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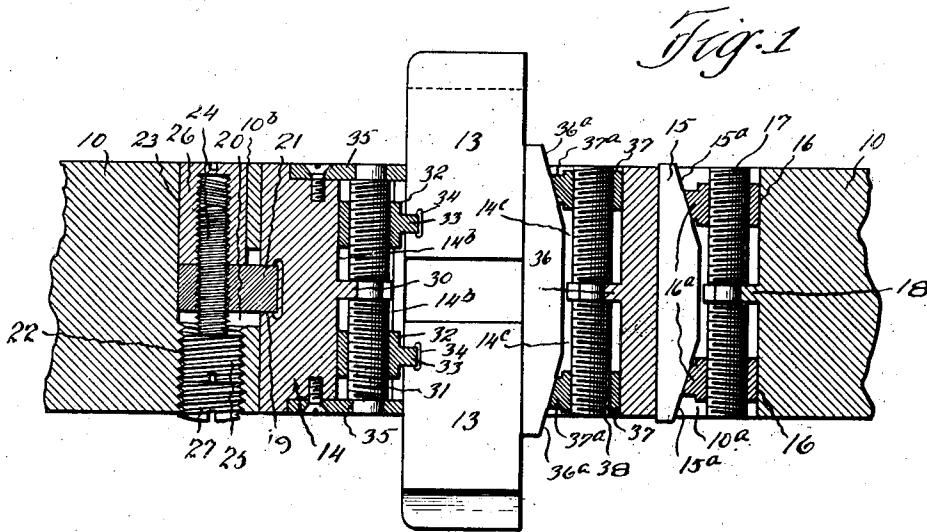
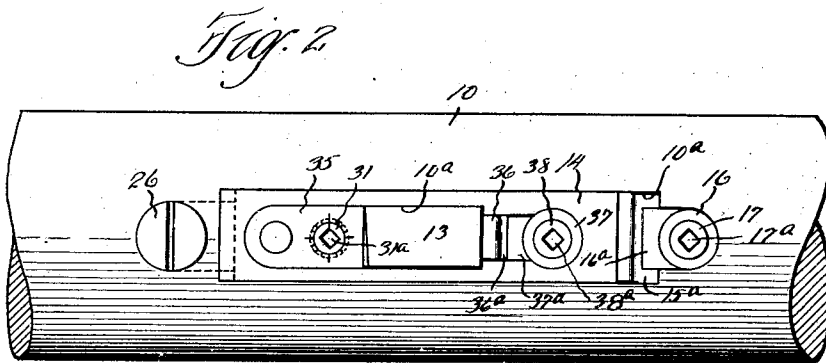
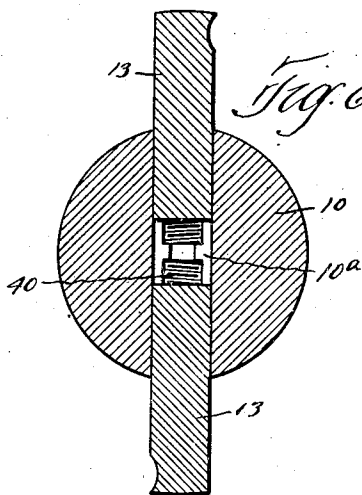
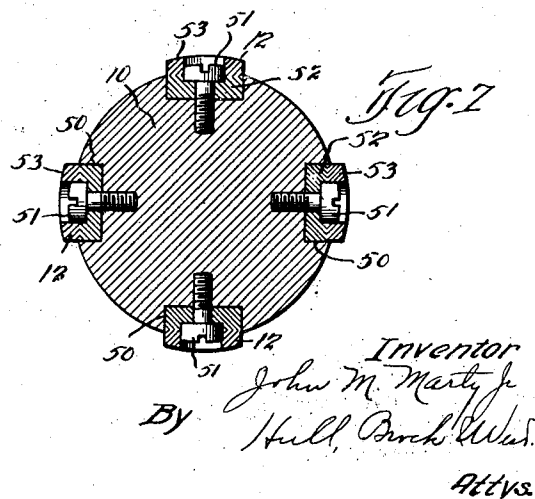
J. M. MARTY, JR

