

No. 663,455.

Patented Dec. 11, 1900.

K. O. MUEHLBERG.  
CUTTER TOOL.

(Application filed Dec. 18, 1899.)

(No Model.)

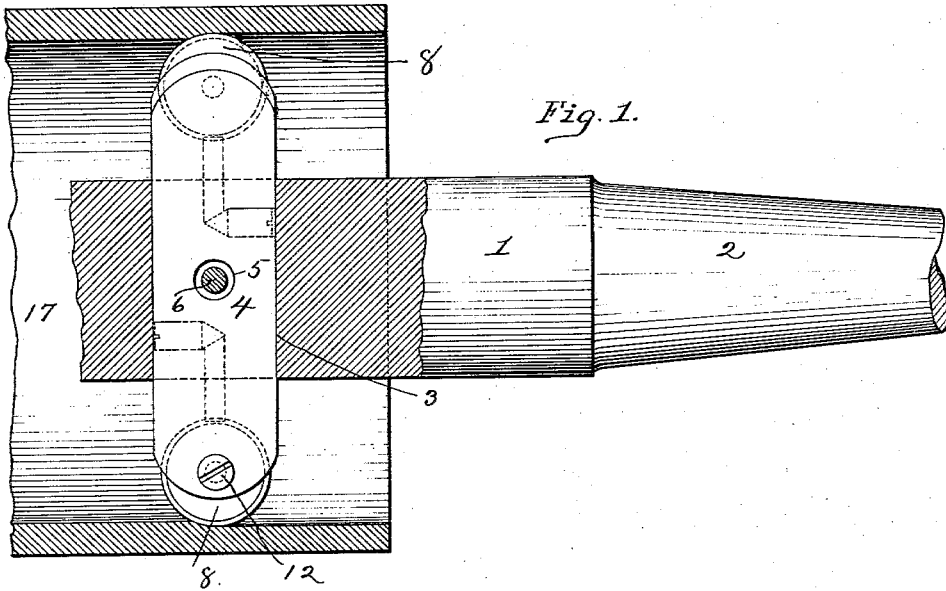


Fig. 1.

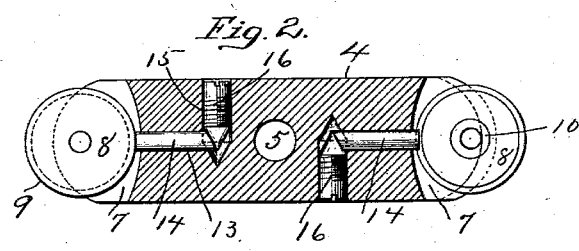


Fig. 2.

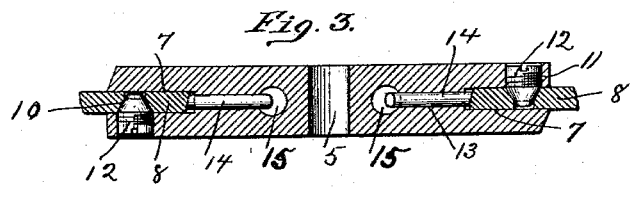


Fig. 3.

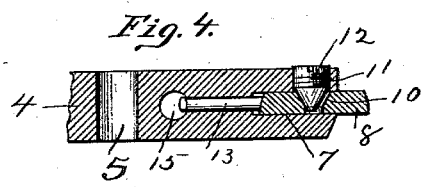


Fig. 4.

Witnesses:

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# UNITED STATES PATENT OFFICE.

KARL O. MUEHLBERG, OF BRADDOCK, PENNSYLVANIA.

## CUTTER-TOOL.

SPECIFICATION forming part of Letters Patent No. 663,455, dated December 11, 1900.

Application filed December 18, 1899. Serial No. 740,819. (No model.)

*To all whom it may concern:*

Be it known that I, KARL O. MUEHLBERG, a resident of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cutter-Tools; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to metal-working tools, such as are employed for reaming out the inside of tubes or tubular articles or for boring cylindrical holes in metal bodies of any form or character; and it has for one of its objects to provide a tool of this character the cutters of which may be readily adjusted to operate upon tubes of different diameters or to ream out a tube of a given diameter to different depths at different portions thereof or to make successive cuts throughout either the entire length of a bore or such portion of the length as may be desired.

A further object of the invention is to provide cutters of substantially circular form having spherical edges and so mounted that they may be partially rotated to bring new portions of the cutting edges into operative position when the portions in use become so dulled or worn as to fail to perform their work satisfactorily.

To these ends my invention consists of the means shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the cutter-head and cutters mounted in a suitable holder in operative position, the holder and a tube upon which work is to be done being shown partially in section and parts being broken away. Fig. 2 is a central longitudinal section through the cutter-head; and Fig. 3 is a central longitudinal section through the cutter-head, taken at right angles to that of Fig. 2. Fig. 4 is a detail sectional view of a portion of the cutter-head, showing the cutter and its adjusting and locking device in different positions from those represented in Figs. 2 and 3.

