

(No Model.)

2 Sheets—Sheet 1.

A. H. MORTON.  
MILLING CUTTER.

No. 604,776.

Patented May 31, 1898.

FIG. 1—

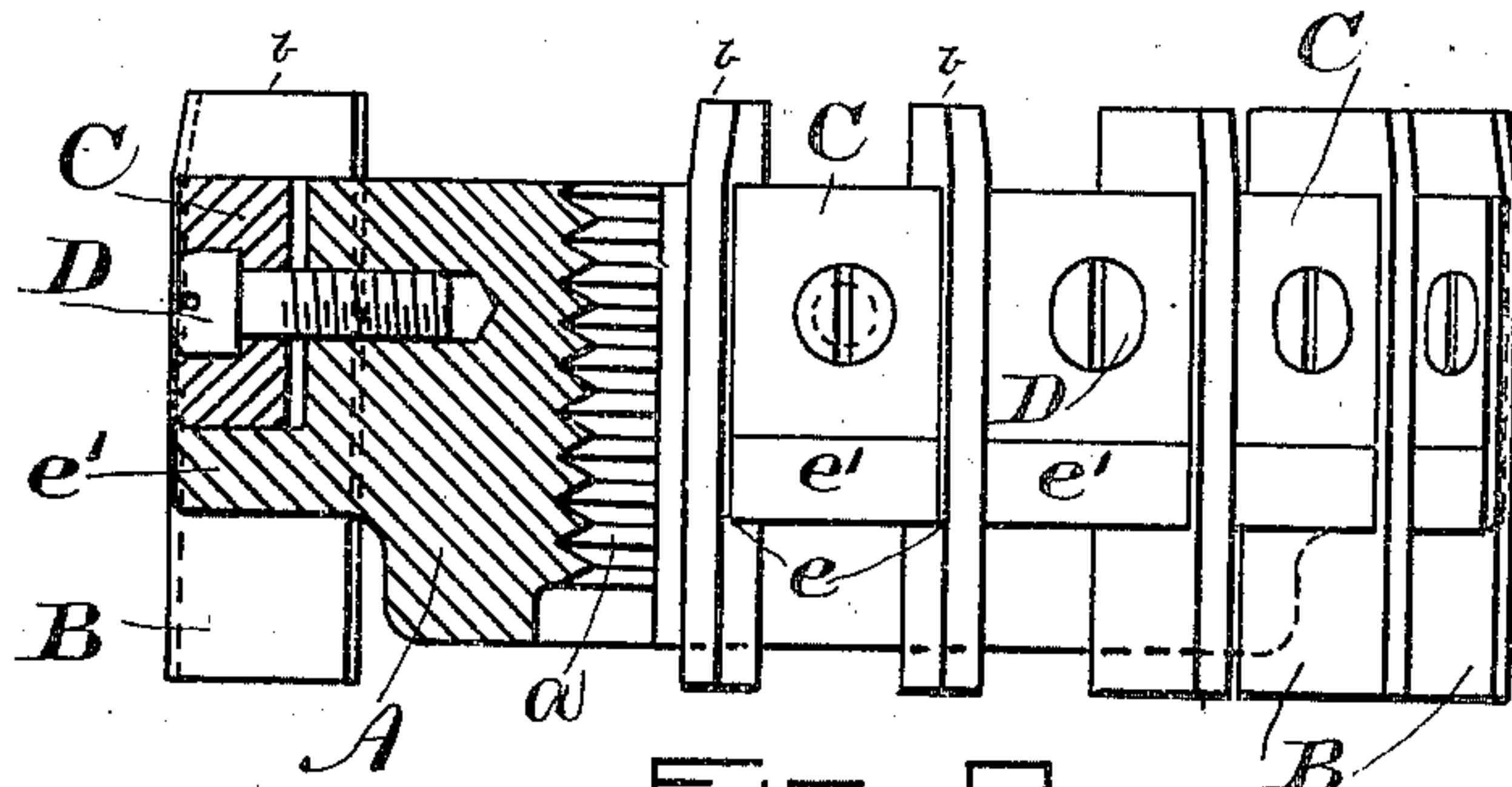
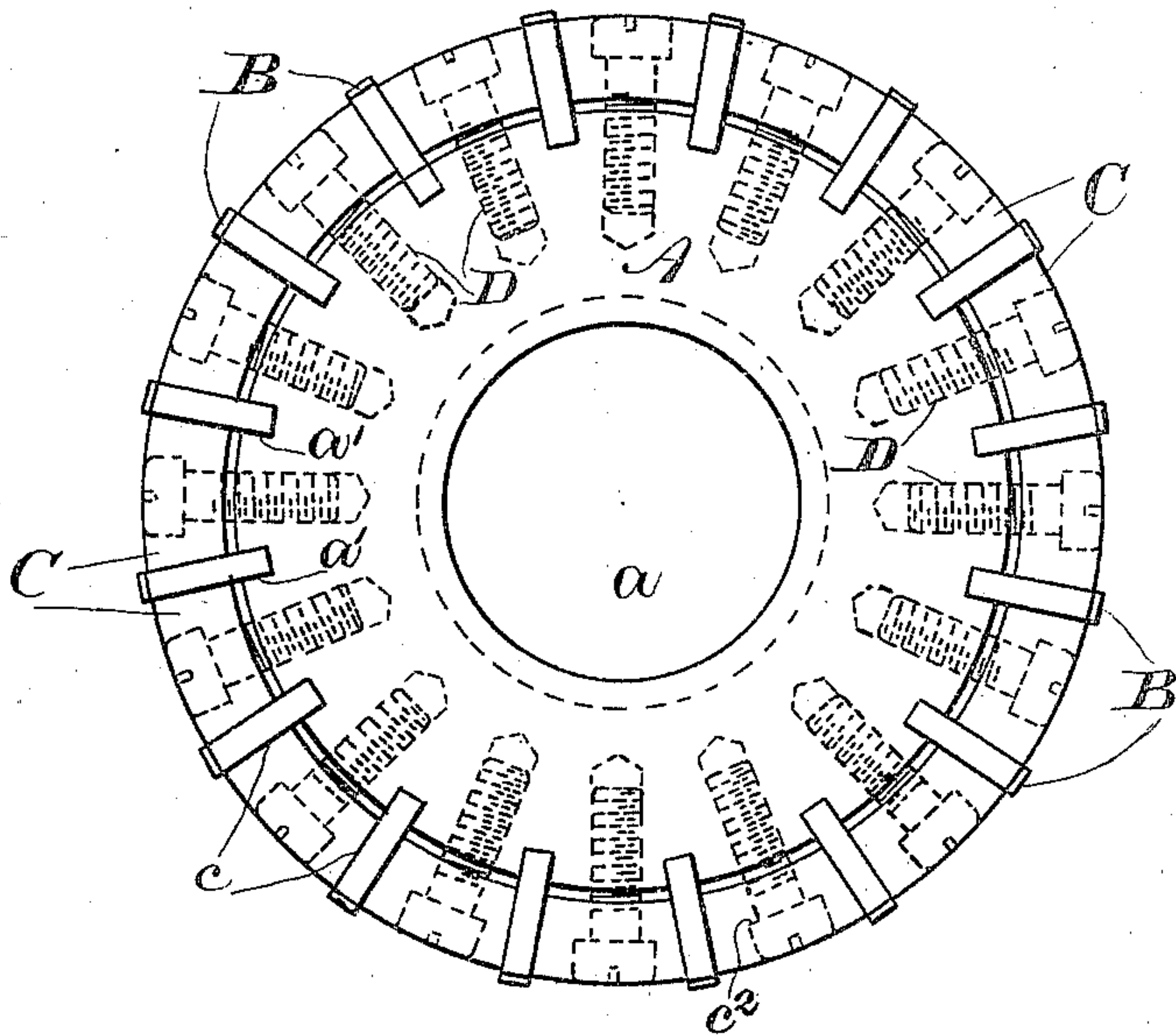


