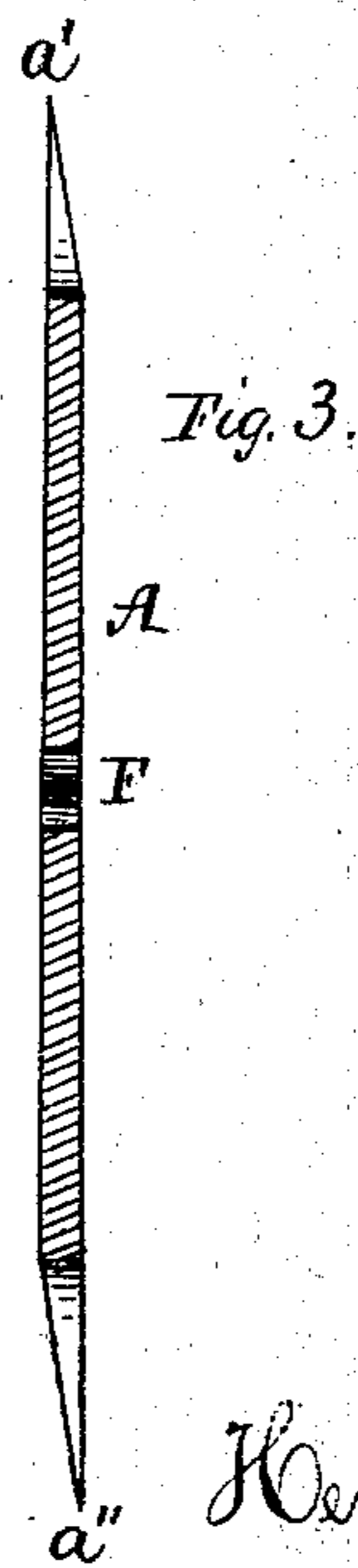
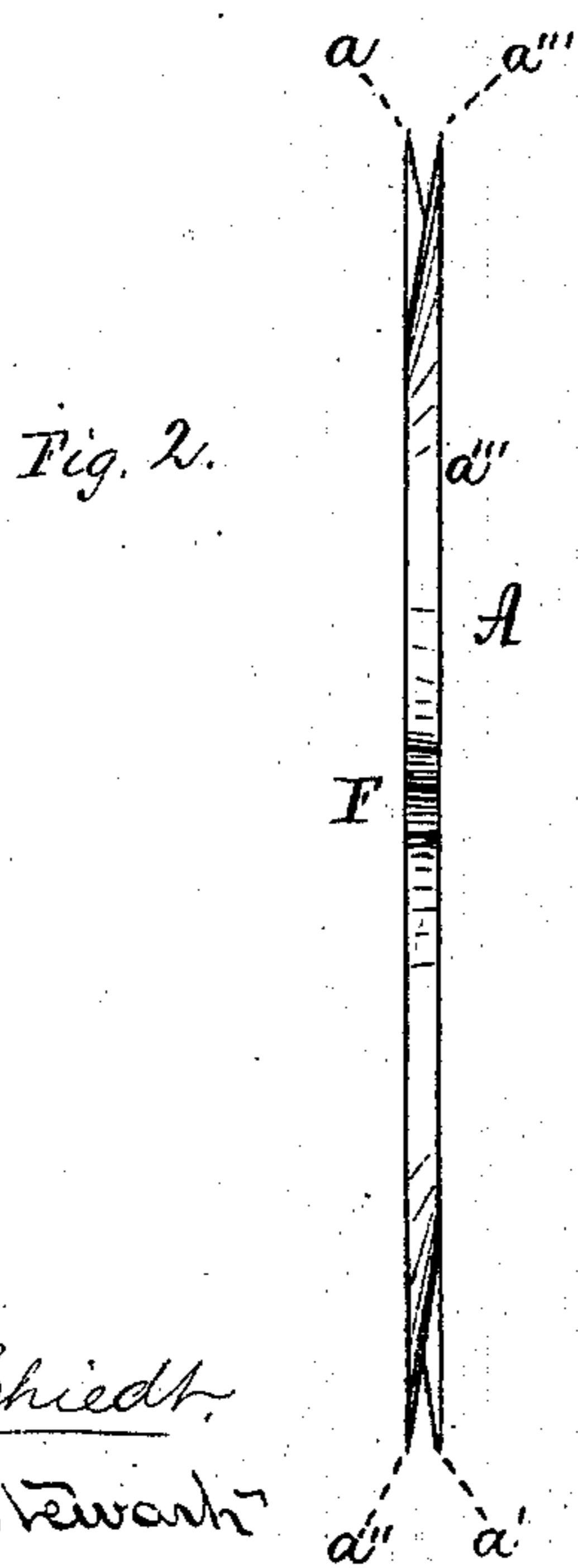
