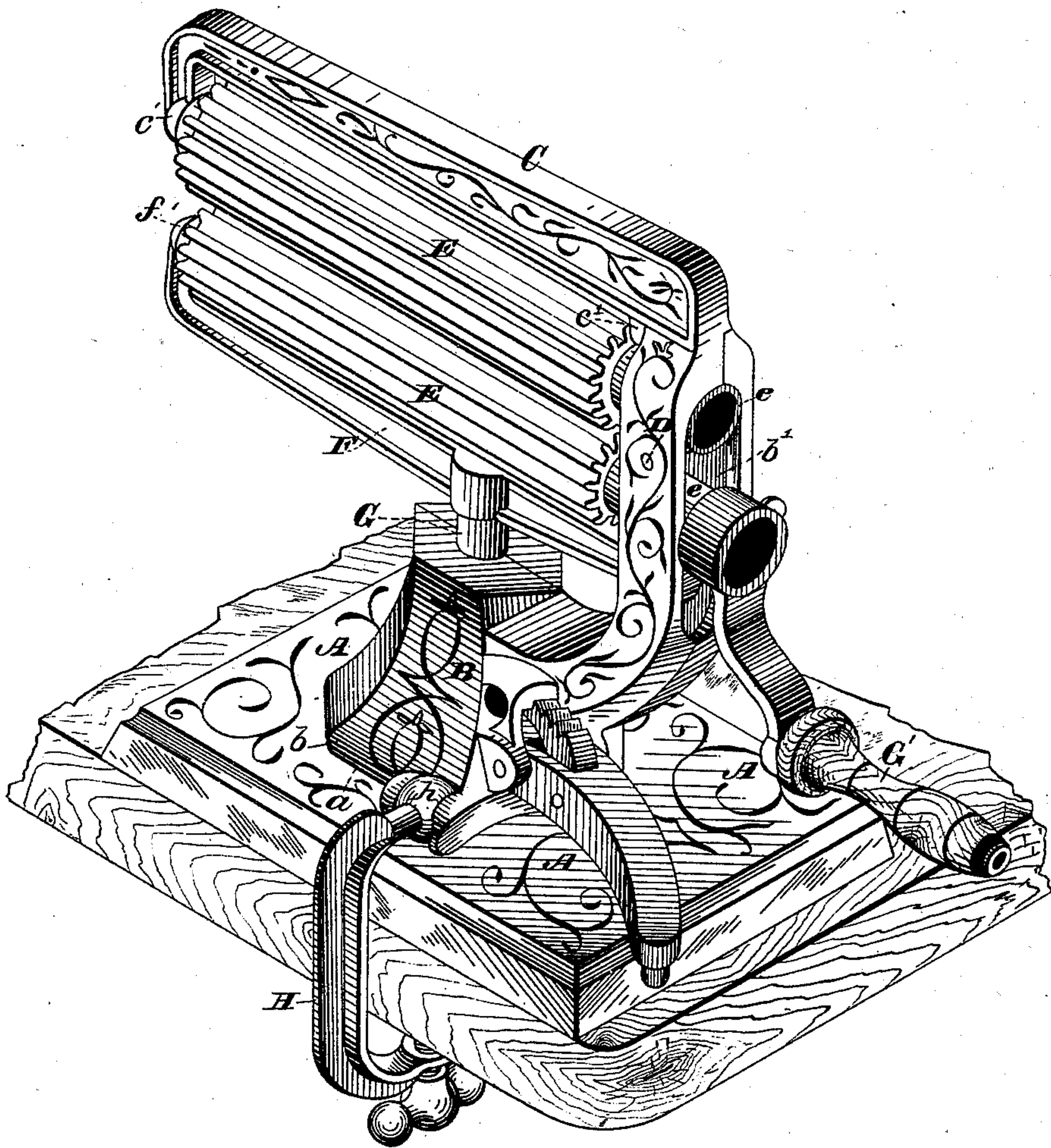


J. E. DONOVAN.
Fluting-Machine.
No. 222,679. Patented Dec. 16, 1879.

Fig. 1.



