

W. A. SCHROEDER & A. J. NOLTE.

BORING BAR.

APPLICATION FILED JUNE 19, 1911.

1,043,874.

Patented Nov. 12, 1912.

Fig. 1.

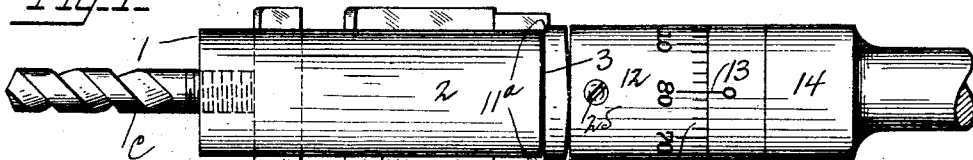


Fig. 2.

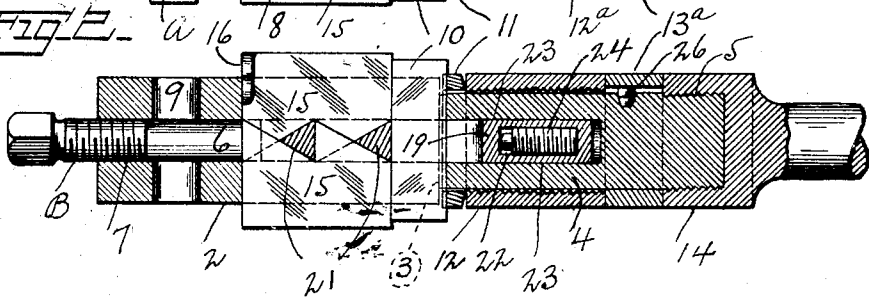


Fig. 3.

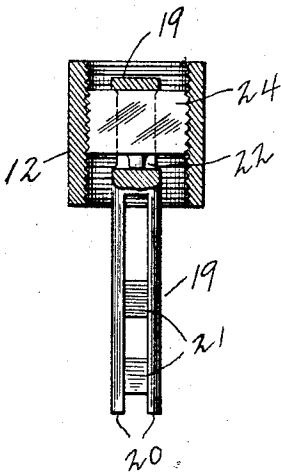


Fig. 4.

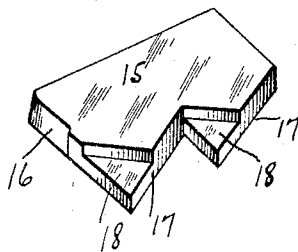
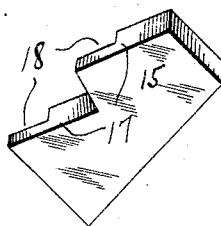


Fig. 5.



WITNESSES:

Chas. A. Becker,
Thomas E. Kine

INVENTORS:

Wm. A. Schroeder & Albert J. Nolte,
BY *Small - Small*
Their ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM A. SCHROEDER AND ALBERT J. NOLTE, OF ST. LOUIS, MISSOURI.

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BORING-BAR.

1,043,874.

Specification of Letters Patent.

Patented Nov. 12, 1913.

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To all whom it may concern:

Be it known that we, WILLIAM A. SCHROEDER and ALBERT J. NOLTE, citizens of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Boring-Bar, of which the following is a specification.

Our invention relates to improvements in boring bars having radially adjustable cutters.

The objects of our invention embrace the provision of a simple, detachable and adjustable device and one which is capable of easy combination with other special tools without removal from the lathe or other operating machine, and, also, the provision of a tool in which the degree of expansion of the cutters may be so exactly ascertained that a given plurality of borings may be of precisely the same diameter.

Another object is to secure a greater degree of expansion for the cutters than has been afforded heretofore.

Further objects and advantages will be apparent in a reading of the following description and are particularly pointed out in the claims.

The desiderata mentioned and referred to we attain by the construction and arrangement of parts shown in the accompanying drawing, in which like numerals and letters refer to like parts throughout the several views, Figure 1 being an elevation of the complete tool; Fig. 2 a combined longitudinal section and elevation showing the interior arrangement, the cutters not being expanded; Fig. 3 a detail view of the cutter-adjusting head and the means by which it is moved; and Figs. 4 and 5 internal and external surfaces, respectively, of the expansion cutters.