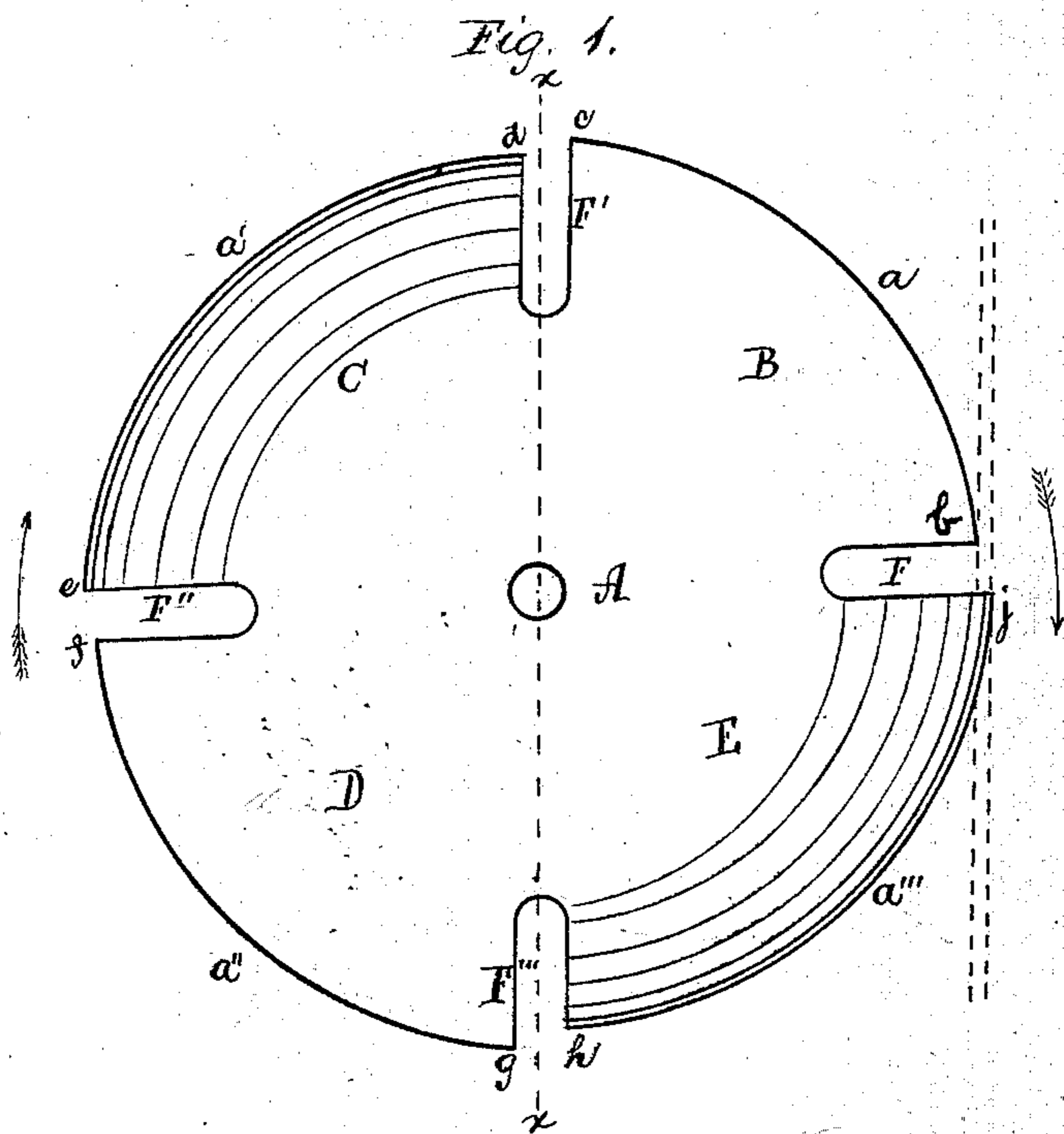


