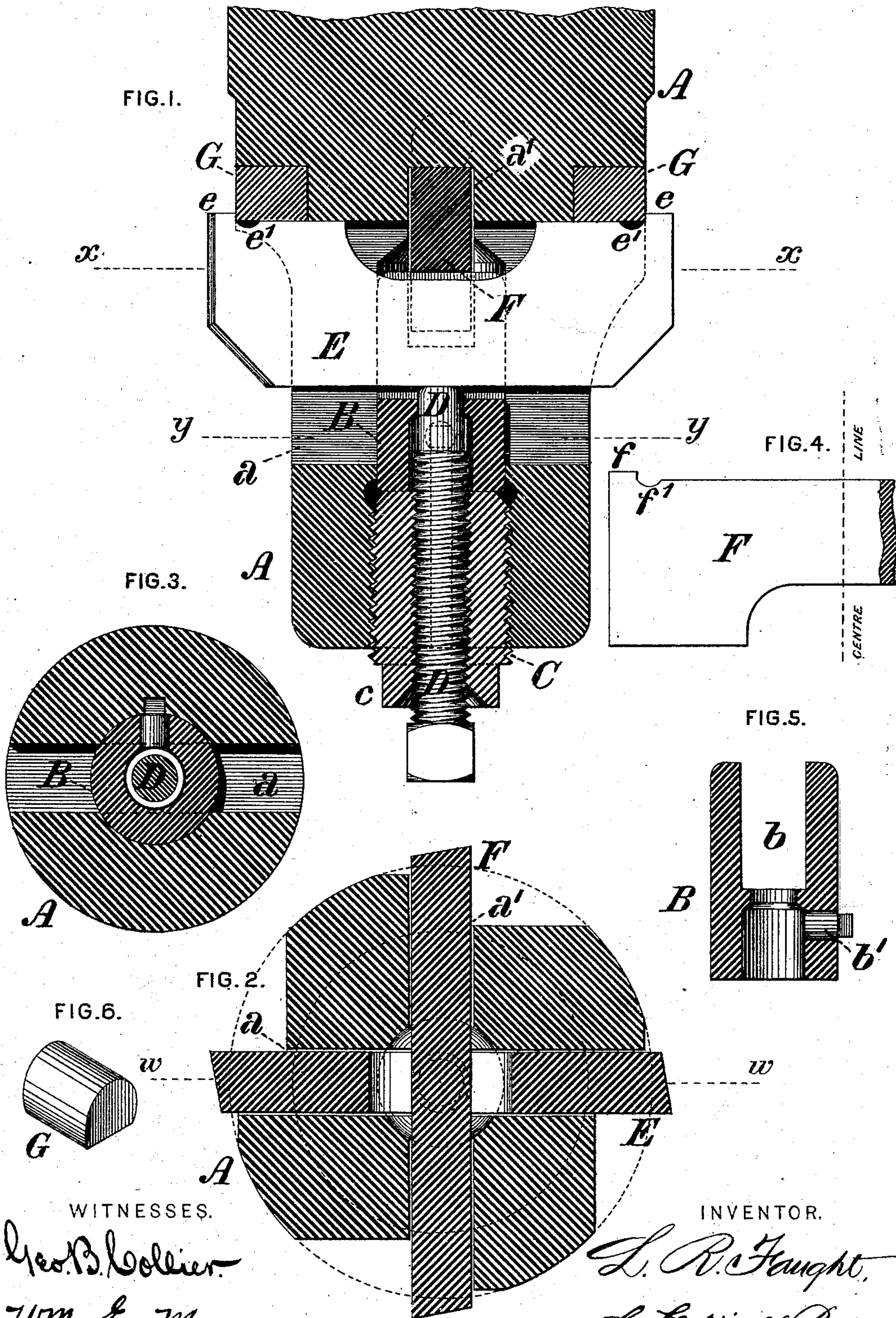


(No Model.)

L. R. FAUGHT.  
Boring Bar.

No. 241,481.

Patented May 17, 1881.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## BORING-BAR.

SPECIFICATION forming part of Letters Patent No. 241,481, dated May 17, 1881.

Application filed November 15, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, LUTHER R. FAUGHT, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Boring-Bars, of which improvements the following is a specification.

The object of my invention is to increase the rapidity and promote the accuracy of the work performed in a boring-machine by the provision of convenient facilities for the application and use either of a single cutter or of two tools or cutters having four cutting-edges spaced at equal distances apart circumferentially. Further, to provide simple and efficient means for inserting the cutters in and removing them from the boring-bar, and for holding one or more cutters firmly in position therein when in operation.

To these ends my improvements consist in sundry novel devices and combinations, embracing a boring-bar having two transverse slots at right angles one with the other; a slotted set-block fitting a central opening in said bar and adapted for the clamping of a cutter within either or each of the slots thereof; two tools or cutters having cutting-edges upon each of their ends, filleted near their shoulders and recessed centrally on their upper and their lower sides, respectively; an externally and internally threaded clamping-screw engaging a thread in the boring-bar concentric with the opening which receives the set-block, and serving to clamp a cutter within one of the slots of the bar and between the upper wall thereof and the top of the set-block; a central set-screw engaging the internal thread of the clamping-screw and acting to clamp one of the cutters within its slot, and hardened dies against which the shoulders of the cutters bear. The improvements claimed are herein-after more fully set forth.