1,644,197

BORING BAR

Filed May 10, 1922

2 Sheets-Sheet 1



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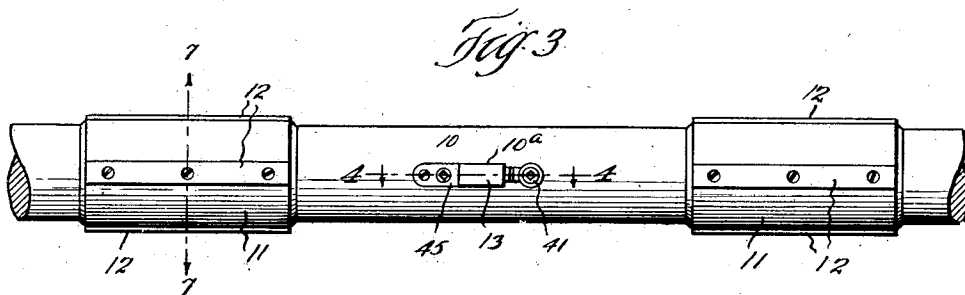
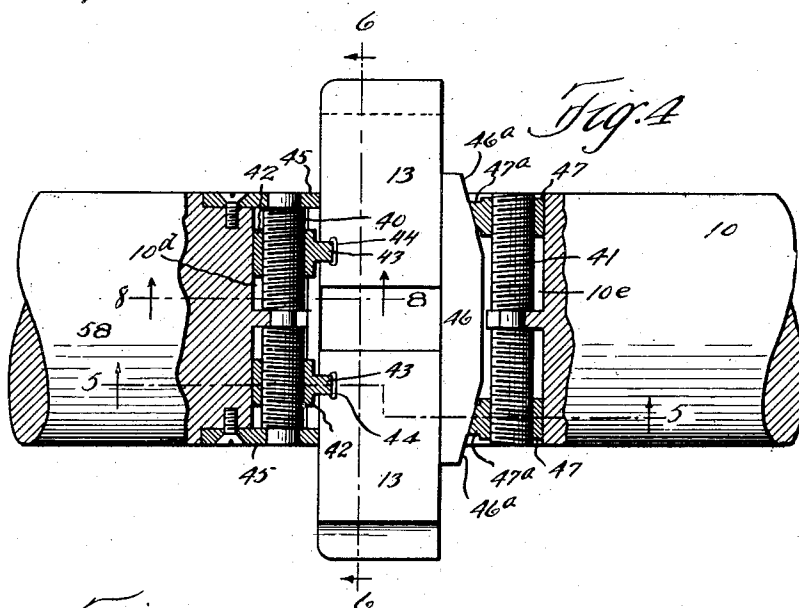
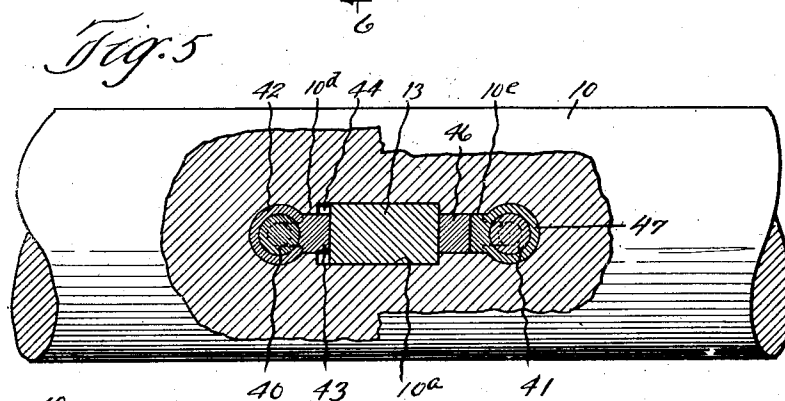
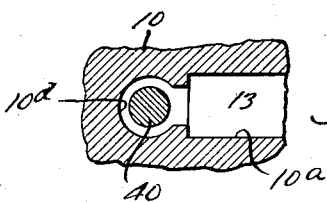
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BORING BAR

Filed May 10, 1922

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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BORING BAR.

Application filed May 10, 1922. Serial No. 559,918.

This invention relates generally to reamers and similar tools embodying a bar or rotating member carrying blades projecting laterally or radially therefrom and is particularly adapted for use upon line bars wherein said bars are arranged in suitable bearings and any desired number of reamers or cutting tools arranged in connection therewith.

The object of the invention is to provide a novel construction of blade adjusting means whereby the blades can be quickly and accurately adjusted in and out as desired and in which an exceedingly fine adjustment can be had.

Another object of the invention is to provide a block adapted to be placed in a line bar and carrying means for adjusting the blades, and means for accurately locating this block so that the blades can be accurately adjusted with reference to the center of the line bar.

Another object of the invention is to provide a novel construction of pilot strips used in connection with the bearing portions of the line bar.

With these various objects in view the invention consists in the novel features of construction and in combining or arranging the same, all of which will be described hereinafter and set forth in the appended claims.