FIG. 2—

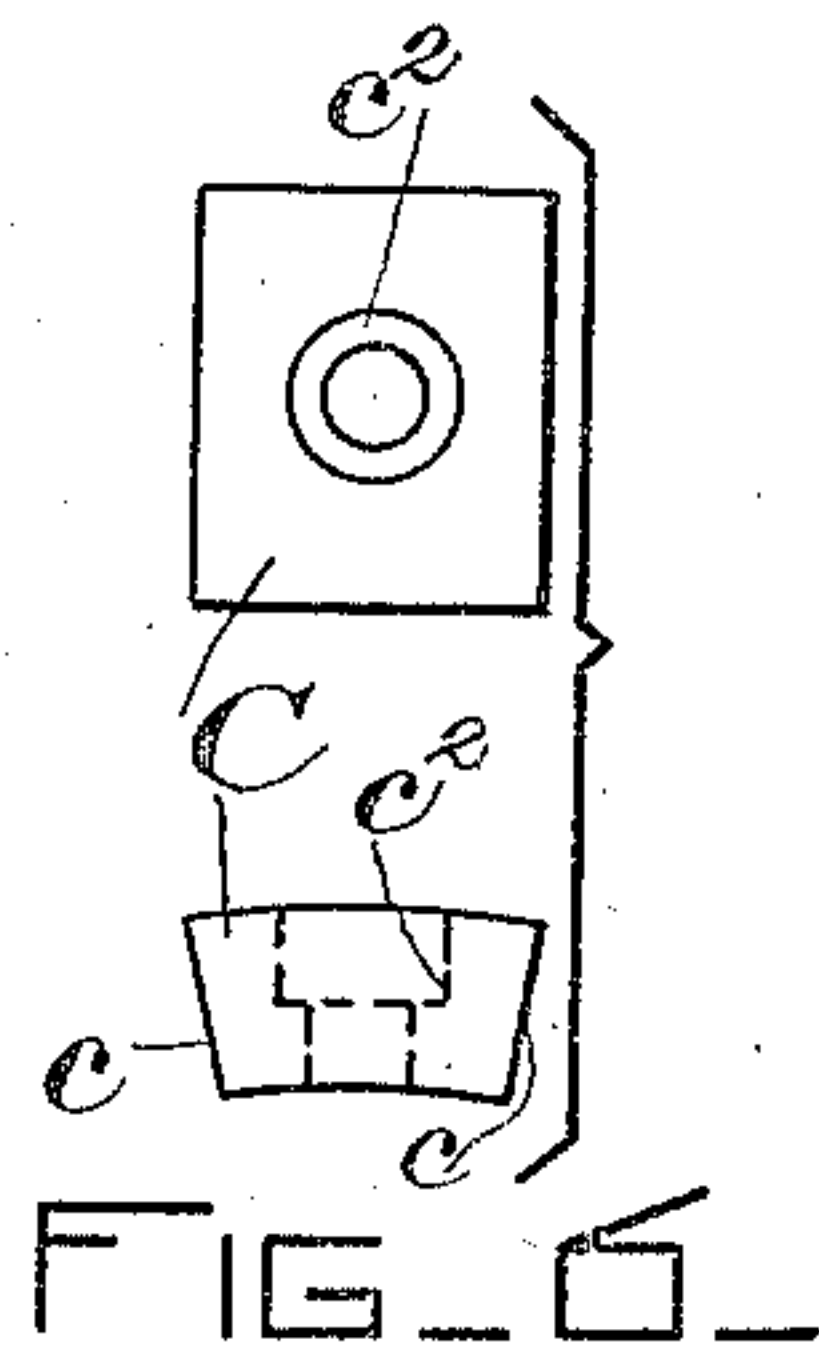


FIG. 3—

WITNESSES:

John F. Collins  
A. C. H. L. W.

INVENTOR

Albert H. Morton  
BY  
Phillips & Anderson  
ATTORNEYS.

