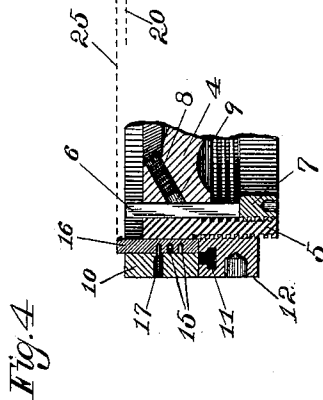
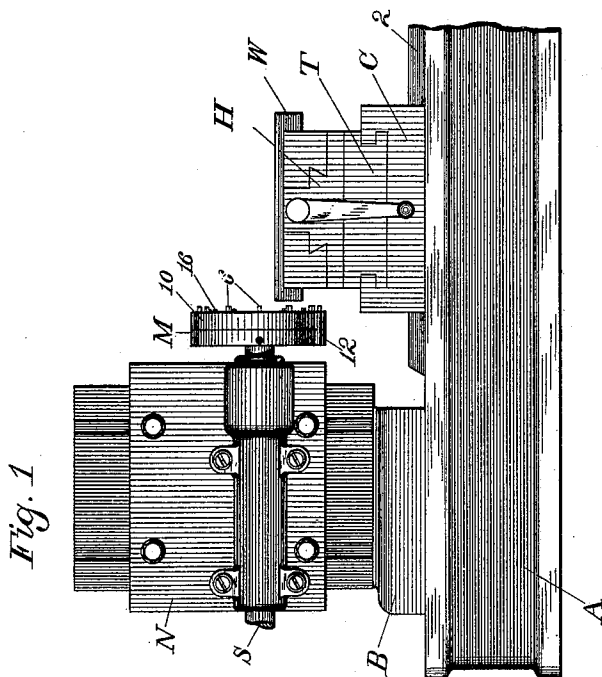
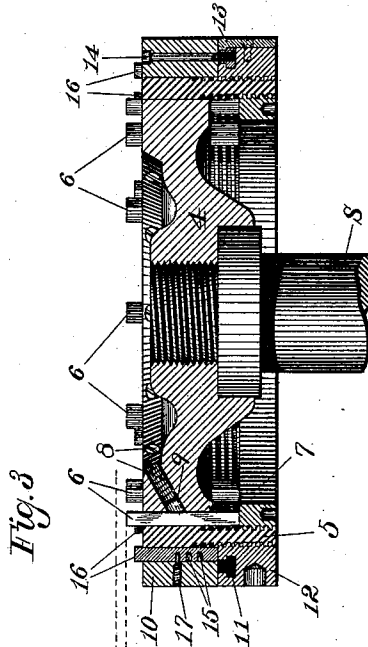
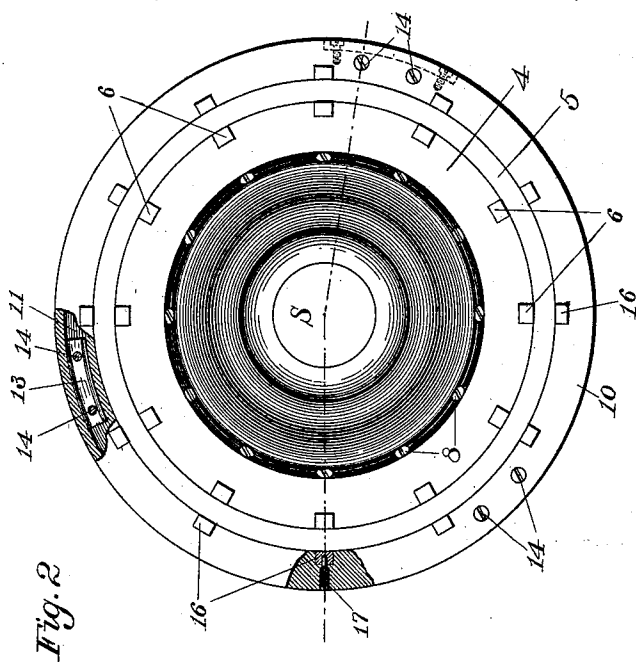


(No Model.)

A. WHITNEY.
MILLING CUTTER.

No. 404,940.

Patented June 11, 1889.



Witnesses:
H. L. Richards.
L. C. Heermann.

By his Attorney

Inventor:
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UNITED STATES PATENT OFFICE.

