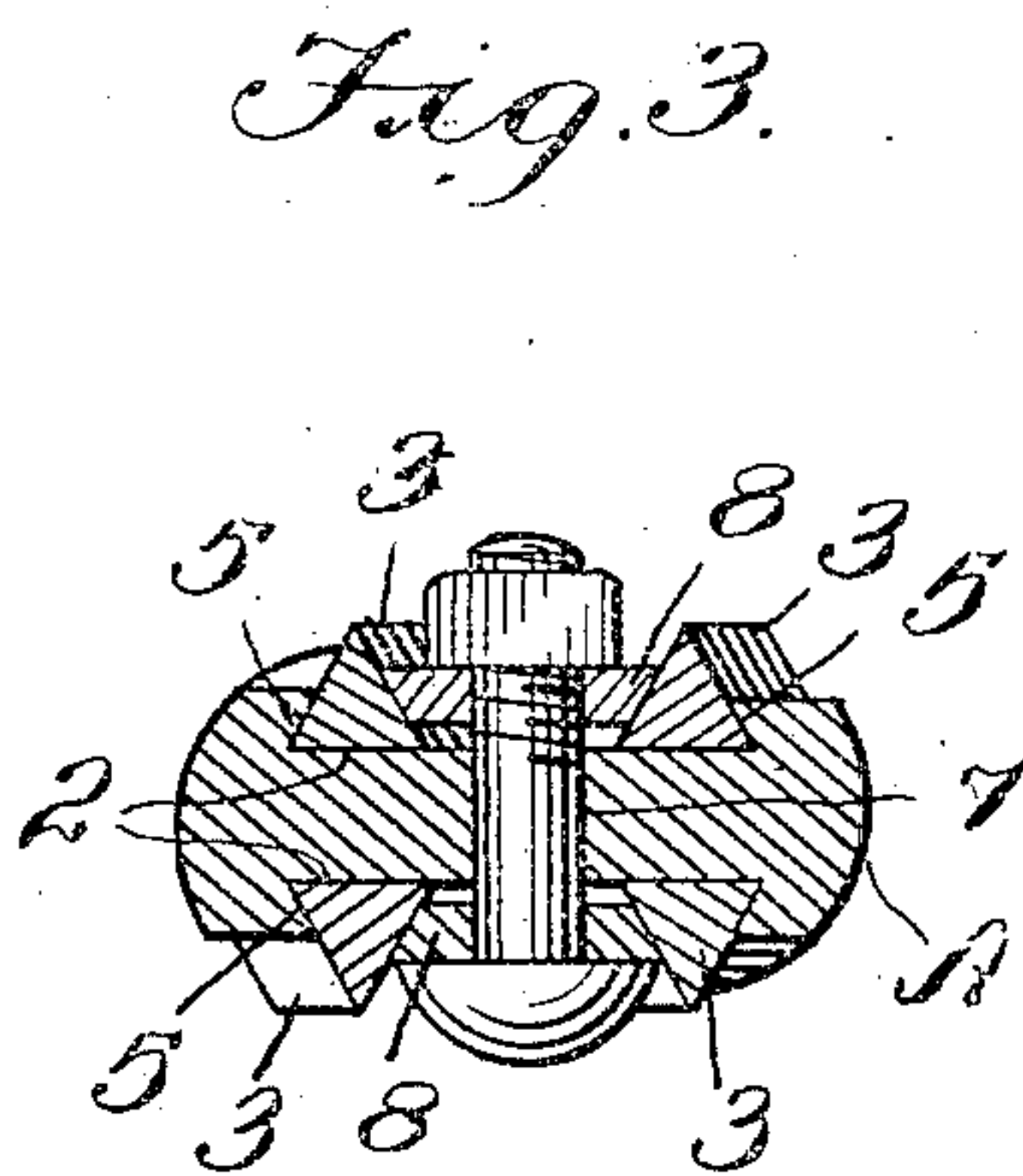