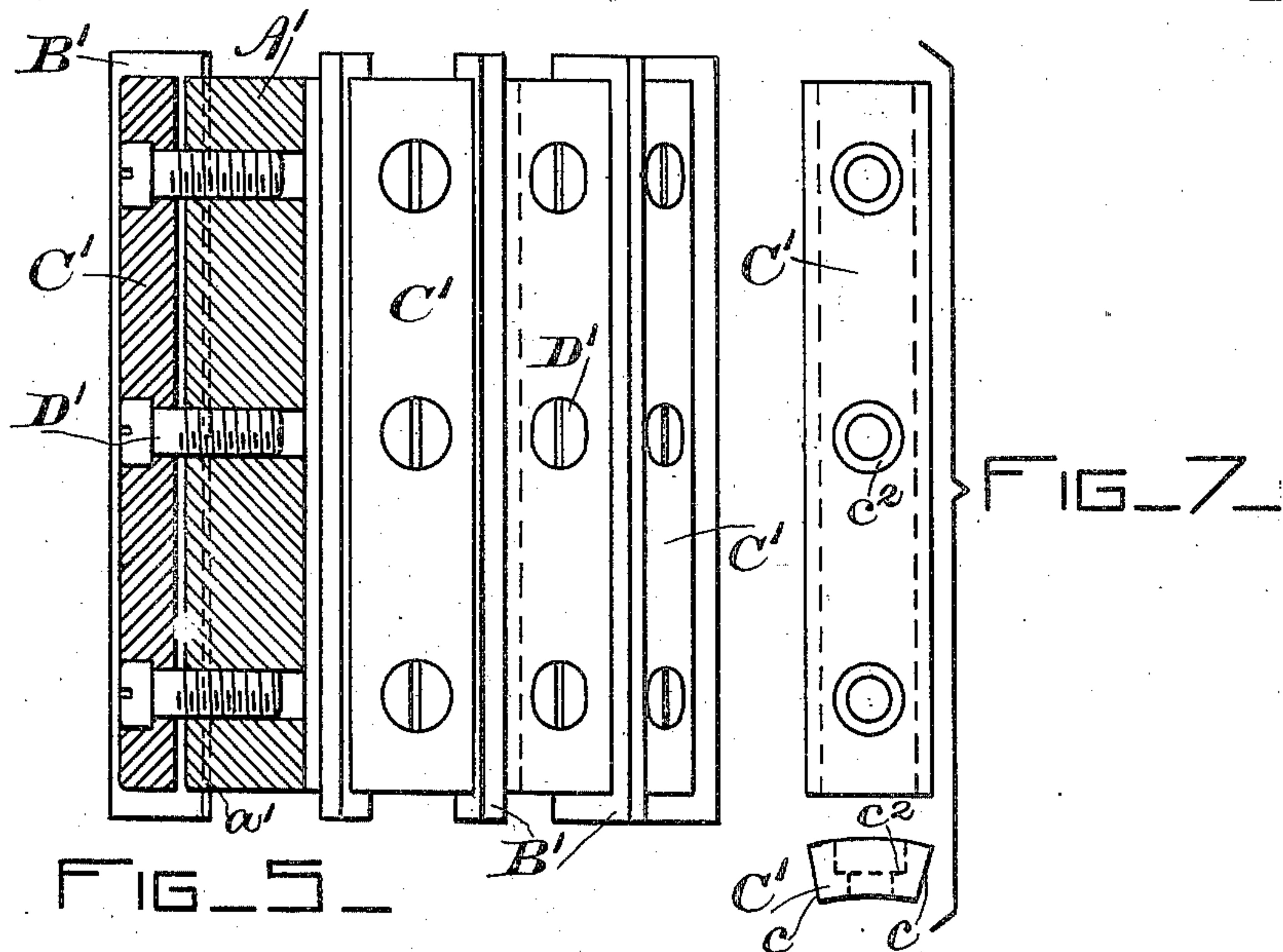
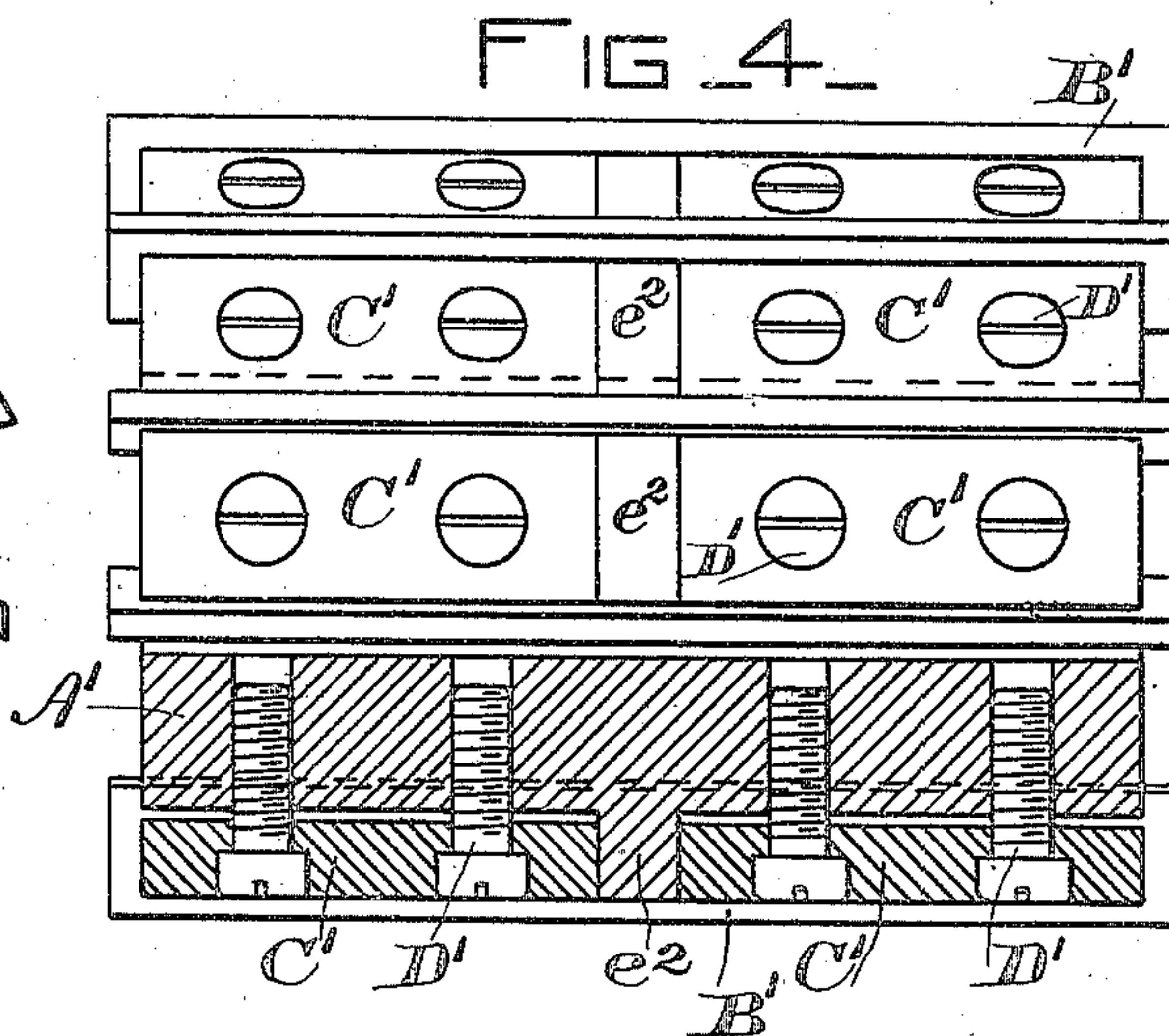
