Dec. 5, 1939. B. F. ROSENBERG ET AL 2,182,411

TOOL HOLDER

Filed June 11, 1938

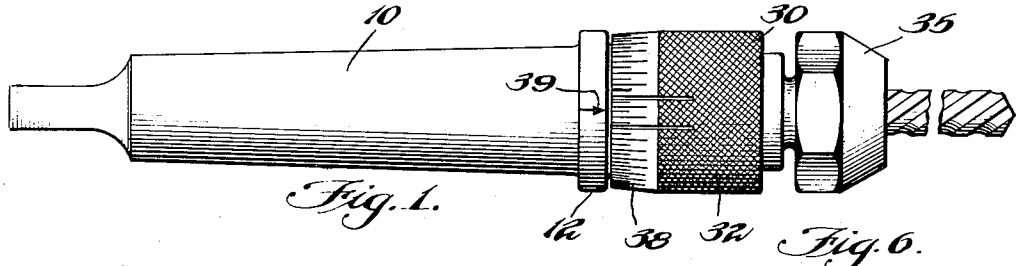
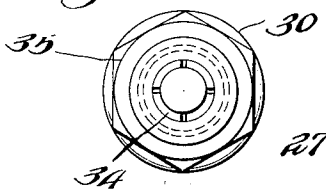
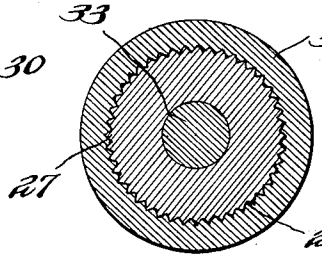


Fig. 1.

Fig. 6.

Fig. 2.





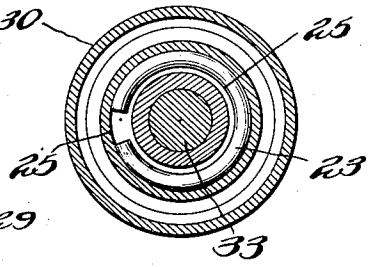


Fig. 3.

Fig. 5.

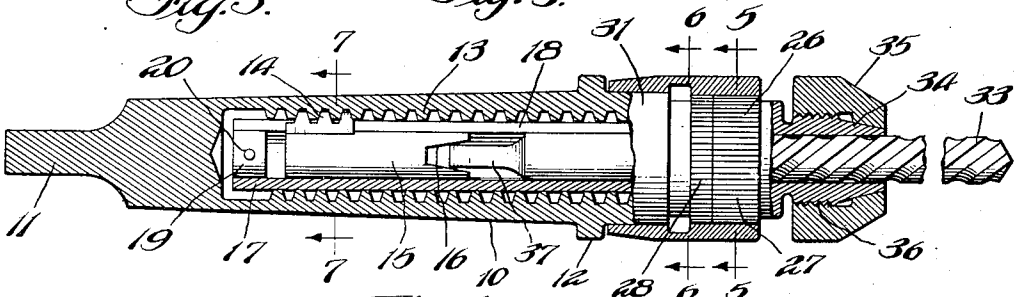


Fig. 4

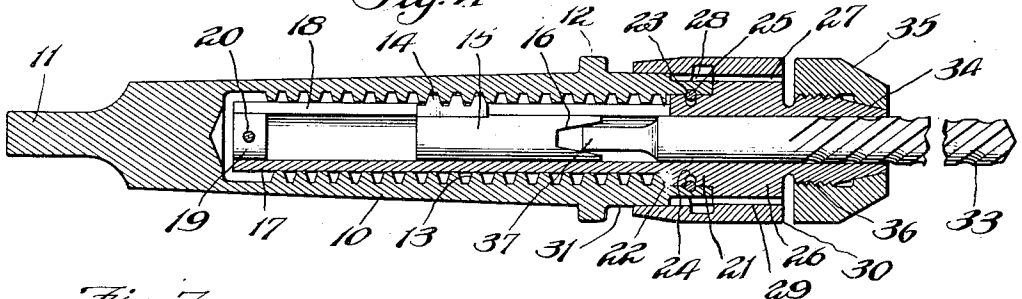
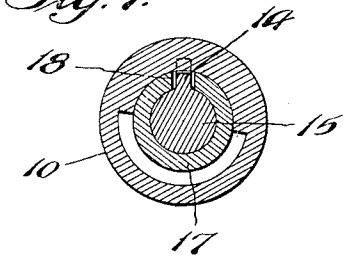


Fig. 7.