In the accompanying drawings, Figure 1 is a vertical central section, through the lower portion, of a boring-bar embodying my invention at the line *ww* of Fig. 2; Figs. 2 and 3, transverse sections through the same, at the lines *xx* and *yy*, respectively, of Fig. 1; Fig. 4, a side view, in elevation, of the cutter which fits the upper slot of the boring-bar; Fig. 5, a

vertical central section through the set-block, taken at right angles to that shown in Fig. 1, and Fig. 6 a view in perspective of one of the cutter-dies.

To carry out my invention I form in the boring-bar A, adjacent to its lower end, two transverse or diametric slots, *a a'*, at right angles one to the other, the width of said slots being sufficient to admit easily the boring-tools or cutters, and their depth being greater than the depth of said cutters, so as to allow of the introduction, clamping, and removal of one or both thereof, as presently to be described. The bar A is bored out centrally to or near the top of the slot *a* to a diameter sufficient to admit a cylindrical set-block, B, and a female thread is cut upon the bore below the slot *a*, extending from the lower end of the bar A for the major portion of the distance therefrom to the slot *a*. The diameter of this central bore, at and for a short distance below the bottom of the slot *a*, corresponds as nearly as may be to that of the set-block, so as to prevent the access of foreign matter to the lower threaded portion. A diametric slot, *b*, corresponding in width to the slot *a*, is cut in the upper portion of the set-block B, below which slot the block is bored out centrally for a short distance to allow of the projection of the plain cylindrical upper end of a set-screw, D, into the slot *b*, below which distance the diameter of the bore for the remainder of the length of the block is slightly greater than that of the threaded portion of said set-screw, thus permitting the same to move freely longitudinally within it, while making as close a joint as may be at the bottom of the slot *b*, to prevent the entrance of chips and dirt. A steady-pin, *b'*, having a squared exterior head, is secured in the set-block B at right angles to the slot *b*, the head of the pin projecting into a groove of corresponding width in the boring-bar A, (shown in dotted lines in Fig. 1,) by which means the slot *b* of the block is maintained truly in line with the slot *a* of the boring-bar. A clamping-screw, C, having a squared lower end or head, *c*, engages the thread of the central bore of the bar A, and has formed upon it a central female thread fitting the thread of the set-screw D.



The boring-tools or cutters E F, which are inserted in the slots *a* and *a'*, respectively, of the boring-bar, have suitable cutting-edges upon each of their ends, and are each reduced in depth at and adjacent to their centers, the cutter F, which is uppermost, by a recess in its lower side, and the lower cutter, E, by a similar recess in its upper side, said lower cutter being likewise beveled or relieved upon each of its lower corners, the object of such recessing and beveling being to enable the two cutters to be placed in such position in the bar that the leading points or corners of the four cutting-edges shall cut in substantially the same plane, thereby acting simultaneously upon the work. The object of using two cutters or four cutting-edges so located is that by acting upon the material at a greater number of points the feed may be correspondingly increased and the work thus expedited, and also the boring will be more truly round than where a less number are employed. Shoulders *e f* are formed upon the upper sides of the cutters E F, adjacent to which curved recesses or fillets *e' f'* are formed in the cutters, so as to prevent sharp corners at the bearing-points of the cutters upon the bar, and thereby reduce the liability to breakage from strains either in hardening or when at work.

A hardened die, G, of cylindrical form, is inserted in the bar A at each end of the upper sides of the slots *a a'*, the dies being flattened or reduced on one side, so as to be flush with the upper sides of the slots, and serving as bearings for the shoulders *e f* of the cutters. The bar A is reduced or relieved on its outer surface, in the usual manner, in advance of each of the cutting-edges, to admit of the free escape of chips therefrom.

In operation, assuming that two cutters with their four cutting-edges are to be employed, the cutter F is first inserted in the slot *a'*. The cutter E is next inserted in the slot *a*. The set-block B is passed up the central bore of the bar A, the sides of its slots *b* passing the cutter E, and the clamping-screw C is then screwed up until the set-block B is brought to a tight bearing upon the cutter F, and holds the same firmly between its upper end and the top of the slot *a'*. The set-screw D is finally brought to a similar bearing upon the cutter E, holding the same between its upper end and the top of the slot *a*. Should it be desirable on any occasion

to use only a single cutter, either of those described may be employed, or an ordinary plain or unrecessed cutter may be adopted, as in boring-bars of the usual construction having only a single slot, and this without removing any of the other parts.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of a boring-bar having two diametric slots at right angles one to the other, a tool or cutter fitting in one of said slots, a set-block fitting centrally within the boring-bar and bearing upon the cutter, said set-block having a diametric slot below said cutter in line with the opposite slot of the boring-bar, and a clamping-screw engaging a thread in the boring-bar and bearing upon the set-block, these members being combined for joint operation to admit of the application and independent adjustment of either one or two cutters, substantially as set forth.

2. The combination, substantially as set forth, of a boring-bar having two diametric slots at right angles one to the other, and a central recess adapted to receive a set-block, a tool or cutter fitting in one of said slots, a central set-screw bearing upon said cutter, and a concentric clamping-screw acting as a nut for said set-screw.

3. The combination, substantially as set forth, of a boring-bar having two diametric slots at right angles one to the other, a tool or cutter fitting in each of said slots, a slotted set-block and a clamping-screw, by which one of said cutters is retained in position, and a set-screw which engages an internal thread upon the clamping-screw and retains the other cutter in position.

4. The combination, substantially as set forth, of a slotted boring-bar, a shouldered tool or cutter, and a hardened die fitted in the boring-bar to serve as a bearing for the shoulder of said cutter thereon.

5. A cylindrical set-block for boring-bars, having a longitudinal diametric slot for a portion of its length, and a central bore or opening for the remainder thereof, as and for the purpose set forth.

L. R. FAUGHT.

Witnesses:

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