E. E. DAVIS.

BORING TOOL.

APPLICATION FILED JULY 10, 1911.

1,078,611.

Patented Nov. 18, 1913.

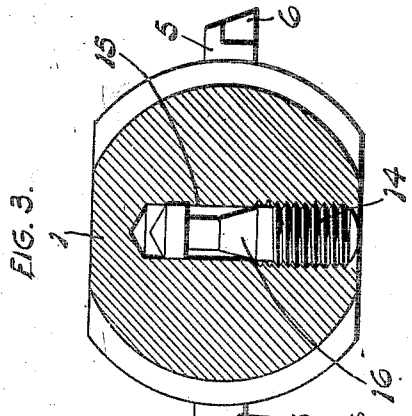


FIG. 3.

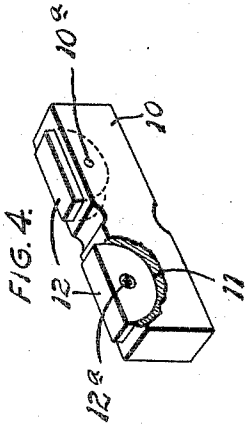


FIG. 4.

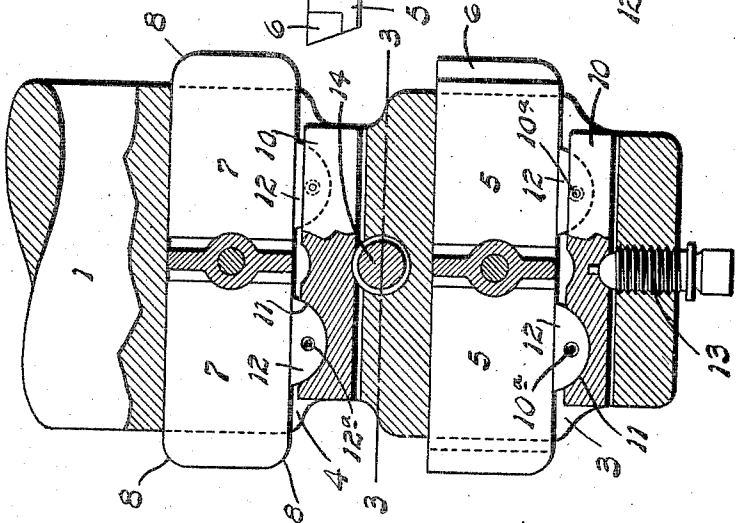


FIG. 2.

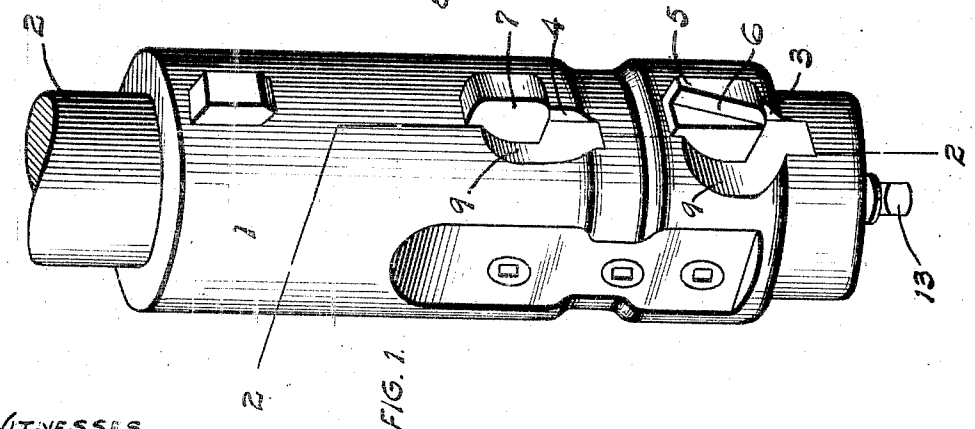


FIG. 1.

WITNESSES

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UNITED STATES PATENT OFFICE.

EMERY E. DAVIS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO MATTHEWS-DAVIS TOOL COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

BORING-TOOL.

1,078,611. Specification of Letters Patent. Patented Nov. 18, 1913.

Original application filed December 16, 1910, Serial No. 597,687. Divided and this application filed July 10, 1911. Serial No. 637,346.

To all whom it may concern:

Be it known that I, EMERY E. DAVIS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Boring-Tools, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a boring tool of my improved construction. Fig. 2 is a section through the center of the forward end of the tool, and taken approximately on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2. Fig. 4 is a perspective view of one of the gib carrying blocks utilized for clamping and locking the cutters or bits in the head of my improved boring tool.

My invention relates to an expansion boring tool of the type shown and described in the patent issued to me October 24, 1905 No. 802,737, and my present application is a division of a co-pending application for improvements in boring tools filed by me December 16, 1910, Serial No. 597,687.