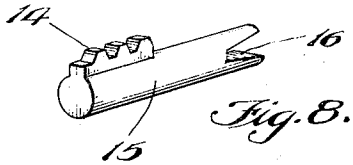


Fig. 8.

INVENTOR.
Benjamin F. Rosenberg
BY James A. Scully
Glenn S. Noble ATTORNEY.

Patented Dec. 5, 1939 2,182,411

UNITED STATES PATENT OFFICE

2,182,411

TOOL HOLDER

Benjamin F. Rosenberg and James A. Scully, Chicago, Ill., assignors to Scully-Jones & Company, Chicago, Ill., a corporation of Illinois

Application June 11, 1938, Serial No. 213,176

5 Claims. (Cl. 279—9)

In connection with many machinery operations, it is necessary or desirable to adjust the tool with respect to the work-piece being acted upon. This is particularly true of drilling operations and in addition to the first setting of the drill in the holder it becomes necessary to adjust the drill after it has been sharpened or broken or for other reasons.

The present invention relates to an improved holder for tools and for convenience in description will be described particularly in connection with drills although of course it may be used for reamers, milling tools, or other similar tools.

The objects of the invention are to provide an improved tool holder having means for readily adjusting the position of the tool with respect to the holder; to provide a drill holder having a micrometer adjustment for adjusting the drill with respect to the holder; to provide a drill holder having means for adjusting the position of the drill and having positive driving means as well as holding means for centering and holding the drill; and to provide such other advantages and novel features as will be described more fully hereinafter.

In the accompanying drawing illustrating this invention;

Figure 1 is a side view;

Figure 2 is an end view;

Figure 3 is a longitudinal sectional view showing the holder with the drill held in driving position;

Figure 4 is a similar view showing the parts in position for adjusting;

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 3;

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 3;

Figure 7 is a sectional view taken on the line 7—7 of Figure 3; and

Figure 8 is a perspective detail of the drill driving member.

In the particular form of our invention as shown in this drawing, the holder has a main body 10 which is preferably tapered in the usual manner and provided with a tang 11 at one end and an annular bead or projection 12 adjacent to the other end. The body portion is hollow or has a cylindrical hole therein provided with screw threads 13 for engagement with threads or teeth 14 on a cylindrical adjusting and driving member 15 as shown in Figure 8. The driving member 15 has a slot or recess 16 in its outer end, the sides of which are preferably tapered or beveled to provide for engagement with tangs of different sized drills.

The driving member 15 is slidably mounted in a sleeve 17 which fits closely within the cylindrical opening in the body and which has a longitudinal slot 18 through which the teeth 14 or toothed projection on the side of the driving member 15 project. The driving member 15 is held in the sleeve 17 by means of a plug 19 which fits in one end of the sleeve and is secured by a pin 20. The sleeve 17 has an annular enlargement or projection 21 at its outer end which fits within a recess 22 in the end of the body 10 and these parts are held in assembled relation by means of a spring ring 23 which fits in grooves 24 and 25 in the sleeve and body respectively as shown in Figures 4 and 6. Any suitable connection may be provided for holding the parts against longitudinal movement while permitting rotative engagement but the ring 23 is preferably of circular cross section so that the parts may be readily assembled but will require considerable force in order to pull them apart.

The sleeve 17 also has another enlargement or annular projection 26 which is shouldered to fit against the end of the body 10 and which has longitudinal teeth 27 which correspond with or are substantially the same as teeth 28 on the outer surface of the body 10 at its adjacent end. These teeth coact with teeth 29 in a driving collar 30 which is slidably mounted on the cylindrical end portion 31 of the body and on the enlarged portion 26 of the sleeve 17 and serves for inter-engaging or causing these members to be fixed together, or to permit rotation of one with respect to the other. It will be seen that the teeth 29 only extend part way along the collar 30 so that when the collar is shoved inwardly against the ring or projection 12 as shown in Figure 3, the teeth 29 will engage both sets of teeth 27 and 28 so that the sleeve will be driven with the body member. However when the collar 30 is moved outwardly as shown in Figure 4, the teeth 28 will be disengaged so that the collar may be used for turning the sleeve 17 and the collar is preferably knurled as shown at 32 for convenience in turning the same.

The sleeve 17 is provided on its extreme outer end with any suitable arrangement for engagement with a drill 33. For this purpose the end of the sleeve may be provided with jaws or collet clamping means 34 which are tapered to coact with a clamping nut 35 that engages with threads 36 on the sleeve 17. This provides a more or less common method of clamping or

holding the drill. The drill 33 has a tang or end portion 37 which fits in the recess 16 in the driving member 15 whereby the drill will be driven by such member. Our improved holders may be made for one size drill only or may be made adjustable for holding various sizes.