WITNESSES=
Jas. E. Hutchinson.
Henry C. Hazard.

INVENTOR.
Jas. E. Donovan, by
Geo. S. Pindle, his Atty

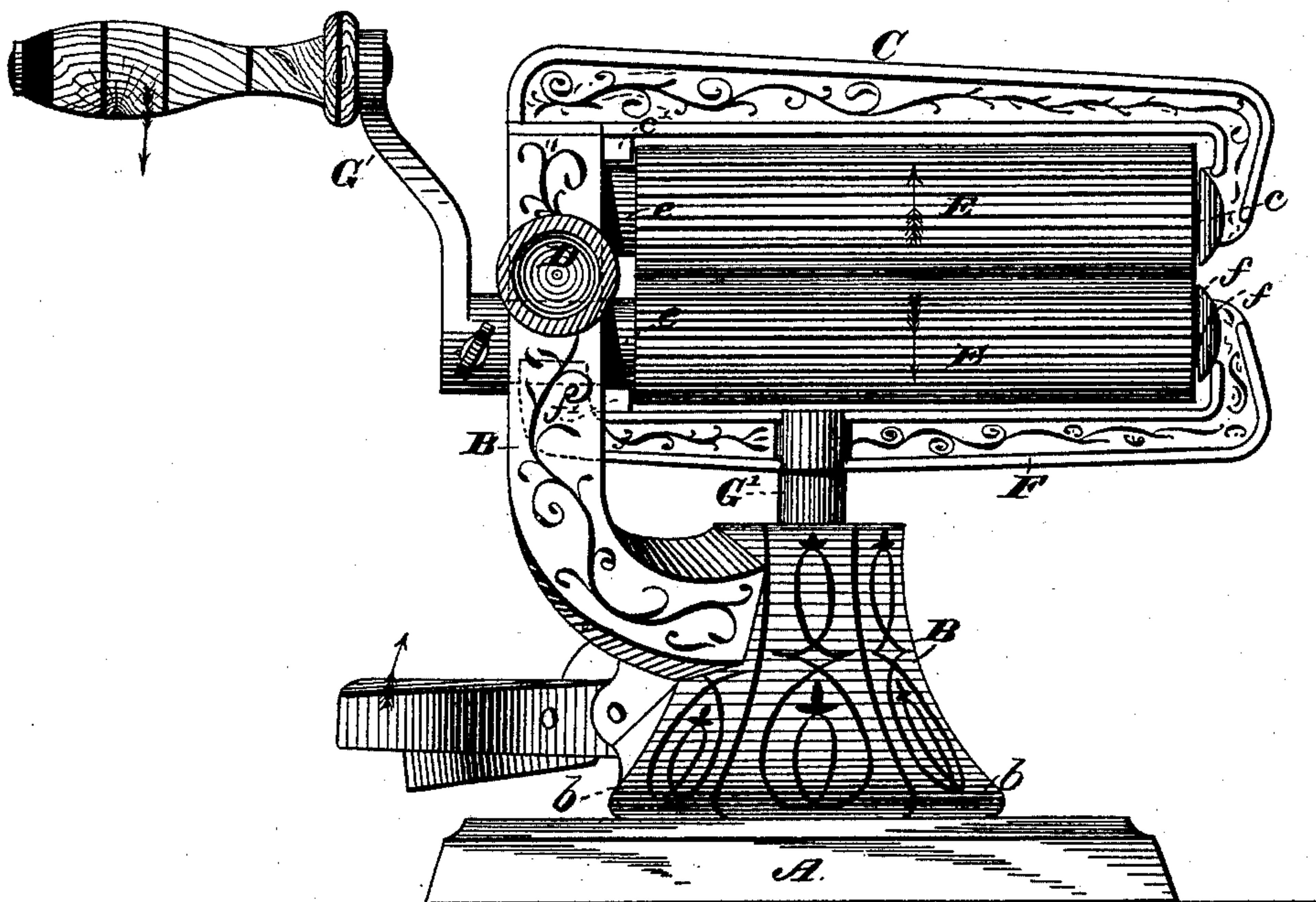
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Fig. 2.