In the drawings forming a part of this specification, Fig. 1 is a sectional view showing a portion of a bar with a block arranged therein, said block being provided with blades and means for adjusting said blades, and this view also discloses the novel means for locating the block within the bar; Fig. 2 is a side elevation of the bar showing the block arranged therein and blades carried thereby; Fig. 3 is a side view of a line bar with bearing portions and the cutting blades arranged in the slot in the line bar together with means for adjusting the same; Fig. 4 is an enlarged sectional view on the line 4-4 of Fig. 3; Fig. 5 is a detail sectional view on the line 5-5 of Fig. 4; Fig. 6 is a detail section on the line 6-6 of Fig. 4; Fig. 7 is a detail sectional view on the line 7-7 of Fig. 3; and Fig. 8 is a sectional view on the line 8-8 of Fig. 1.

In carrying out my invention I employ a rotary stock or line bar 10 having the bearing portions 11, said bearing portions being provided with pilot strips 12 constructed

and arranged in a manner more clearly described hereinafter.

The rotary stock or line bar 10 has one or more transverse slots therethrough in order to receive the cutting blades 13 and parts 60 connected therewith, the outer ends of said blades being shaped according to the purposes for which they are intended.

I have devised a novel form of means for adjusting the blades in and out as desired; 65 and this novel means for adjusting the blades can be employed when the blades are arranged directly in the transverse slot in the line bar or stock; and when the cutting blades are adjustably arranged in a block, I 70 also provide a novel form of device for properly locating the block within the line bar or stock.

As all of the features employed in connection with the blades carried by the block 75 are to be found in the construction wherein the blades are arranged in the slot in the bar, I will first describe the embodiment of my invention which includes the block 14 which is arranged in the transverse slot 10^a 80 cut in the line bar or rotary stock 10.

The block 14 is of a width to snugly fit the opening 10^a as most clearly shown, but is of less length than said opening as most clearly shown in Figs. 1 and 2, and in order 85 to lock the block in position I employ a wedge key 15 having its flat face contacting with the end of the block, and its wedge faces 15^a engaged by the wedge extensions 16^a of the nuts 16 which engage the oppositely threaded ends of the double screw 17; 90 held in a central bearing portion 18 left at the center of the stock or bar as most clearly shown in Fig. 1, the nuts traveling back and forth upon the oppositely threaded portions 95 of the screw 17, each end of the screw having a socket 17^a into which a wrench can be fitted and it will be noted by reference to Fig. 2 that the end of the transverse opening is shaped to receive the nuts 16 and their 100 wedge extensions 16^a.

The opposite end of the block 14 has a keyway or recess 19 produced therein; and at this end of the transverse slot 10^a the stock is also provided with a recess 20 in 105 which is arranged a locating key or nut 21 which projects slightly into the recess 19 as most clearly shown in Fig. 1; and it will be noted that there is some clearance between the key and end of the block in order to per- 110

mit the key 21 to be first introduced and then the block 14 inserted, it being understood, that the wedge locking means applied to the key 15 are released in order to give
 5 ample space for the insertion of the block 14.

The stock or bar 10 is also bored transversely as shown at 10^b and one end of this bore is threaded as shown at 22 while the opposite end is smooth as shown at 23, and
 10 threaded into the key 21 is a screw 24 which screw has an enlarged portion 25 threaded to engage the threads 22 of bore 10^b and it will be noted that the threads 24 are much finer than the threads 25 and consequently
 15 when the differential screw is turned in one direction the locating key 21 will be moved a distance equal to the difference between the pitch of the coarse thread and the pitch of the fine thread and in this way exceedingly
 20 fine and easy adjustment of the locating key 21, and consequently of the block 14 is obtained.

A threaded bushing 26 is screwed upon the projecting reduced portion of the differential screw after the locating key has been
 25 adjusted to its desired position, and in practice I prefer to shorten the enlarged portion 25 and provide the same with a slot, and then employ a screw plug 27 for locking
 30 and protecting the end of the differential screw, so that after the block has been properly positioned by means of the locating key, and which in turn is actuated through the medium of the differential screw, all danger
 35 of the adjustment becoming impaired is avoided.

Heretofore accurate and fine adjustments of cutting tools and their carrying parts has been more or less difficult, but by means of
 40 the differential screw and locating key herein shown and described I am able to obtain exceedingly fine and accurate adjustments as it is obvious that by making the two
 45 pitches of the screws nearly equal, that a single turn of the screw must necessarily move the key only an exceedingly short distance, inasmuch as such distance can only be the difference between the two pitches of the screw.