When the parts have been assembled as shown and the drill is to be adjusted, the collar 30 which has a yielding or spring fit, is moved longitudinally of the body or housing 10 until it is free to turn and the collar serves to turn the sleeve 17 which causes the teeth 14 of the driver 15 to turn in the threaded bore of the body and consequently cause the driver 15 to move longitudinally of the body and thereby adjust the drill to the desired position. When the drill has been adjusted the collar 30 is slipped back to its driving position so that when the body 10 is turned the drill will be driven positively through the medium of the sleeve 17 and driving member 15. After the drill or tool has become worn and further adjustment is required it may be performed by repeating these steps or operations as will be readily apparent to those familiar with such devices.

It will be noted that this provides an accurate or delicate adjustment which depends in part upon the pitch of the screw threads, and the amount of adjustment may be noted or measured by means of micrometer scale 38 on the collar 30 which coacts with an index or point 39 on the projection 12.

We have shown and described a preferred commercial embodiment of our invention but we have also utilized the same with different forms of end chucks or collets and other modifications employed which readily come within the scope of the invention and therefore we do not wish to have the same limited to the particular form shown and described except as specified in the following claims, in which we claim.

1. An adjustable tool holder comprising a body portion having a threaded bore, a sleeve rotatably mounted on the bore, means for holding the sleeve against longitudinal movement relatively to the body portion, a driving member slidably mounted in the sleeve and having a threaded projection extending outwardly through a longitudinal slot in the sleeve and engaging with said threads, means on the driver for positively engaging the tool to be driven for driving the tool, chucking means at the outer end of the sleeve for engagement with the tool, and adjustable means for locking the sleeve in rotative engagement with the body portion or releasing the same to permit turning of the sleeve for adjusting the tool.

2. An adjustable feed drill chuck having a bore with threads therein, a sleeve fitting closely within the bore and having a longitudinal slot, a driving member slidably mounted in the sleeve and having a longitudinal projection extending outwardly through the slot and provided with teeth for engagement with said threads, means for holding the driving member in the sleeve, said driving member being provided with means for positively engaging the drill to be driven, means for holding the sleeve in the chuck, means at the outer end of the sleeve for engagement with the drill for holding the same in the sleeve, means for rotating the sleeve to cause the driving member to move longitudinally thereof, and means for fastening the sleeve in driving engagement with the chuck.

3. In a device of the character set forth, the combination of a chuck to be driven by a machine and having a threaded bore extending inwardly from one end, a tube rotatively mounted in said bore and having a longitudinal slot, a slide in the tube having a toothed projection extending outwardly through the slot and engaging with said threads, said slide having a recess in one end for receiving the end of a tool for turning the same, a spring ring engaging with the chuck and tube for holding the tube in the bore, said tube having an annular projection engaging with the end of the chuck, radially arranged teeth on the end of the chuck and on said projection, a collar having teeth engaging with the teeth on the projection and adapted to engage at times with the teeth on the chuck when the collar is moved to driving position and to be free from the teeth on the chuck when the collar is moved to position for rotating the tube, and a collet on the end of the tube for engagement with the tool to be driven.

4. In a tool holder, the combination of a body portion for engagement with a drilling machine or the like for turning the same, said body portion having a threaded bore extending inwardly from one end and having peripheral teeth at the outer end, a sleeve fitting within the threaded bore, a longitudinally adjustable driver coacting with the sleeve and the threads and adapted for driving a tool, means for holding the sleeve in rotative engagement with the body portion, an annular projection on the sleeve engaging with the end of the body portion and having teeth adapted to match the teeth in the end of the body portion, an adjusting collar yieldingly engaging with the end of the body portion, an annular projection on the body portion for limiting the movement of the collar in one direction, said collar having teeth engaging with the teeth on said projection when in adjusting position and adapted to engage with the teeth on the body portion also when in driving position, and means for detachably holding a tool in the sleeve.

5. In a device of the character set forth, the combination of a cylindrical socket, a tool receiving and holding member slidably and rotatably mounted in the socket, means for holding a tool in said member for driving the same, adjustable means coacting with the socket and said member for turning said member when in one position and for locking the member to the socket when in another position whereby said member may be driven by the socket, a tool adjusting member slidably and non-rotatably mounted in the tool supporting member, and means for operatively connecting the tool adjusting member with the socket whereby said member will be adjusted longitudinally when the tool holding member is turned with respect to the socket and will be held in adjusted position when said member is fixed to the socket.

BENJAMIN F. ROSENBERG.
JAMES A. SCULLY.