

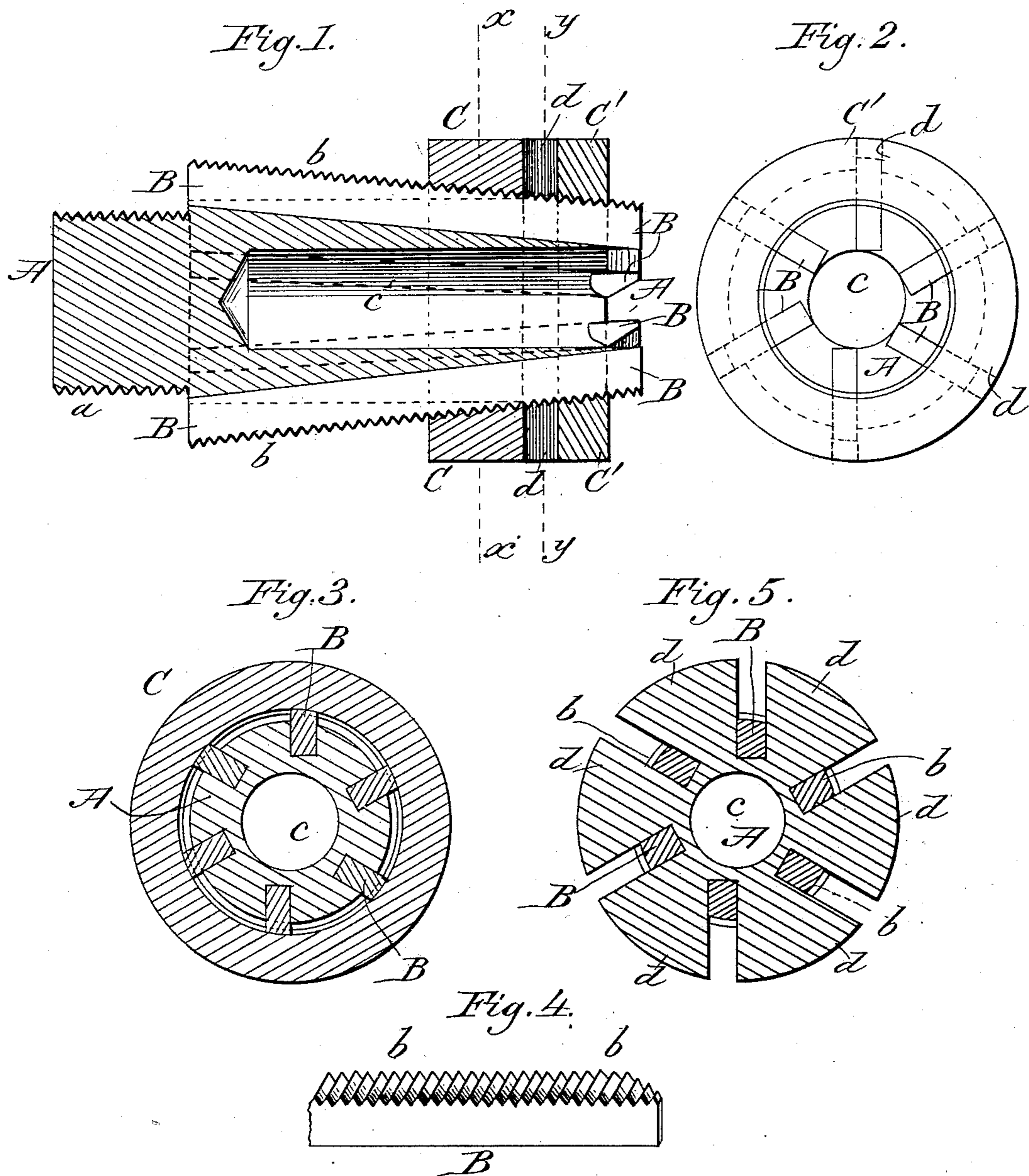
(No Model.)

2 Sheets—Sheet 1.

C. HOLLY.  
MILLING TOOL.

No. 346,103.

Patented July 27, 1886.



Attest:

H. H. Schott  
A. R. Brown.

Inventor:

Charles Holly  
Geo. H. Parker Atty.