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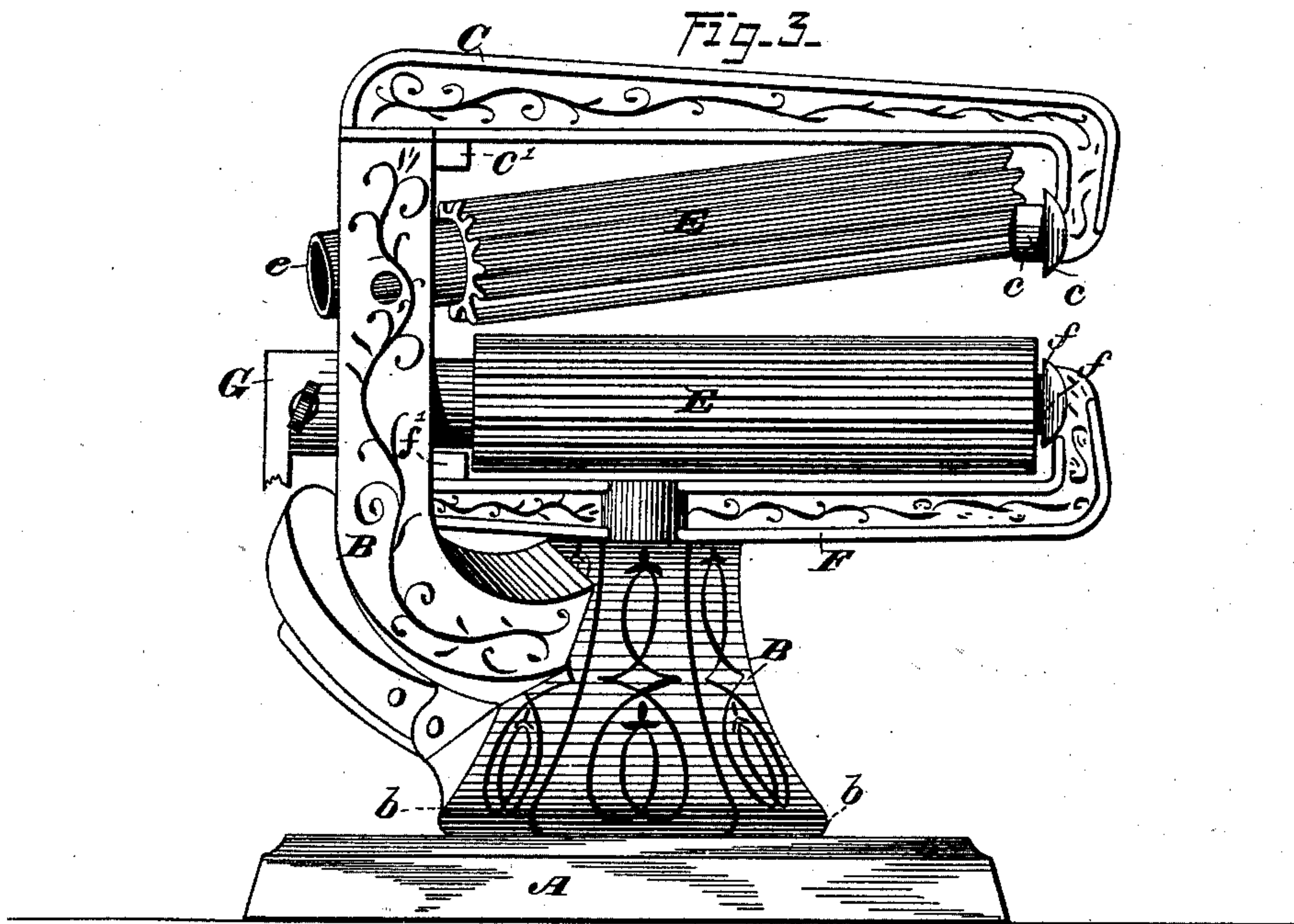


Fig. 4.

Fig. 5.