The block 14 is transversely slotted as shown at 14^a to receive the blades 13, and at each end, communicating with the slot 14^a in which the blades move, are the keyhole
 50 extensions 14^b and 14^c, which communicate with the slot 14^a and each portion 14^b and 14^c has a central bearing portion 30, and in the extension 14^b is mounted the double reversely threaded screw 31 which actuates the nuts
 55 32, each provided with a lug 33 which engage a recess 34 produced in the adjacent edge of the blade 13, there being clearance between the end of lug and wall of recess as shown so that the blades can be inserted after the locking means have been released as here-
 60 after explained.

The ends of the double screw 31 are journaled in side plates 35, set in the sides of the block and the square ends of the plates are flush with the end of the transverse slot 10^a, and it will be noted that the edges of the
 70 blades contact with the end of the slot (see Fig. 8) and also with the straight edges of the plates.

The screw 31 has a socket 31^a at each end into which a wrench can be fitted to turn the
 75 double screw, and it is obvious that when the double screw is turned in either direction the nuts 32 will be moved in unison in opposite directions and their lugs 33 being in engagement with the blades will cause said blades
 80 to move in or out in unison.

By having the blades slide in the slot and having the nuts working on the double screw, these screws can be cut with comparatively
 85 fine threads and in this way fine adjustments can be had.

After the blades have been thus adjusted in the block I lock them in their adjusted positions by means of a wedge key 36 which
 90 fits in the extension 14^c and bears with its flat face upon the edges of the blade, and the wedge faces 36^a are engaged by the wedge lugs 37^a of the nuts 37 working on the double
 95 reversely threaded screw 38 journaled in the bearing 18 projecting into the slot extension 14^c. The screw 38 has sockets 38^a at the ends to receive a wrench. The screw 38 is turned to release the lock whenever it is desired to
 100 adjust the blades, and tightened after the adjustment is obtained.

The adjustment of the blades is had by turning the screw 31 in the proper direction and by placing graduations upon the plate
 35, and a point upon the end of the screw, the exact amount of movement of the blades
 105 can be determined.

The block 14 is located by means of the location key or nut 21 actuated by the differential screw 24—25 as previously described, and by having this double adjustment I am
 110 able to properly and accurately adjust the blades with reference to the true center of the line bar so that an accurate hole will be cut.

In the construction shown in Figs. 3, 4 and
 5 the slot 10^a is cut in the bar and is provided with extension 10^e and 10^b, the double reversely threaded screw 40 being arranged in the extension 10^a and the double screw 41 in the extension 10^e. On the screw 40 are the
 120 nuts 42 having lugs 43 which fit into recess 44 in the blades 13 and by turning the screw 40 in either direction the blades can be moved in or out as desired, the screw having wrench sockets at the ends, and these
 125 ends turn in the plates 45 secured to the sides of the bar, and have straight edges flush with the end of the slot 10^a and as previously stated the nuts turning on the double screw and provided with lugs which engage the
 130

blades, a fine thread can be cut upon the screw and fine adjustments had.

A wedge key 46 contacts with the opposite side of the blades and nuts 47 working on the screw 41 having wedge extensions 47^a which engage the top end portion 46^a of the wedge key 46 and lock the blades in the adjusted positions.

The manner or adjusting the blades and the advantages of the various features have already been described in connection with Figs. 1 and 2.

In Figs. 3 and 7 I have shown a line bar 10 having bearing portions 11 provided with pilot strips 12. These strips are fastened in grooves 50 by screws 51, and after being fitted are hardened and attached, and finished off to fit the bearing. As commonly constructed they frequently break on a line with the head screw, and in order to avoid this I provide a composite strip composed of a low carbon steel part 52, and a high carbon steel part 53 welded together at 54, so that the outer part can be hardened without affecting the inner part, and when it becomes necessary to insert shims and re-grind the outer part it can be done much more conveniently and with better results than with the strips heretofore employed, and all danger of breakage is avoided.

From the foregoing description it will be

seen that I provide a novel form of blade adjusting means, which can be used either in a bar, or in a block within the bar, and that I also provide a novel locating means for the block when so used so that absolute accuracy is obtained.

Having thus described my invention, what I claim is:

1. The combination with a slotted bar, of a block arranged therein having a recess at one end, a locating key nut arranged in the bar and engaging the recess in the block, a differential screw, and bushing arranged in the bar, the coarse threaded portion of screw engaging the bar and the fine threaded part thereof engaging the locating key nut and bushing, means for locking said block, and blades carried by said block.

2. The combination with a member transversely slotted and transversely bored, the said bore and slot communicating, of a block arranged in said slot a locating key nut arranged in the member and having engagement with the block, a differential screw engaging the member and locating key nut, and means for protecting the ends of said screw.

In testimony whereof, I hereunto affix my signature.

JOHN M. MARTY, JR.