(No Model.)

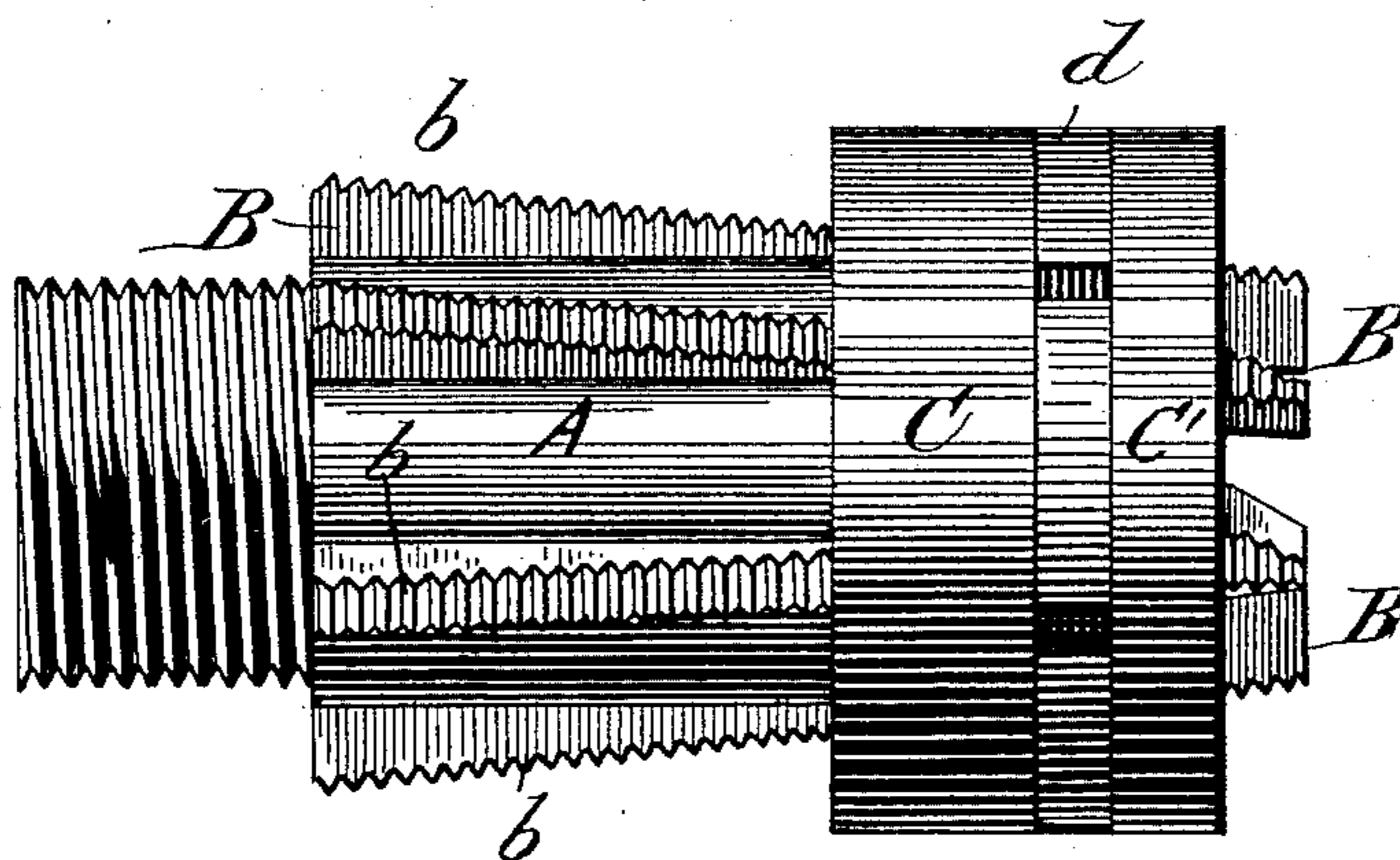
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*Fig. 6.*



Witnesses

*H. H. Schott*  
*Fred E. Taster.*

Inventor

*Charles Holly*  
By his Attorney *J. E. Taster*

# UNITED STATES PATENT OFFICE.

CARLOS HOLLY, OF LOCKPORT, NEW YORK.