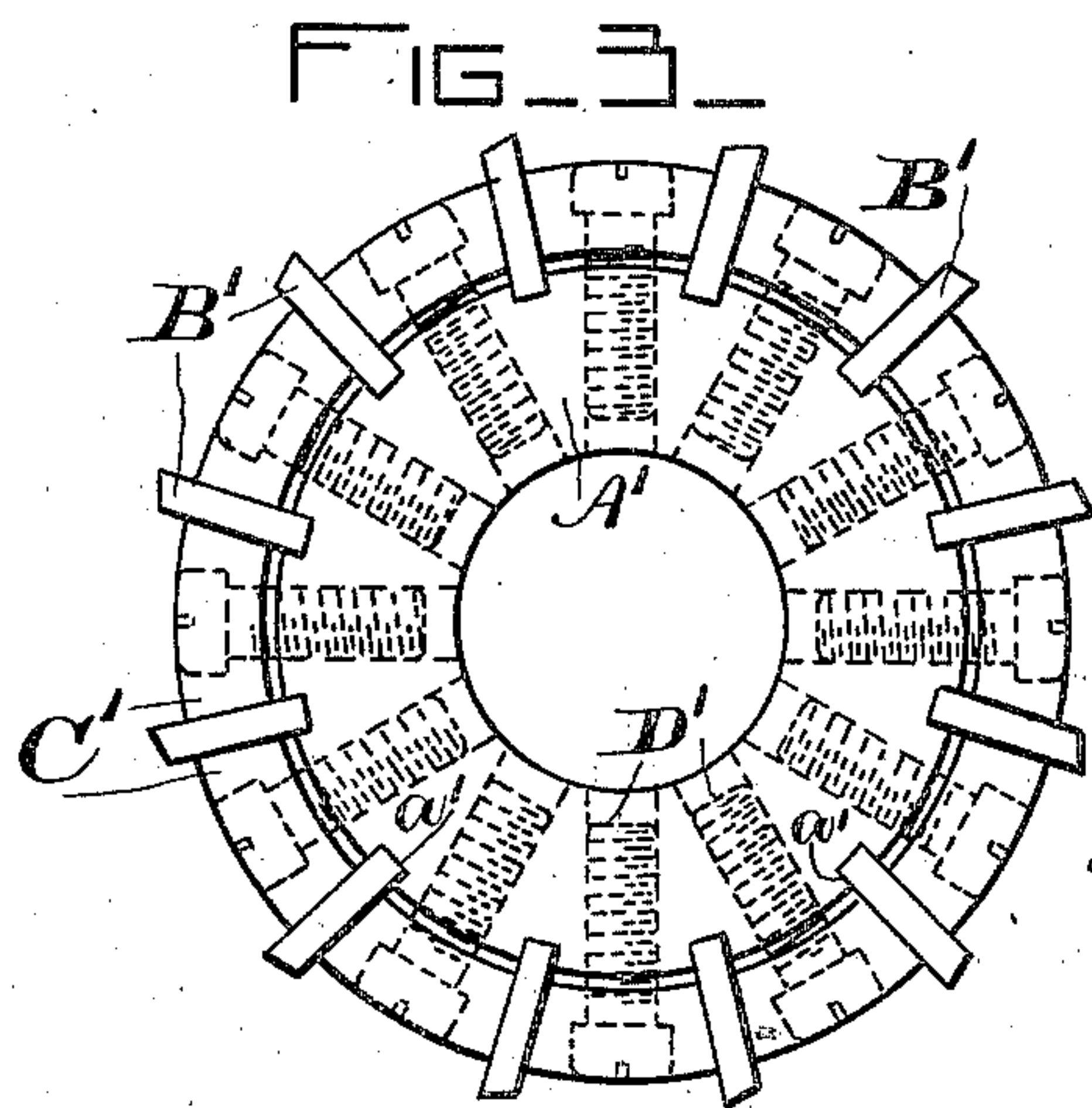
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2 Sheets—Sheet 2.