In carrying our invention into practice we provide a barrel 1 comprising a body portion 2, a shoulder 3, a shank 4 ending in threads 5, an interior guideway 6 terminating in threads 7, cutter-slots 8, and a special tool slot 9. Thus the mechanic is enabled to insert an extra single cutter *a*, which would be retained by a screw *b*, or a twist or flat drill *c*, without removal of the tool proper from the machine with which it may be operating. Mounted upon shank 4 and normally held above shoulder 3 by the insertion of a key 10 is a locking ring 11 provided with shallow slots 11^a, and arranged above said ring is an adjusting collar 12 having

a micrometer scale 12^a, said scale being used in connection with an index 13 marked upon an annular stationary member 13^a, these several parts being clamped together by tightening a suitable bar 14 upon threads 5. Cutters 15 are of a form designed to yield the maximum expansion in a tool of comparatively small proportions, and comprise a cutting-edge 16, a plurality of inclines 17, and indents or pockets 18, each of the latter serving to accommodate said inclines as the cutters are opposed when set in the barrel, as shown in Fig. 2. Within guideway 6 is disposed a cutter-adjusting head 19, the same comprising forked members 20 joined at intervals by wedge-shaped devices 21, and an apertured extremity 22. Aperture 22 registers with a similar larger aperture 23 disposed through shank 4 of barrel 1, and through said apertures is projected a half-bolt 24 whose threads cooperate with threads upon the inner face of adjusting-collar 12 to move member 19 in said guideway, as best shown in Fig. 3. That the certain adjustment of cutters 15 be not disturbed when, for any reason, the tool is separated from bar 14, we provide a countersunk set-screw 25 by which collar 12 may be held against movement, while member 13^a is prevented from rotation by a removable pin 26 which fits within a groove provided in the inner face of said member.

It will be noted that locking-ring 11 is rather loosely mounted upon shank 4 and that its upper edge gradually slopes upward on either side from a point above slots 11^a. By these devices we insure that key 10 will be positively forced against both of the expansion cutters even though one thereof become shorter than the other, for in the latter event the tightening of collar 12 will cause said ring to incline or tilt toward the shorter cutter and so bring said key into engagement therewith.

In operation, cutters 15 are inserted in opposite slots 8 and the upper portion of inclines 17 brought to bear against wedge-shaped devices 21 as shown in Fig. 2, the lower portion of said inclines being received within pockets 18. The base of devices 21 corresponding in depth to the diameter of cutter-adjusting head 19 and each of inclines 17 having a depth equal to that of said base, it follows that upon continued rotation in one direction of collar 12 each of cutters 15 may be simultaneously pro-

jected to an extent equal to the diameter of member 19.

What we claim as new and desire to secure by Letters Patent is:—

- 5 1. A boring bar comprising a plurality of cutters, a cutter-expanding member, a collar movably engaging said member for the adjustment of said cutters, a ring loosely mounted upon the shank of said bar, and a
10 key normally disposed between said cutters and ring, said ring having an inclined edge, and said collar adapted to engage said edge of said ring.
- 15 2. A boring bar comprising a plurality of cutters, a cutter-expanding member, a collar movably engaging said member for the adjustment of said cutters, a ring loosely mounted upon the shank of said bar, a key
20 normally disposed between said cutters and ring, and devices whereby each of said cutters may be expanded to an extent equal to the diameter of said member, said ring having an inclined edge, and said collar adapted to engage said edge of said ring.
- 25 3. A boring bar comprising a plurality of cutters, a cutter-expanding member, a

micrometrically-scaled collar movably engaging said member for the certain adjustment of said cutters, a ring loosely mounted upon the shank of said bar, and a key normally disposed between said cutters and ring, said ring having an inclined edge, and said collar adapted to engage said edge of said ring.

4. A boring bar comprising a plurality of cutters, a cutter-expanding member, a micrometrically-scaled collar movably engaging said member for the certain adjustment of said cutters, a ring loosely mounted upon the shank of said bar, a key normally disposed between said cutters and ring, and devices whereby each of said cutters may be expanded to an extent equal to the diameter of said member, said ring having an inclined edge, and said collar adapted to engage said edge of said ring.

WM. A. SCHROEDER.
ALBERT J. NOLTE.

Witnesses:

FRED SCHLUETER,
FRED J. BARFORT.