## MILLING-TOOL.

SPECIFICATION forming part of Letters Patent No. 346,103, dated July 27, 1886.

Application filed June 18, 1883. Serial No. 98,431. (No model.)

*To all whom it may concern:*

Be it known that I, CARLOS HOLLY, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Milling-Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a hollow milling-tool for reducing and sizing the outside of metal bars or rods for bolts, &c. The device is intended to be used in place of the ordinary fixed hollow milling-tool on a turret-machine, lathe, or other machine; and it consists in the construction and arrangement of parts hereinafter more fully described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a longitudinal section of my improved milling-cutter. Fig. 2 is an end view of the same. Fig. 3 is a transverse section on the line *x x*, Fig. 1. Fig. 4 is a perspective view of one of the cutters detached. Fig. 5 is a transverse section on the line *y y* of Fig. 1, and Fig. 6 is a side elevation of the entire device.

Like letters of reference are used to designate like parts in the several views.

A is a tool-holder having the form of a hollow truncated cone, and provided at its larger end with a threaded shank, *a*, for connection to an arbor or other part of a machine. The exterior of this holder is grooved longitudinally at intervals for the reception of the cutters or cutting-bars B B, which are held in place by the internally-threaded rings or nuts C C', that engage with threads or serrations *b b*, formed in the outer side of each cutter. The interior of the truncated cone or holder A is hollow or recessed at *c* for passage over the bar, rod, or bolt operated upon.

By loosening one of the rings or nuts C C' and tightening the other the cutting tools or bars B will be carried out or drawn in, as desired, thus diminishing or increasing the diameter of their cutting area. The tools being set at or on an angle, as they are drawn out or

toward the smaller end of the holder their cutting ends will be drawn more closely together in position to cut smaller, while if drawn back toward the enlarged end of the holder they will cut larger. Being all set in the holder at the same angle, and each cutter moved by the same threaded nut or ring, it is obvious that their advancement as well as their reduction of diameter will be exactly alike when the nuts or rings C C' are manipulated, thus keeping the cutters in position, so that each will do a like amount of work.

The cutters B B are easily ground without removing, and may yet be readily removed when required and others substituted. It is apparent, also, that they are readily adjustable with relation to the end of the holder, and can therefore be projected farther beyond the same to compensate for wear. It will also be observed that from the slight angle at which the cutters are set their movement is nearly all in the direction of the greatest wear. These cutters, being set farther apart at the larger or rear end of the holder A, also gives a clearance, and consequently permits a freer cut than can be obtained with the ordinary hollow mill, which must have a parallel hole in order to retain its size as it is worn and ground.

On the holder A, between the nuts or rings C C', are formed a series of segmental projections, *d d*, that are separated by the grooves in which the cutters B B are held. The peripheries or outer faces of these projections are flush, or nearly so, with the peripheries of the rings or nuts C C', which abut against said projections, as shown in Fig. 1. These projections thus form a collar, against which the rings or nuts C C' alternately bear in drawing the cutters B B in or out. It is obvious that if the ring C is moved back away from the collar *d*—such movement being possible to a certain small extent on account of the slight inclination of the cutters B B and the fact that the ring C incloses them loosely—and, further, if the ring C' be tightened up against said collar, the cutters B B will be projected until the ring C again comes in contact with said collar. On the other hand, if the ring C' is turned so as to move it away from the collar *d*, and the ring C then turned up tightly against the same, the cutters will be drawn back.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the holder A, of the longitudinally and diametrically adjustable cutters B B, and means, substantially as described, for simultaneously and equally adjusting and securing the same, as shown, and for the purpose set forth.

2. The combination of the truncated holder A, having a collar, *d*, composed of segmental projections, the adjustable cutters B B, having serrations *b b*, and the internally-threaded rings C C', substantially as described.

3. In a milling-tool, the combination of the truncated holder A, having collar *d*, the adjustable cutters B B, set in converging grooves, and having serrations *b b*, and the internally-threaded rings or nuts C C', substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CARLOS HOLLY.

Witnesses:

WM. R. WARD,

WM. GRIENTHWAITE.