In the patent and application just referred to I disclosed constructions utilizing only one pair of bits or cutters, and it is the object of my present invention to provide a boring tool having a plurality of pairs of bits or cutters, one pair of cutters being used for making the first or rough cut, and the second set of bits being utilized for producing the finishing or smooth cut.

A further object of my invention is to provide self adjusting gibs which engage the bits or cutters for the purpose of locking them in operative position within the head or body of the tool, and further to provide means for forcing the self adjusting gibs into close contact with the bits or cutters.

My invention consists in certain features of novelty and arrangement of parts hereinafter more fully described and claimed.

Referring by numerals to the accompanying drawing, 1 designates the body of my improved boring tool, which is in cylindrical form and is removably mounted in any suitable manner upon one end of a shank or rod 2. Formed through the body 1 at a suitable distance apart is a pair of diametrically arranged slots 3 and 4, which are adapted to be occupied by the bits or cutters and the gibs which lock the latter to the body of the tool.

The bits or cutters of each pair are adapted to be moved outward by any suitable adjusting means, preferably such adjusting means as is shown in my Patent #802,737, hereinbefore referred to, or in Patent #1,046,740, issued to me December 10, 1912. Parts of this bit adjusting means are shown in section in Fig. 2.

5 designates the bits or cutters which are located in the slot 3 and this pair of cutters is constructed especially for rough boring. The outer ends of these cutters are provided with notches or recesses 6 which permit the chips or shavings removed by the cutters to curl parallel with the body of the tool, which action permits the tool to be operated easily and with comparatively little power.

The pair of cutters 7 located in the slot 4 are especially constructed for making a finishing or smooth cut, and the outer corners of this pair of cutters are rounded off as designated by 8 so as to bore a perfectly smooth hole during operation.

Formed in the face of the body 1 immediately in front of the projecting ends of the cutters 6 and 8 are recesses or pockets 9 which are for the purpose of receiving the chips and shavings removed by the cutters during operation, and these pockets also serve as a reservoir for the lubricant used on the tool while the same is in operation.

The means employed for locking the bits or cutters in position within the body of the tool comprises a block 10 in the top of which is formed a pair of pockets 11, the bottoms of which are curved lengthwise and mounted in each pocket is a gib 12, the under side of which is curved to conform to the curvature of the bottom of the pocket, and the top face of which gib is flat and adapted to engage against the corresponding face on the under side of the adjacent bit or cutter.

10^a designates pins, the ends of which are seated in the walls of the block to the sides of the pockets therein, and said pins pass through transverse apertures 12^a formed through the gibs 12, and which apertures are slightly larger in diameter than are said

pins. This construction permits each gib 12 to have a slight vertical movement, and also a slight rocking movement independent of the block 10, and thus when the gibs are brought into engagement with the under sides of the bits or cutters said gibs will independently adjust themselves to the surface with which they contact. Such construction also prevents the gibs from dropping out of the blocks 10 when the same are removed from the body of the tool. One of these gib carrying blocks is located beneath each pair of bits or cutters and the block located below the pair of cutters 5 is forced upwardly to lock said cutters 5 to the body 1 by means of a screw 13, which passes through the end of the body 1, and bears against the under side of the central portion of said block 10. The gib carrying block located in the slot 4 beneath the pair of bits or cutters 7 is forced upward to lock said bits or cutters 7 in position by means of a screw 14 which is seated in a transversely disposed aperture 15 immediately below the slot 4, and the central portion of which screw is tapered as designated by 16, said tapered portion bearing against the under side of this gib carrying block.

It will be noted that the gibs 12 are independently mounted in the gib carrying block, and therefore, when the blocks carrying said gibs are moved toward the cutters, said gibs will automatically adjust themselves to the corresponding faces of the bits or cutters. Thus each bit or cutter is individually engaged by a self adjusting gib and when the screws 13 and 14 are tightened the bits or cutters will be very firmly locked to the body of the tool.

A boring tool of my improved construction is comparatively simple, can be operated with little power and the rough cutting and smooth boring operations, which usually require two tools and two distinct operations are accomplished with the one tool and by a single operation.

It will be readily understood that minor changes in the size, and construction of the various parts of my improved device may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claim.

I claim:

In a boring tool, a slotted body, a pair of cutters adjustably positioned in the slot in said body, a block positioned in the slot below said cutters, which block is provided in its top with a pair of recesses having curved bottoms, gibs mounted in said recesses, which gibs have curved under faces adapted to engage the curved bottoms of the recesses, and which gibs project a substantial distance beyond the face of the block so as to engage the undersides of the cutters independently of said block, said gibs being provided with transverse apertures, pins having their ends seated in the block to the sides of the recesses therein, which pins pass through the apertures in the gibs, said apertures being substantially larger in diameter than said pins, and a screw seated in the body and bearing against the underside of the block for forcing the same toward the cutters to cause the outer faces of the gibs to engage the adjacent faces of the cutters.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 5th day of July, 1911.

EMERY E. DAVIS.

Witnesses:
M. P. SMITH,
B. S. REID.