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MILLING CUTTER.

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WITNESSES:

John J. Collins.  
A. E. H. Lytle.

INVENTOR

Albert H. Morton.

BY

Phillips & Anderson.  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ALBERT H. MORTON, OF LOWELL, MASSACHUSETTS.

## MILLING-CUTTER.

SPECIFICATION forming part of Letters Patent No. 604,776, dated May 31, 1898.

Application filed March 8, 1897. Serial No. 626,368. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT H. MORTON, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Milling-Cutters; and I do hereby 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.

The present invention relates to milling-cutters, and more particularly to that type of cutters which comprise removable and renewable blades or cutters fitted to a stock or body portion.

The object of the present invention is to produce a milling-cutter of simple construction which can be easily and cheaply made and one in which the blades or cutters shall be firmly and securely held in a fixed position upon the stock or body portion and to so construct the same that should one of the blades break in use another could be quickly and readily substituted therefor.

To the above end the present invention consists of a milling-cutter constructed and arranged as hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a face view of one form thereof; Fig. 2, a plan view, partially in section; Fig. 3, an end view of a modified form of the invention; Fig. 4, a plan view, partially in section, of the same cutter shown in Fig. 3; Fig. 5, a plan view of another modification, and Figs. 6 and 7 detail views representing the clamping blocks and bars.

Similar letters of reference refer to corresponding parts throughout the several views.

In the form of the invention shown in Fig. 1, A represents the stock or body portion, circular in form and provided with the threaded opening *a*, whereby it may be secured upon a suitable shaft or spindle.

Around the stock A are securely fastened a series of cutters or blades B, which are clamped in position by the blocks C and screws D.

In order to securely fasten the blades B in position upon the stock A, said stock is preferably provided with the radial grooves or

seats *a'*, into which the lower edges of the blades B fit, and the blocks C are made with beveled sides *c*, or substantially wedge shape in cross-section, whereby when the screws D are screwed up tightly the sides *c* of said blocks will closely engage the sides of blades B and will cause them to be clamped in a firm and secure manner between the faces *c* of two adjacent blocks C.