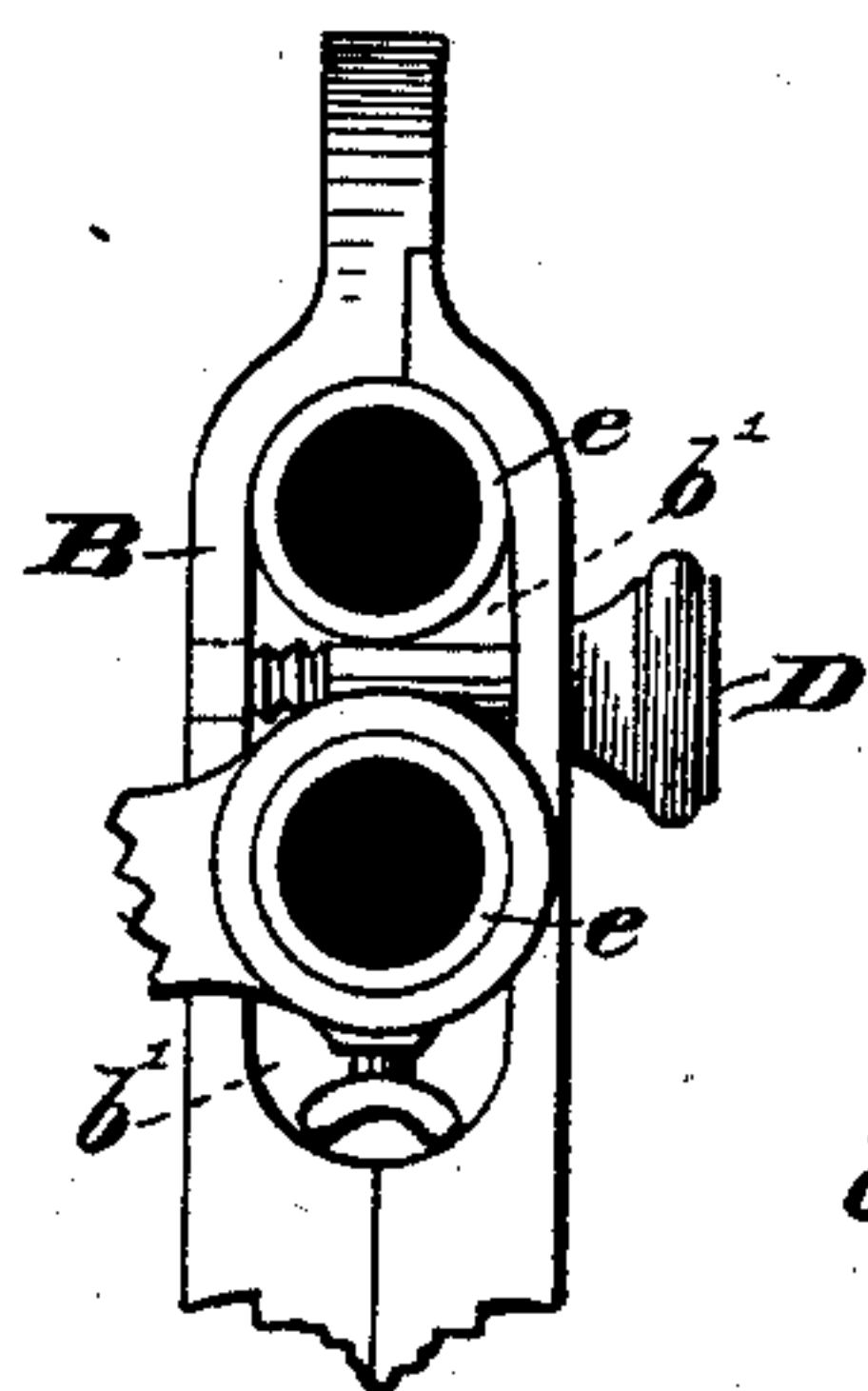