Referring now to the details of construction illustrated in the drawings, the holder or boring-bar 1 has a tapered end portion 2, adapted to be inserted in a lathe-chuck or boring-machine clamp in order that the holder may be

properly centered and rigidly held for rotation. The central portion of the holder is provided with a rectangular opening 3, extending through it from side to side, in which is located a cutter-head 4, the latter being provided with a central opening 5, through which extends a pin 6 of smaller diameter, this pin and opening serving to retain the cutter-head in the holder, but by reason of the difference in diameter between the two permitting the head to move back and forth in its seat sufficiently to adjust itself with reference to the material operated upon.

The head 4 is provided at each end with a slot 7, in which fits a substantially circular cutter 8, having a spherical cutting edge 9 and a central tapered opening 10. In employing the term "spherical" to define the form of the cutting edge I mean to indicate that the cutter is in the form of a segment of a sphere having parallel circular sides of different diameter. While the cutters employed by me are shown as circular in form and the functions performed render the circular form particularly advantageous, I desire and intend to include within the scope of my invention all variations from the circular form that do not rob the cutter of its essential functional characteristics. A screw-threaded opening 11 communicates from each slot with one side face of the head, this opening being arranged at right angles to the slot 7. Seated in each screw-threaded opening 11 is a screw 12, having a tapered inner end of such form and size as to fit the tapered opening in the cutter. Extending longitudinally from the base of each slot 7 toward the center of the cutter-head is a cylindrical recess 13, in which is mounted a pin 14, having a beveled inner end. From the base of the recess 13 a screw-threaded opening 15 extends outwardly at right angles thereto to one of the edge faces of the head, and in this opening is seated a screw 16, having a tapered inner end, the base of the opening being tapered to conform to the end of the screw. In order to set the cutters in operative position, the screws 12 and 16 are screwed home, so as to hold the cutters rigidly in the head. If it is desired to increase the diameter of the cut, the screws 12 are loosened and

the screws 16 tightened, the cutters being thereby adjusted outwardly in the slots 7. If a cut of less diameter is desired, the screws 16 are loosened and the screws 12 tightened, whereby the cutters are adjusted inwardly in the slots 7, as will be readily understood. The screws 12 and 16 and the pins 14 are made of hardened steel, and therefore serve to hold the cutters securely in any position to which they may be adjusted. In case the two cutters are not adjusted to exactly the same distance from the center of the head the play between the opening 5 and the pin 6 will enable the head to automatically adjust itself to the work.

It will be seen upon reference to Fig. 1 that the tube 17 is cut by only a comparatively small portion of the spherical cutting edge of each cutter 8, and it therefore is feasible to secure a large number of substantially new sharp cutting edges without grinding the cutters or substituting new ones therefor, but merely loosening the screws 12 and partially rotating the cutters to bring a new portion of the cutting edge into working position.

The tool constituting my invention and here described and illustrated may be advantageously used in any style of lathe, drill-press, or boring-mill and is both a right and a left boring-tool, as will be readily seen.

While I have illustrated and described my invention as embodied in a specific structure, I desire it to be understood that the details as regards form and relative location of parts may be varied within considerable limits without departing from the spirit and scope of my invention.

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

1. A boring or reaming tool comprising a cutter-head, a circular cutter rotatably mounted therein on an axis at right angles to and not intersecting the axis of the head, means for adjusting the cutter to different distances from the center of the head and means for locking the cutter immovably in any position to which it may be adjusted.

2. A boring or reaming tool comprising an oblong head having end slots and screw-holes communicating laterally with said slots, circular cutters having central conical apertures and seated in said slots and screws hav-

ing conical ends and seated in said holes and projecting into said apertures.

3. A boring or reaming tool comprising an oblong head having end slots, a screw-threaded opening extending from each slot to one face, a recess extending longitudinally from the base of each slot toward the center of the head and the screw-threaded opening extending from the base of said recess at right angles thereto, a pin in said longitudinal recess, circular cutters having central openings and seated in said slots and screws having tapered ends and adjustable in said screw-threaded openings to adjust said cutters and lock them in position.

4. The combination with a holder, of an oblong cutter-head mounted therein and provided at each end with a rotatably-mounted circular cutter and with means for adjusting the cutters toward and away from the holder and for locking them in any position to which they may be adjusted.

5. A boring or reaming tool comprising a holder, an oblong cutter-head mounted to center itself in said holder, and a circular cutter rotatably mounted in each end of said head.

6. A boring or reaming tool comprising a holder, an oblong cutter-head mounted to center itself in said holder, a cutter mounted in each end of said head, and means for adjusting the cutters toward and away from the holder.

7. The combination with a holder having a transverse slot, of a cutter-head mounted to center itself in said slot, said head having a circular cutter rotatably mounted in each end and means for adjusting said cutters toward and away from the holder and for locking them immovably in any position to which they may be adjusted.

8. A boring or reaming tool comprising a head and a circular cutter mounted therein on an axis at right angles to but not intersecting the axis of the head, said cutter being adjustable on its axis and also toward and away from the center of the head.

In testimony whereof I, the said KARL O. MUEHLBERG have hereunto set my hand.

KARL O. MUEHLBERG.

Witnesses:

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ROBERT C. TOTTEN.