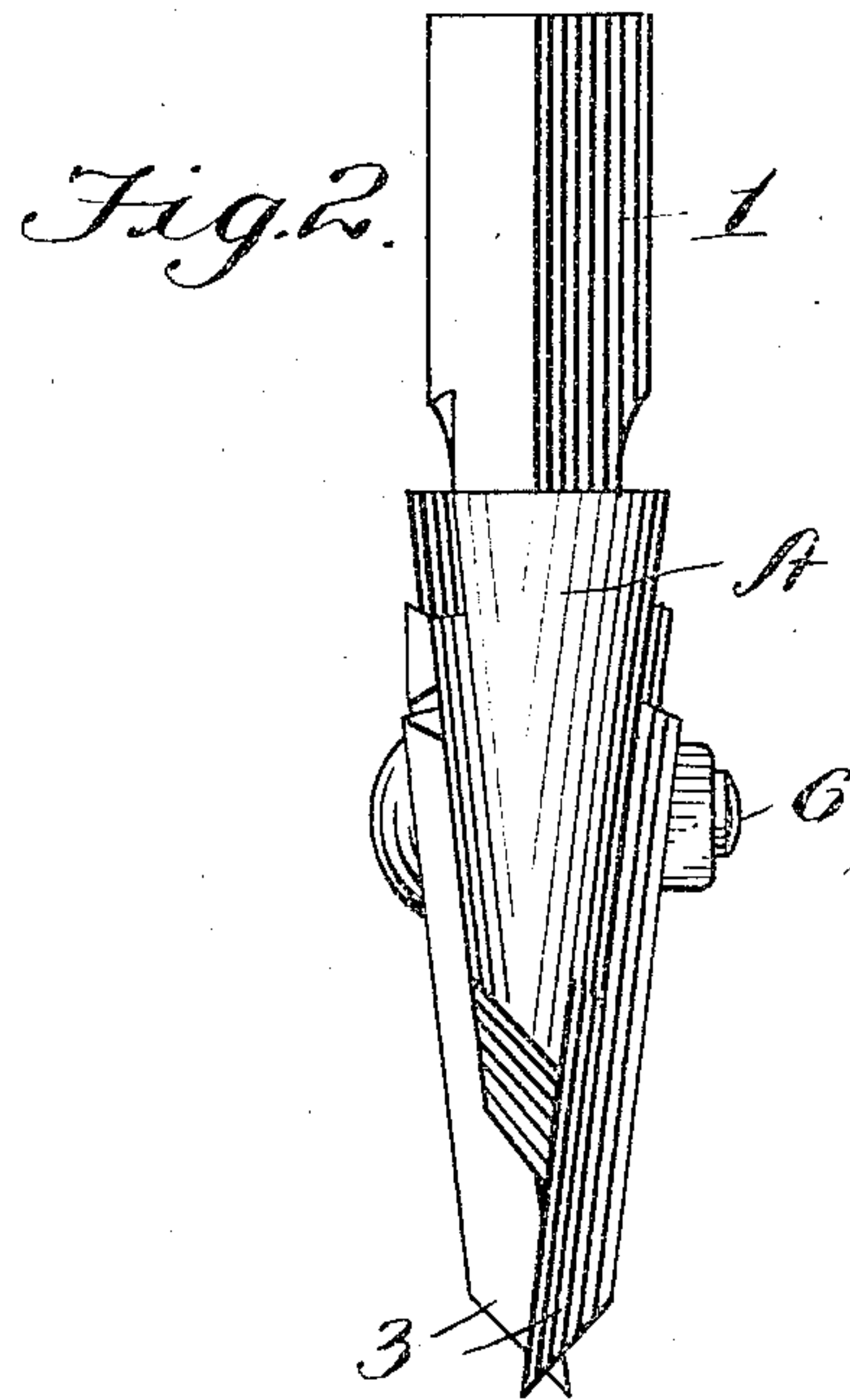