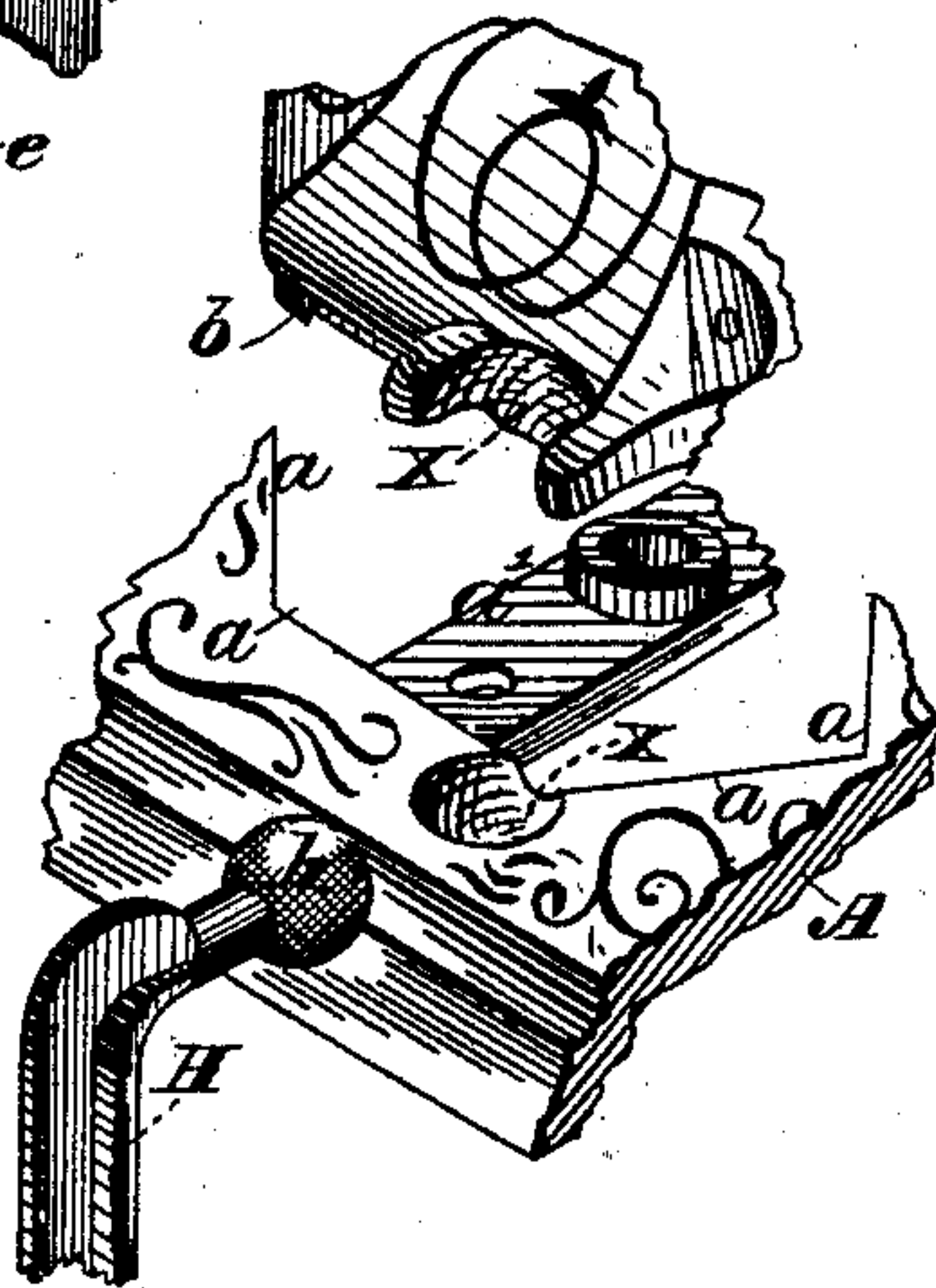
