No. 630,998. Patented Aug. 15, 1899.

W. J. SMITH.

MILLING TOOL.

(Application filed Apr. 1, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

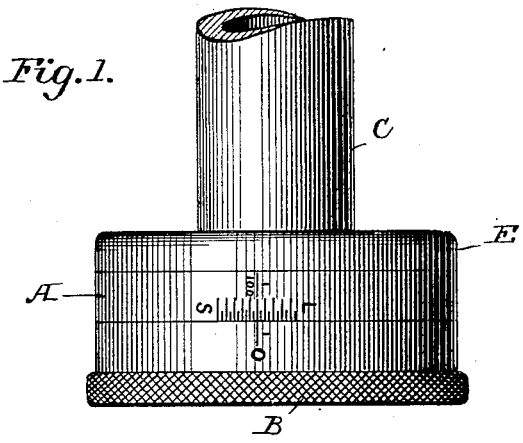


Fig. 2.

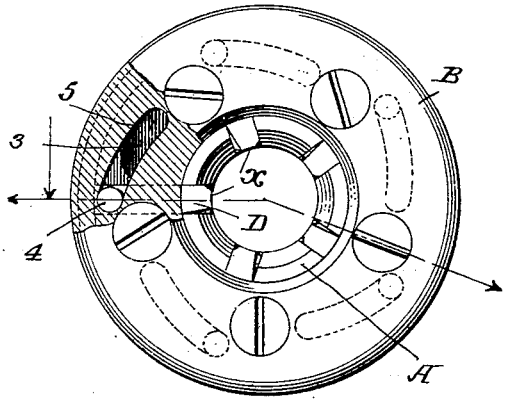
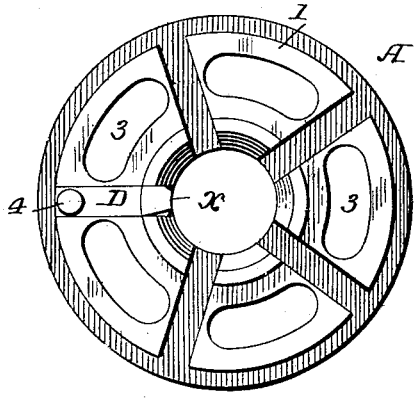


Fig. 4.



Witnesses

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Fig. 3.

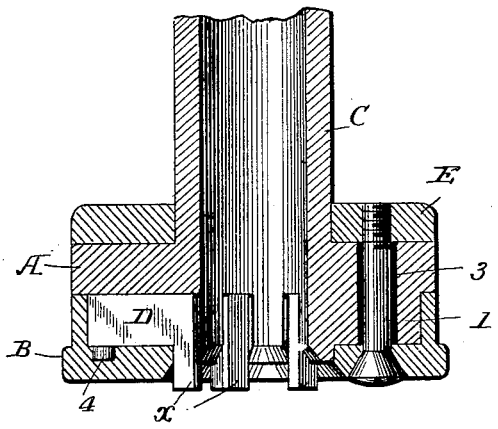


Fig. 5.

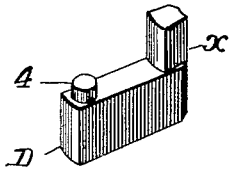
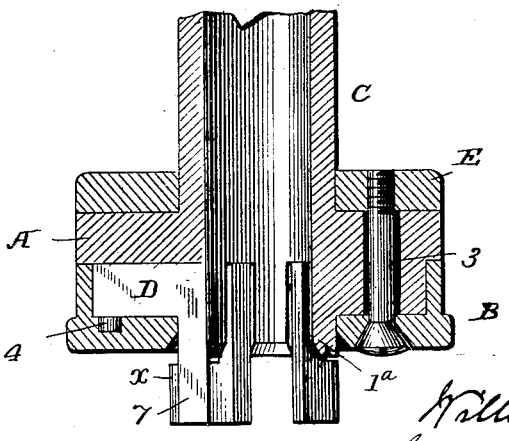


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM J. SMITH, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE GEOMETRIC DRILL COMPANY, OF WESTVILLE, CONNECTICUT.

MILLING-TOOL.

SPECIFICATION forming part of Letters Patent No. 630,998, dated August 15, 1899.