If desired, the stock or body A may be provided with a flange, which is cut out at intervals, as shown at *e*, corresponding to the seats *a'* in the stock A, whereby projections *e'* are formed, which project up between the blades B and form suitable back-stops to accurately position the clamping-blocks B.

The cutter above described is a face-cutter, the cutting edges *b* of blades B being projected beyond one face of the stock or body A, and as the blades wear away they may be sharpened and moved forward to position their cutting edges, or if one blade becomes broken it may be ground down and positioned without disturbing the other blades.

It will be noted that the clamping-blocks C form a broken ring or annulus, the inner diameter of which is greater than the outer diameter of the stock or body A, and that therefore a space is left between the bottom faces of the blocks C and the face of the stock or body A, whereby the blocks C when drawn down between the blades B will be enabled to exert a powerful clamping action against the sides of the blades B, obviating the necessity of forming interlocking projections and recesses on the blades and blocks, as in the cutters heretofore constructed. In other words, the width of the blocks C relatively to the space between the blades or cutters B is such that the inclined faces *c* will come into clamping contact with the sides of said blades or cutters B before the inner face of said blocks comes in contact with the periphery of the stock or body A, and thus the blades B are held in position by the clamping or wedging action of said blocks C.

The blocks C are preferably provided with countersunk recesses *c'* to receive the heads of the screws D, so that when the parts are assembled they will not project beyond the periphery of the cutter.

In the cutter shown in Figs. 3 and 5 the



blades or cutters B' are arranged as peripheral cutters instead of face cutters. In this form of cutter the stock or body A' is made in the form of a cylinder, preferably having along its face grooves or seats  $a'$  to receive the lower edges of the blades B', as in the device hereinbefore described. C' represents wedge-bars similar to the wedge-blocks C, before described, which are fitted between the blades B' and drawn downward toward the stock or body A' by screws D', whereby the blades B' are securely clamped in position. If desired, the stock or body A' may be provided at its transverse center with the projections  $e^2$ , which are similar to the projections  $e'$  of the cutters shown in Fig. 1, in which case the wedge-bars C' would be made in two sections, the inner ends of which would abut against the said projection  $e^2$ . The cutter shown in Fig. 5 is the same as that shown in Fig. 4, with the exception that the projections  $e^2$  on the stock or body are omitted and the wedge-bars made of such a length as to extend along the entire length of the stock or body.

It will be noted that the wedge-blocks and wedge-bars do not come in contact with the face of the stock or body and that therefore a powerful wedging action is imparted thereto by the screws D and D', tending to forcibly and firmly grip the blades B and B' between them, thereby obviating the necessity of providing said blades and blocks with interlocking lugs and recesses.

While I have described the stock or body as being provided with grooves or seats to receive the backs or lower edges of the blades, and thereby more effectually secure said blades in position, it is obvious that said grooves are not essential, as the lower edges of the blades could just as well rest upon the surface of the stock or body portion, and the clamping or wedging action of the wedge blocks or bars alone holds them fixedly in position.

While I have illustrated the blades as ra-

dially disposed along the periphery of the stock or body portion, I do not regard such specific disposition as an essential feature of the present invention, since it is evident that with slight modifications in the form and arrangement of the parts hereinbefore described the blades may be disposed tangentially or in any required manner to secure the greatest efficiency.

Having fully described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a milling-cutter, the combination with a central stock or body portion comprising an integral block having threaded holes around the periphery and a central aperture, of a series of cutters disposed around the periphery of said stock or body portion, a series of removable wedge-shaped bars or blocks alternating with the cutters and screws passing through said bars or blocks and engaging the threaded holes in the stock or body portion, the inner peripheral faces of said bars or blocks being of greater width than the peripheral face of the stock or body portion exposed between the cutters, whereby the bars or blocks may be caused to forcibly engage the sides of the cutters and securely hold them in position upon the stock or body portion, substantially as described.

2. In a milling-cutter, the combination with the stock or body portion, of a series of blades disposed along the periphery thereof, a series of fixed projections on the stock or body portion extending between the blades, and a series of clamping-blocks interposed between the blades, and arranged to be brought into clamping contact therewith, substantially as described.

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

ALBERT H. MORTON.

Witnesses:

JOHN K. WHITTIER,  
HENRY W. CHURCH.