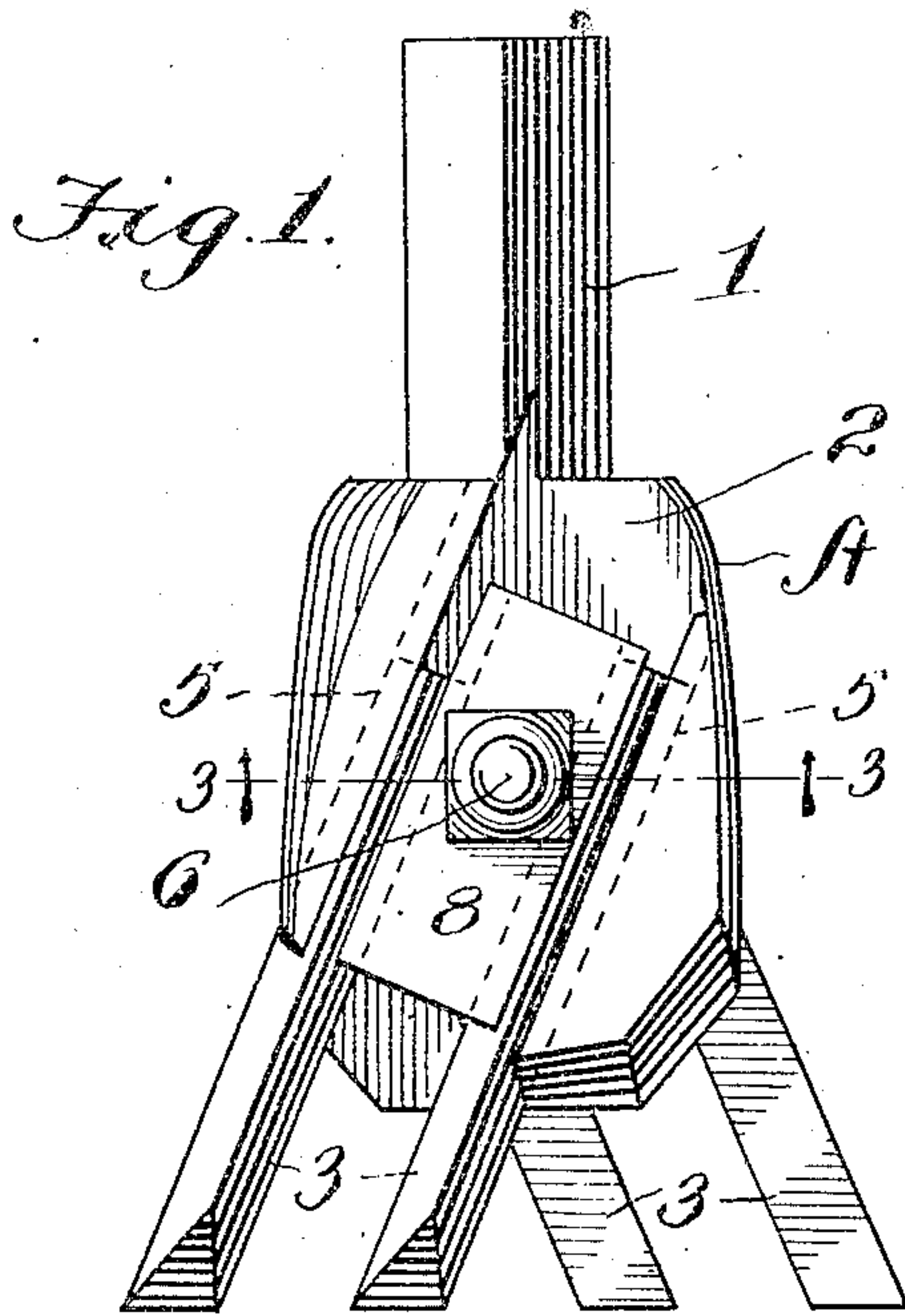