AMOS WHITNEY, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE PRATT
& WHITNEY COMPANY, OF SAME PLACE.

MILLING-CUTTER.

SPECIFICATION forming part of Letters Patent No. 404,940, dated June 11, 1889.

Application filed February 18, 1889. Serial No. 300,328. (No model.)

To all whom it may concern:

Be it known that I, AMOS WHITNEY, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Milling-Machines, of which the following is a specification.

This invention relates to metal-working milling-machines, the object being to furnish a machine and milling-head whereby to finish a piece by successive cuts without adjustment of the work or of the milling-machine head toward or from each other.

In the drawings accompanying and forming a part of this specification, Figure 1 is a front elevation of a milling-machine and milling-head embodying my improvements. Fig. 2 is an enlarged front elevation of the milling-head. Fig. 3 is a sectional elevation of the same. Fig. 4 is a view similar to a portion of Fig. 3, illustrative of the operation of the head.

Similar characters designate like parts in all the figures.

The bed or frame A carries the head-block B and the saddle C. On the saddle-block C, which is adjustable on ways 2 longitudinally of bed A and is to be clamped to said bed, the usual milling-machine table T is fitted to slide crosswise to said ways 2, and on this table is carried the usual vise or work-holder H, in which the piece of work W is held to be milled. The head-block B carries thereon the spindle-slide N, which has bearings for the spindle S of the usual description, and this spindle carries the improved milling-head M, which is provided with two sets of cutters adapted to be used one set at a time, one set for "roughing" and the other for "finishing." The construction of this head is shown in detail in Figs. 2, 3, and 4. The central plate or body 4 of the head M is fitted to be screwed or otherwise attached to the spindle S. On the outer edge of this body is firmly affixed the rim 5, which projects rearward of said body, and on the projecting portion thereof is threaded inside and outside. These two parts 4 and 5 may be integral, but are preferably made separate, as set forth, to facilitate construction. The roughing-cutters 6 are inserted in mortises just within the

ring 5, and at their rear ends rest against a stop-ring 7, which is screwed into ring 5. By this means by turning forward the ring 7 the cutters 6 are adjusted and set forward to the proper working-point. Set-screws 8, which force the shoes 9 against the cutters 6, serve to clamp these in place and prevent accidental misplacement thereof. On the outside of ring 5 there is fitted a sliding ring 10, which is connected to and operated by an adjusting ring or nut 12, that is screwed onto the outside of said ring 5. The connection between the said rings 10 and 12 is or may be made by means of a T-shaped groove 11, formed in ring 12, and one or more (preferably three) correspondingly-shaped segments 13, lying in said groove 11 and secured to ring 10 by screws 14. The ring 10 is prevented from rotation on ring 5 by a suitable key (not shown) in a well-known manner. On the inner side of ring 10 the finishing-cutters 16 are placed in recesses formed in said ring. As a means for setting forward the cutters 16 when the points are worn away so as to require the same, holes 15 are or may be made in said cutters, into which holes the point of screw 17, one for each cutter, is fitted, substantially as shown in the drawings.

When about to use the machine, the ring 10 is drawn back, as in Figs. 1 and 3, so that cutters 6 project to line 20, Fig. 3, beyond cutters 16. The work W being now set in place, it is fed to the milling-head and the roughing-cut made, when the carriage or table T is drawn back again in the usual manner. Next the ring 10 is set forward, as in Fig. 4, so that the finishing-cutters 16 project to the line 25 beyond the roughing-cutters 6 by an amount equal to the depth of the finishing-cut to be made, this depth being supposed to be represented by the distance between the dotted lines 20 and 25. This adjustment being made, the finishing-cut is taken, after which the ring 10 is retracted to its former position, and the machine is then ready for another roughing-cut.

Having thus described my invention, I claim—

1. In a milling-head, the combination of the central plate or body carrying one set of

cutters and having a laterally-projecting threaded ring, the sliding ring thereon and carrying another set of cutters, and means, substantially as described, serving to adjust
5 said sliding ring and cutters relative to the other set of cutters carried by said body, all substantially as described.

2. In a milling-head, the combination of the body 4, having threaded ring 5, cutters 6,
10 adjustably fixed in said body, the sliding

ring 10, carrying a second set of cutters, the ring-nut 12, and means, substantially as described, connecting said rings 10 and 12, the one to turn on the other, substantially as described.

AMOS WHITNEY.

Witnesses:

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H. A. LAWTON.