H. S. MILLER.
Rotary Paper-Cutters.

No. 139,176.

Patented May 20, 1873.



Witnesses:
Jacob E. Schiedt
James S. Stewart

Inventor:
Henry S. Miller.
by *John A. Gieseler & Co.*
Attys.

UNITED STATES PATENT OFFICE.

HENRY S. MILLER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ROTARY PAPER-CUTTERS.

Specification forming part of Letters Patent No. **139,176**, dated May 20, 1873; application filed January 28, 1873.

To all whom it may concern:

Be it known that I, HENRY S. MILLER, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Rotary Paper-Cutters; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation of the device embodying my invention. Fig. 2 is an end or edge view thereof. Fig. 3 is a section in line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists of a circular knife formed in sections, the edges thereof being of such form as to make the "draw"-cut. It also consists in the blades being beveled on alternate opposite faces of the sections, whereby the knife cuts with ease, and binding thereof is overcome. The invention also consists in so constructing the cutting-edges of the sections as to prevent ripping or tearing of the articles to be cut.

Referring to the drawing, A represents the knife, consisting of a blade which is of circular form, and provided with a central opening for the application of a mandrel, on which the knife is mounted, and by which it receives rapid rotary motion. This blade is constructed with channels F F' F'' F''', which extend from periphery toward the center, and form the blade into sections or divisions B C D E, whose peripheries constitute cutting-edges *a a' a'' a'''*. The cutting-edge *a* begins at the channel F at the point *b* and terminates at channel F' at point *c*. The cutting-edge *a'* begins at channel F' at point *d*, and terminates at channel F'' at point *e*, and so with the edges *a''* and *a'''*, as illustrated at *f g* and *h j*. The points *b d f h* are the commencement of the cutting-edges of the respective sections, the knife being properly rotated in the direction of the arrows, Fig. 1, and said points are nearer to the center of the blade than are the points *c e g j*, the termini of the cutting-edges; or, in other words, the commencement of the cutting-edge of one section is below the termination of the edge of the

adjacent section, so that the terminable points project beyond the points of commencement. The sides of the sections are beveled to form the sharp or cutting edges, and the bevels alternate or are respectively formed on opposite sides of the section—that is to say, the sections C E are beveled on the one or same side, and the sections B D on the other side, so that there are produced two series of cutting-edges. (See Fig. 2.)

It will be seen that as the article to be cut is advanced to the knife, or vice versa, the edges of the sections cut with a draw-cut, owing to the increasing form of said edges, as stated, from *b* to *c*, &c.; and, as the knife rotates with great swiftness, the various edges cut into the mass, each beveled series cutting distinctively of each other, and yet, in the aggregate, so cutting that every part of the article is subjected to the cutting operation. Then when the termini of the sections have cut, the knife "jumps" over the channels F, &c., so as to avoid presenting the edges of the commencements of the sections to the articles, whereby the cut is begun and continued so gradually that there is no ripping or tearing of the article, and the cut surfaces of the latter are smooth and uniform.

Again, the two distinct series of beveled edges form a groove in the article, so that there is no binding with the article—a disadvantage well known in the operation of cutting articles of great compactness and friction, especially of numerous sheets of paper, cork, gutta-percha, &c. The particles removed from the mass fill the channels, and are thrown out from the knife during its rotation and completion of the cut.

Clearers may be arranged with the knife to assist the removal of the cut particles.

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

The rotary cutter, constructed with cutting-sections increasing in radius toward their heels, so as to produce a draw-cut, substantially as herein described.

The above signed by me this 23d day of December, 1872.

HENRY S. MILLER.

Witnesses:

SAMUEL G. R. HAYNES,
JOHN A. WIEDERSHEIM.