Application filed April 1, 1899. Serial No. 711,416. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. SMITH, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Milling-Tools, of which the following is a specification.

My invention relates to tools for milling circular rods, projections, or openings, and consists of a milling-tool adapted for application to a lathe or turret or otherwise, and constructed as set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is an external side elevation of my improved milling-tool; Fig. 2, a face view in part section; Fig. 3, a transverse section; Fig. 4, a face view of the head portion, the cap and all but one of the cutters removed; Fig. 5, a perspective view of one of the cutters for external milling; Fig. 6, a sectional view illustrating the tool as constructed for internal milling.

The tool is provided with a head A, which may be upon a hollow or solid stem C, and adapted for being secured in a lathe or turret or otherwise, and at the outer face of this head is an annular projection 1, radially slotted for the reception of cutters D. Each of the said cutters has at the outer end a cutting edge *x* at right angles with the axis of the cutter-head and also a lug 4 for the purpose described hereinafter. The projection 1 and the cutters therein are covered by a flanged cap B, having a central opening into which the inner ends of the cutters extend, and with curved cam-grooves 5, each adapted to receive one of the lugs 4, so that by turning the cap upon the projection 1 the cutters may be carried inward or outward, according to the direction in which the cap is turned.

It is important that the tools shall be secured positively and firmly, and to this end I use means to lock the cap after adjustment. Thus there is a series of screw-bolts each of which passes through the cap and through a curved opening or slot 3 in the head and into a ring E at the back of the head, which ring turns freely upon the stem C. By loosening the screw-bolts the cap may be turned to any desired position, and by tightening the bolts the cap is clamped firmly upon the projection 1 and holds the cutters immovably in position. Preferably the clamping-bolts will be arranged alternately with the cutters, as with such arrangement the clamping action of the cap will be positive and uniform on all the cutters. Heretofore when only two clamping-screws have been employed the clamping-disk was liable to spring or yield at points intermediate the screws, and consequently some of the cutters would get out of position.

When the milling-tool is to operate upon the interior of an opening or socket to mill the same, a tapering opening for contracting the cutting edges of the cutters may be made at the outer edges of the projections thereof, as shown in Fig. 6, these projections extending beyond the head to any desired extent, and the slotted projections 1^a also extending through and beyond the cap B.

In order to adjust the cutters to any determined extent, the cutter-head is provided with graduations, as shown in Fig. 1, and index line or point *o* on one part and a series of divisional lines upon the other.

It will be seen that in the above tool the operating parts are all covered by the flanged cap B, and thus protected from dust and prevented from becoming inoperative by accumulation of matter, and that the cutters while readily movable are firmly supported in each position, and that owing to simplicity of construction the tool can be made at a comparatively small expense. It will also be observed that the flange of the cap B, which fits around the periphery of the annular projection 1, is flush with the periphery of the head A, and the tool thus presents a very neat and compact appearance in addition to being protected from dust, &c., as aforesaid.

Without limiting myself to the precise construction and arrangements of parts shown, I claim—

1. The cutter-head having an annular projection 1 with radial slots, cutters in said slots, a flanged cap fitting over the projection to be flush with the head to close the ends of the radial slots and provided with curved grooves, lugs on the cutters entering said grooves, and means to clamp the cap against the cutters, substantially as set forth.

2. The cutter-head having an annular projection 1 with radial slots, cutters in said slots, a flanged cap fitting over said projection to be flush with the head to close the ends of the radial slots and cutters and provided with curved grooves, lugs on the cutters entering said grooves, external graduations on the cap and cutter-head and means to clamp the cap against the cutters, substantially as set forth.

3. The cutter-head having an annular projection 1 with radial slots, cutters in said slots, a cap fitted over said projection and cutters and movable rotatively thereon, said cap being provided with curved grooves, lugs on the cutters entering said grooves, a ring rotatively supported back of the head, and means connecting said ring and cap to cause them to move together independently of the head and operative to clamp the cap against the cutters, substantially as described.

4. A cutter-head provided with a projection having slots 2, 3, cutters in the slots 2, a cap covering the said projection, a ring at the back of the head and screws extending through the slots 3 and connecting the cap and ring, substantially as set forth.

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

WILLIAM J. SMITH.

Witnesses:
CHARLES E. FOSTER,
W. CLARENCE DUVALL.