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COAL OR ROCK DRILL.  
APPLICATION FILED SEPT. 9, 1908.

914,966.

Patented Mar. 9, 1909.



Witnesses  
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Attorney



# UNITED STATES PATENT OFFICE.

GEORGE G. MAYER AND REESE ASHTON, OF SOUTH BETHLEHEM, PENNSYLVANIA.

## COAL OR ROCK DRILL.

No. 914,966.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed September 9, 1908. Serial No. 452,181.

*To all whom it may concern:*

Be it known that we, GEORGE G. MAYER and REESE ASHTON, citizens of the United States, residing at South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented new and useful Improvements in Coal or Rock Drills, of which the following is a specification.

This invention relates to drills intended primarily for boring coal or rock and the invention has for one of its objects to provide a drill in which a plurality of tools or cutters are mounted on a common head in such a manner as to be readily adjustable for boring holes of various sizes within the range of the drill and which permits the miner to readily remove the cutters for sharpening whenever they become dull so that a skilled mechanic or smith is not required, thus saving time and expense.

Another object of the invention is the provision of a simple and convenient means whereby the various tools can be clamped in position on the head of the drill and at the same time permits one or more of the drills to be retracted when not required for use according to the nature of the substance drilled.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing which illustrates one of the embodiments of the invention, Figure 1 is a front view of the drill. Fig. 2 is a side view thereof. Fig. 3 is a transverse section on line 3—3, Fig. 1. Fig. 4 is a front view of the drill showing one of the tools retracted for converting the drill from four to three cutters for the purpose of drilling relatively soft substances.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, A designates the head of the tool which is of any suitable material and size and on the head is a shank 1 of such shape as to be applied to a drill chuck or extension therefor. The front and rear sides of the head are flat and taper downwardly as shown in Fig. 2 and in these flat faces are shallow dove-tailed grooves 2, the

groove on one side being inclined in the opposite direction from that on the other side. In each groove 2 is a pair of cutters 3 of triangular cross section and of the same dimension from end to end. Each pair of cutters is spaced apart and are engaged under the undercut shoulders or walls 5 formed by the dove-tailed grooves 2, while the cutters bear flat against the bottoms of the grooves. The cutters are secured to the head by a single bolt 6 passing through an opening 7 located in the longitudinal center line of the head and provided with clamping plates 8 that have their side edges beveled or undercut at thirty degrees so that each plate will bear against the inner faces of each respective pair of cutters. The clamping plates not only hold the cutters against the flat bottom surfaces of the grooves 2 but by their wedging action force the cutters outwardly or apart into firm engagement with the undercut shoulders 5 of the dove-tailed grooves. By partially loosening the bolt 7 the cutters can be independently adjusted longitudinally so as to thereby vary the diameter of the bore which the drill will make, and the cutters can be filed down from time to time as they become dull and then projected still farther from the head to compensate for the amount of stock filed away so that the drill will be of the original gage and maintain the original diameter of the bore. In this manner the cutters can be used until their length is diminished to such an extent that a firm hold by the plates 8 is impossible. In case the substance is soft, like coal, four cutters will be found unnecessary and in this case one of the outside cutters can be retracted as shown in Fig. 4, and clamped in position so that there will be only three effective cutters, and the fourth can be held in reserve to take the place of any other cutter that may become dull or broken. In hard substances, such as rock, the fourth cutter will be set to do its share of the work with the others. It will be noted that one pair of cutters is disposed reversely to that of the other and are beveled in opposite directions, their cutting edges being set approximately to coincide on a line extending transversely of the axis of rotation. With a drill of this character the user can readily sharpen tools or cutters when necessary so that the need of a skilled workman for sharpening the tool is unnecessary as was formerly the case, and further-



more the drill can be adjusted for holes of various sizes.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while we have described the principle of operation of the invention, together with the apparatus which we now consider to be the best embodiment thereof, we desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention; what is claimed as new is:—

1. A drill comprising a head having tapering opposite faces having spaced undercut walls, the walls on one side of the head being inclined oppositely from those of the other side, a pair of cutters disposed at opposite sides of the head and engaging under said

walls, and a clamping plate disposed between each pair of cutters for holding the same in engagement with the head and serve to wedge the cutters apart to interlock under the said walls.

2. A drill comprising a head having relatively shallow dove-tailed grooves in its opposite faces and inclined oppositely to each other, a pair of cutters disposed parallel to each other and movable longitudinally in each groove, a clamping plate disposed between each pair of cutters, and forcing the same apart to engage the undercut walls of the grooves and clamping the cutters into contact with the bottoms of the grooves, and a common means for tightening the plates to the cutters.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE G. MAYER.  
REESE ASHTON.

Witnesses:

A. L. COPE,  
WILLIAM BITTNER.