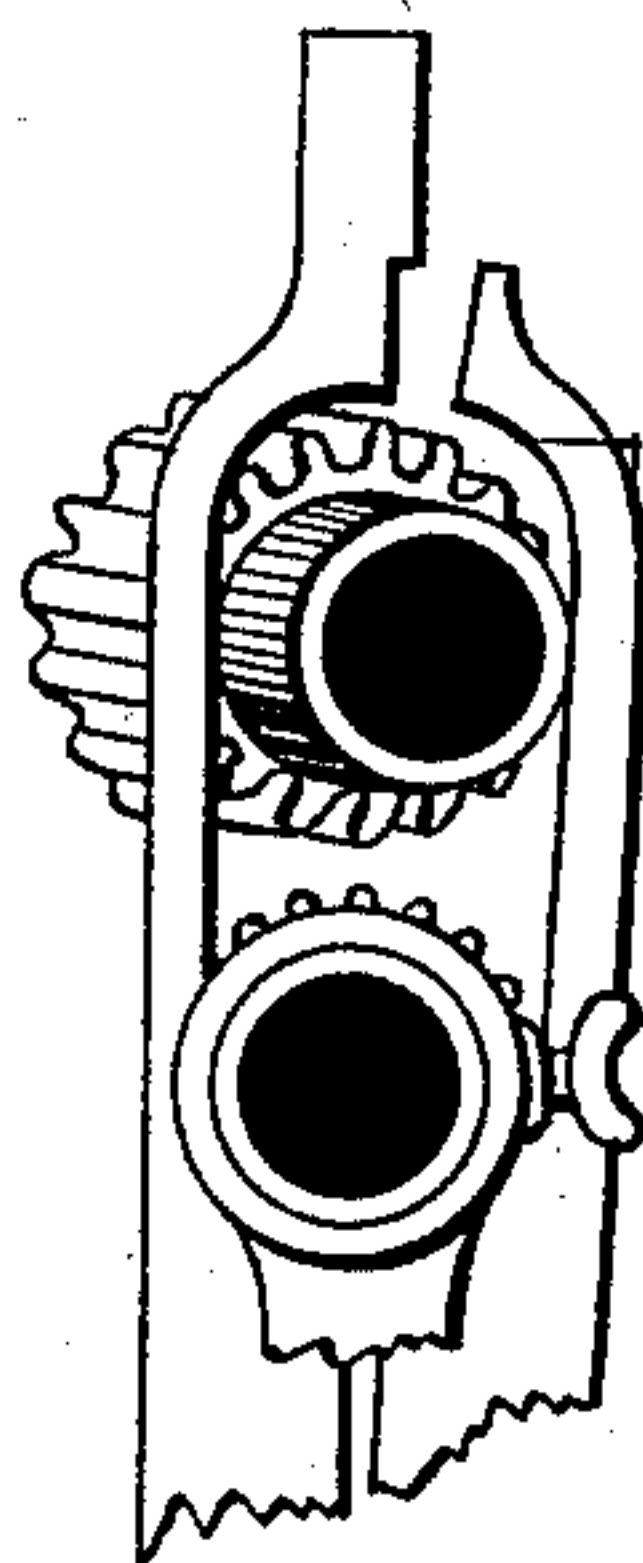


