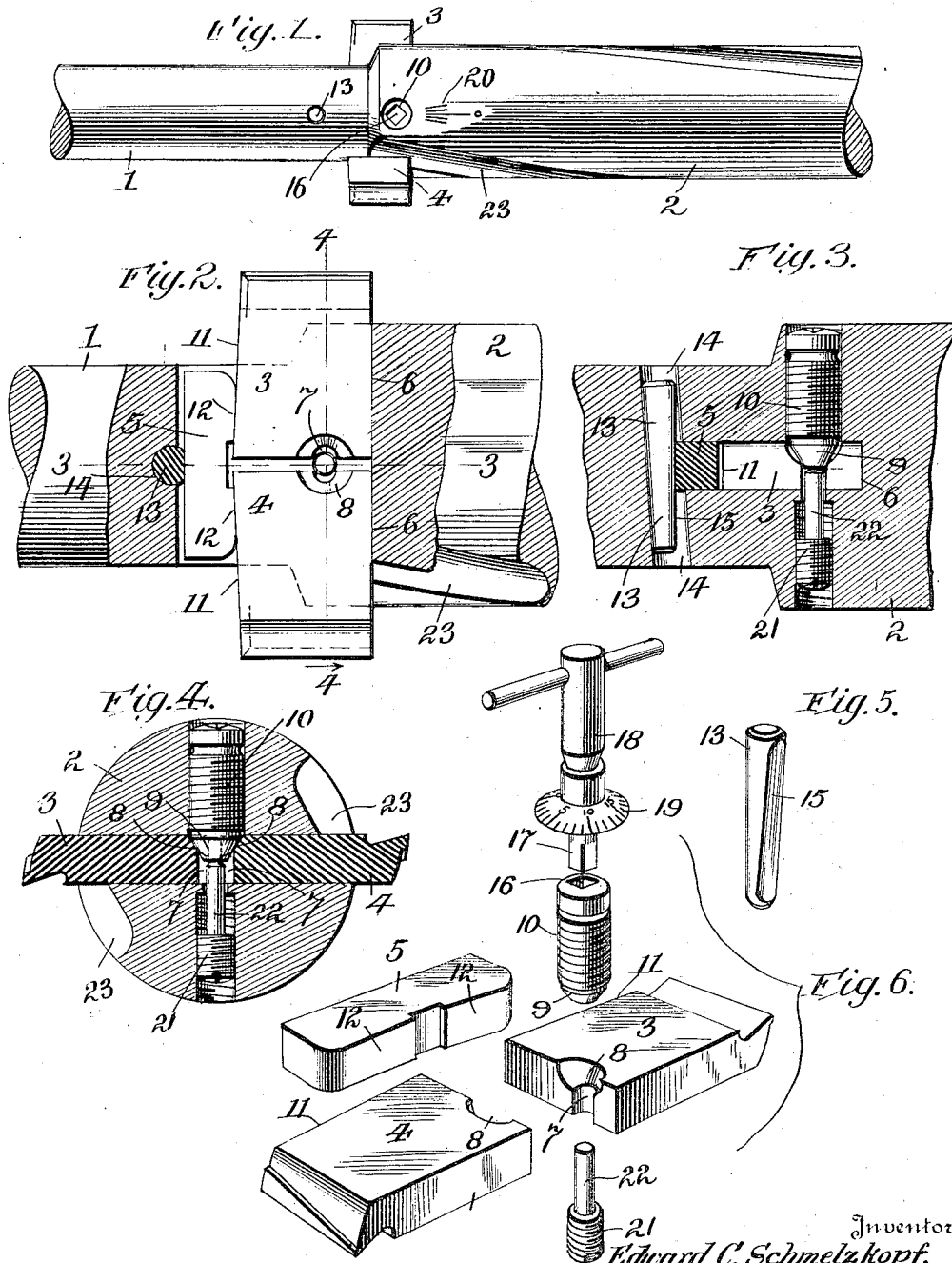


E. C. SCHMELZKOPF.
BORING BAR.
APPLICATION FILED AUG. 8, 1914.

1,144,795.

Patented June 29, 1915.



Witnesses
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UNITED STATES PATENT OFFICE.

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BORING-BAR.

1,144,795.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD C. SCHMELZKOPF, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Boring-Bars, of which the following is a specification.

My present invention pertains to improvements in boring bars, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein:

Figure 1 is an elevation of the bar, with the ends broken away; Fig. 2 an enlarged longitudinal sectional view, showing the cutters and securing shim; Fig. 3 a similar view taken on the line 3—3 of Fig. 2; Fig. 4 a transverse sectional view, on the line 4—4 of Fig. 2; Fig. 5 a perspective view of the locking key; and Fig. 6 a perspective view showing the cutters, the key or shim, the adjusting screw, the lock screw, and the key or wrench employed to actuate the adjusting screw and to thereby effect adjustment of the cutters.

The main object of the present invention is to provide a cutter bar wherein the cutters may be adjusted to a nicety and locked against movement, the locking mechanism being such that it is not easily displaced, and furthermore, serves to force the cutters inwardly into intimate contact with the adjusting screw employed to determine the set of the cutters.

A further object of the invention is to provide an adjusting screw and an actuating driver wrench of such construction that the screw may be readily positioned to effect a relatively small adjustment of the cutters, the wrench carrying a graduated dial adapted to be read in conjunction with a scale or fixed mark upon the body of the bar.

A still further object is to provide a special seating between the key or shim and the locking key, whereby the parts have a fair and extended contact.

With these and other objects in view, a detail description of the structure follows.

The bar may be said to comprise a front portion 1 and a larger, rear section 2. Extending transversely therethrough, at the junction of said sections, is a slot or opening adapted to receive the cutters 3 and 4, and the locking key 5. The cutters, as will be seen upon reference to Fig. 2, have a straight

and extended bearing along their rear edges 6, and are well sustained toward their ends by the larger body section 2, see dotted lines in Fig. 2. The inner end of each cutter is formed with a half-round notch or recess 7, and a rounded bearing seat 8, said seat preferably being a little shallower in the direction of the length of the cutter than it is across the end thereof, whereby the inclined face 9 of the adjusting screw 10 bears substantially along a line only of said seat and that in line with the direction of the movement of the cutter. The forward edge 11 of each cutter is inclined or tapered, the inclination being rearwardly toward the outer end or cutting edge of the cutter, and said edges are adapted to coact with similarly inclined or inwardly converging faces 12 formed upon one edge of key 5. Said key or shim is held in place by a pin 13 mounted in a hole or opening 14 formed in the bar, said hole being bored at an angle of, say, 3° to the axis of the bar. The rear face 15 of the pin is milled off at the same angle, whereby said face 15 will have a fair and full bearing against the key, and the forward wall of the opening, while at the same time exerting a wedging effect and forcing the key into contact with the cutters.

Screw 10, see Figs. 1 and 6, is provided with a socket 16, in its upper end, adapted to receive the polygonal end 17 of a wrench or driver 18, and through the manipulation of which the screw may be raised or lowered in its threaded opening as desired. The wrench carries a dial 19, graduated as desired, and adapted, when the wrench is positioned, to be read in conjunction with an index or scale 20, Fig. 1, produced upon the body of the bar. By this arrangement, which is at once simple and effective, and not subject to injury by reason of the use of the bar, a fine and predetermined adjustment of the screw and cutters may be effected. To hold the screw 10 against movement, once the desired adjustment is effected, a locking screw 21, provided with a finger 22, is employed, said screw being turned inwardly until the finger, which passes up through the recesses 7, contacts with the lower end of the adjusting screw and binds it securely in place.

Spirally-disposed grooves 23 will preferably be formed upon the exterior of the larger section 2, said grooves extending from

the cutters rearwardly of the bar and serving to remove the chips. Where the body of the bar is made large, as in the present instance, and consequently leaves but little space between the bar and the walls of the opening in which the bar is working, these grooves may become essential to afford the necessary clearance and feed for the chips or cuttings.

10 It is thought that the method of adjusting and locking the cutters will be readily understood from the foregoing description, but it may be recapitulated as follows: Assuming that the parts are in the positions
15 shown in Figs. 2, 3 and 4, and it be desired to reset the cutters, the user will loosen pin 13 and turn screw 10 in or out, as the case may be, say in, and by reading the dial 19 in conjunction with the scale 20 he can determine the exact amount of protrusion of the cutters. Lock screw 21 which, of course, was previously backed out, will then be turned in, locking the adjusting screw and holding it against movement. Pin 13 is then
25 driven home, forcing the key 5 into locking contact with the cutters 3 and 4, and by reason of the inclined faces 11 and 12, the cutters will be drawn inwardly into close contact with the adjusting screw and firmly
30 held. By the employment of the wedging faces 11 and 12 and by providing flat and extended bearing faces between the pin 13 and the key or shim 5, and between the pin and the wall of the opening in which it is
35 mounted, the parts are securely and positively locked in place.

Having thus described my invention, what I claim is:

1. In combination with a boring bar, laterally-extending cutters; means for securing adjustment thereof; a shim or key bearing on the cutters adjacent their inner portions, said shim and cutters having inclined contacting bearing faces; and a pin mounted
45 in the bar and bearing on the shim to force the latter into contact with the cutters.

2. In combination with a boring bar, laterally-extending cutters adjustably mounted therein; an adjusting screw mounted in the bar and bearing at its inner end against said
50 cutters; a key having inclined converging faces bearing upon reversely inclined faces formed on the cutters; and a pin mounted in the bar and bearing on the key to force
55 the latter into contact with the cutters.

3. In combination with a boring bar, having a recess formed therein for the recep-

tion of cutters, and an opening for the reception of a locking pin, said opening being inclined to the longitudinal axis of the bar; cutters mounted in the recess; a key
60 likewise mounted in the recess and bearing upon the cutters; and a pin mounted in the opening, said pin having a flat bearing face contacting with the adjacent face of the key.
65

4. In combination with a boring bar, having a recess formed therein for the reception of cutters and an opening for the reception of a locking pin, said opening being inclined to the longitudinal axis of the bar; cutters
70 mounted in the recess; a key likewise mounted in the recess and bearing upon the cutters; and a pin mounted in the opening, said pin having an inclined flat bearing face contacting with the adjacent face of the key,
75 the inclination of said face being substantially the same as the inclination of the opening.

5. In combination with a boring bar, cutters carried thereby; an adjusting screw carried by the bar for effecting adjustment of the cutters; a driver for the screw and removable from the same; and a graduated dial carried by the driver, said dial being adapted to be read in conjunction with an
80 index on the bar, upon the rotation of the driver.
85

6. A boring tool, comprising, in combination, a bar having sections of two diameters; and cutters carried thereby at the point of
90 emergence of the two sections, the larger section of the bar being provided with spirally-disposed grooves extending from the cutters rearwardly of the bar.

7. In combination with a boring bar, a pair of cutters carried thereby; an adjusting screw mounted in the bar, said screw having a socketed head; a locking screw for said adjusting screw; means for securing the cutters in adjusted position; a driver for
100 the adjusting screw, said driver having a portion adapted to enter the socket; and a graduated dial carried by the driver and adapted to be read in conjunction with an index on the bar as the adjusting screw is
105 manipulated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD C. SCHMELZKOPF.

Witnesses:

H. J. PARKE,
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