Fig. 6.



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Geo. S. Prindle, his Atty

UNITED STATES PATENT OFFICE.

JOHN E. DONOVAN, OF CINCINNATI, OHIO.

IMPROVEMENT IN FLUTING-MACHINES.

Specification forming part of Letters Patent No. **222,679**, dated December 16, 1879; application filed October 20, 1879.

To all whom it may concern:

Be it known that I, JOHN E. DONOVAN, of Cincinnati, in the county of Hamilton, and in the State of Ohio, have invented certain new and useful Improvements in Fluting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view from the front of my improved device as arranged for use. Fig. 2 is an elevation of the rear side of the same. Fig. 3 is a like view of said device with the upper roller in position for removal. Figs. 4 and 5 are elevations of the rear end, and show, respectively, the arrangement of parts shown in Figs. 2 and 3; and Fig. 6 is a perspective view of the parts composing the socket of the ball-bearing of the clamp, said parts being separated from each other.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to increase the efficiency and to lessen the expense of fluting-machines; to which end it consists, principally, in a fluting-machine having formed between its base and standard a socket for the reception of a ball, which forms the pivotal end of its fastening-clamp, substantially as and for the purpose hereinafter specified.

It consists, further, in the means employed for securing the fluting-rollers within their bearings, substantially as hereinafter shown.

In the annexed drawings, A represents the base of my machine, provided at its center with an opening, *a*, which is preferably polygonal in shape, and at its lower side is spanned by a bar, *a'*, that is cast with and forms part of said base.

Within the opening *a* is placed the correspondingly-shaped end *b* of a hollow standard, B, which is secured in position by means of bolts that pass through the bar *a'*, and through suitable lugs that are provided upon the inside of said standard.

The standard B has the form shown in Fig. 2, and is formed in two pieces, that are united upon a central vertical line, while from the up-

per end of one of said parts an arm, C, extends horizontally outward to or near one end of the base A, and thence downward, and then inward, and at its end terminates in a cylindrical boss, *c*.

The lower portions of the standard B are held together by the bolts employed for connecting the same with the base A, while the upper portions are united by means of a screw, D, that passes through one part, and has its threaded end contained within a correspondingly-threaded opening in the second part.

Within the upper portion of the standard B is provided a vertical slot, *b'*, that corresponds in horizontal dimensions to the diameters of the journals *e* of two corrugated rollers, E, the upper end of said slot being formed upon a circular line, and having such length above the screw D as to enable one of said journals to be contained within such portion.

The outer end of the upper roller E passes over the boss *c* of the arm C, which thus forms a bearing therefor, and is held in position thereon by means of a lug or shoulder, *c'*, that is formed upon said arm and bears against the rear end of said roller, as seen in Fig. 2.

The lower roller E is supported within a frame, F, which rests upon a rod, G, that passes vertically downward into the standard B at its axial center, and is made vertically adjustable therein. The outer portion of said frame is the same in form, only reversed, as the like portion of the arm C, and its inner end is provided with a bearing (shown in dotted lines in Fig. 2) for the reception of the inner journal, *e*, of the lower roller E, the outer end of the latter being supported upon or by a boss, *f*.

A lug, *f'*, similar to the lug *c'*, is provided upon the inner portion of the frame F, and, engaging with the inner end of the lower roller E, holds said roller in place upon the boss *f*.

To remove the rollers E it is only necessary to withdraw the screw D and permit the upper roller at its rear end to drop downward out of engagement with the lug *c'*, after which said roller may be moved longitudinally rearward until free from the boss *c*, then laterally until its outer end is clear from the arm C,

when it may be withdrawn by being moved longitudinally forward. The lower roller E is now free to be withdrawn in the same manner, except that its rear end must be raised until free from the lug *f'*.

The usual crank G, attached to the projecting end of the journal *e* of the lower roller E, enables the latter to be rotated in the ordinary manner.

For the purpose of attaching the device to a table or other like support, I employ a clamp, H, of usual form, except that at its upper inner end it is provided with a ball, *h*, that is contained within a socket, X, which is formed partly within the base A and in part within the standard B. Said ball-bearing *h* is inserted within its socket before said standard and base are drawn closely together; but after said parts are in place said ball is prevented from being withdrawn, while free to rotate upon its axis. The clamp thus connected with the machine is entirely free to adjust itself to any desired position, either for use or storage, and, as it cannot be detached without breakage, it is not liable to become lost.

The means employed for forming the socket

X render unnecessary special fitting of the same or of said ball, nothing being required except to clean the castings in the usual manner before fitting said parts together.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. A fluting-machine having formed between its base and standard a socket for the reception of a ball, which forms the pivotal end of its fastening-clamp, substantially as and for the purpose specified.

2. In combination with the bosses *c* and *f*, which furnish bearings for the outer ends of the rollers E, the lugs *c'* and *f'*, provided upon the arm C and frame F, respectively, and the screw D, passing through the sections of the standard B, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of October, 1879..

JOHN E. DONOVAN.

Witnesses:

SAML. E. HILLES,
S. C. TATUM, Jr.