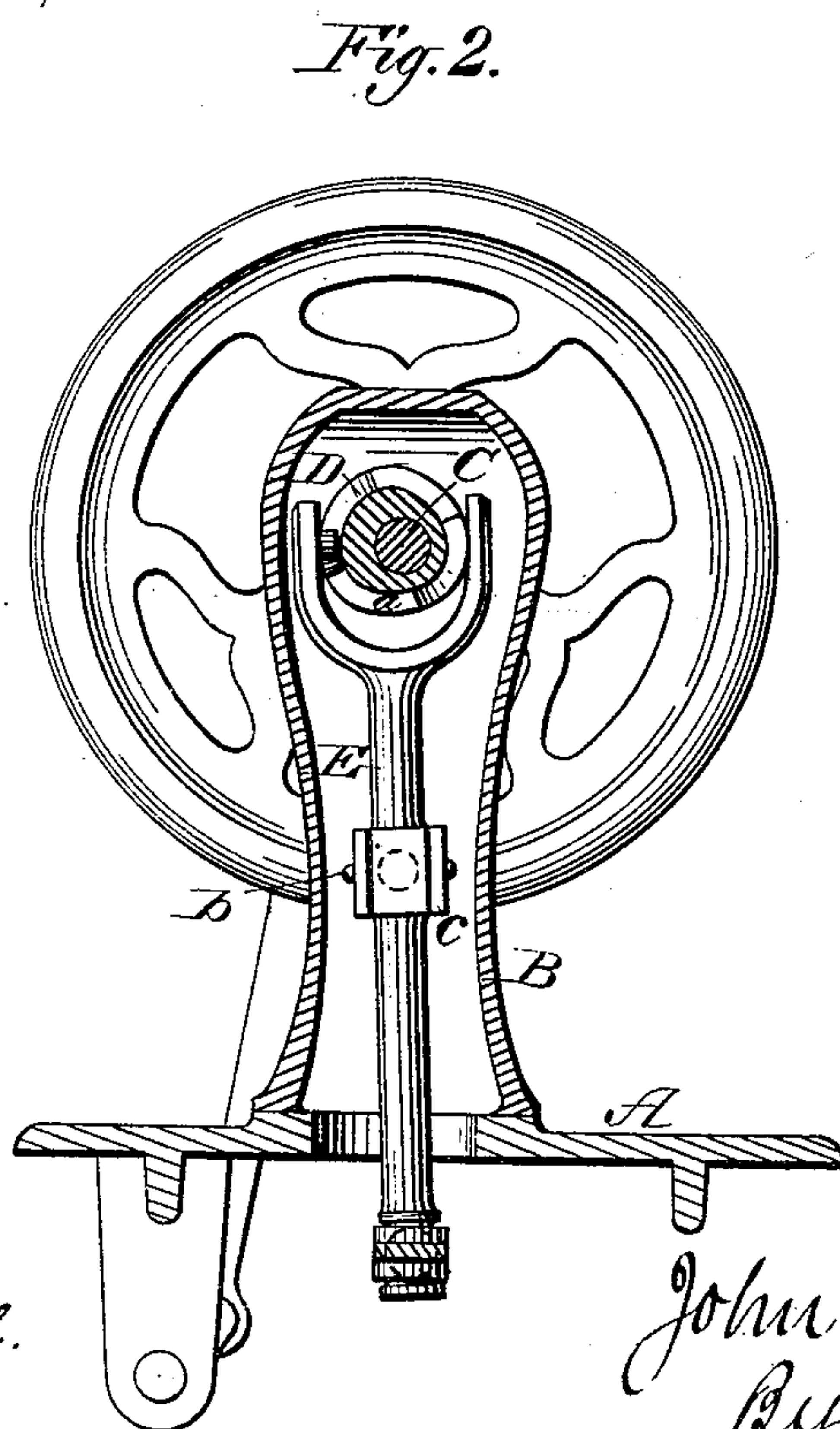
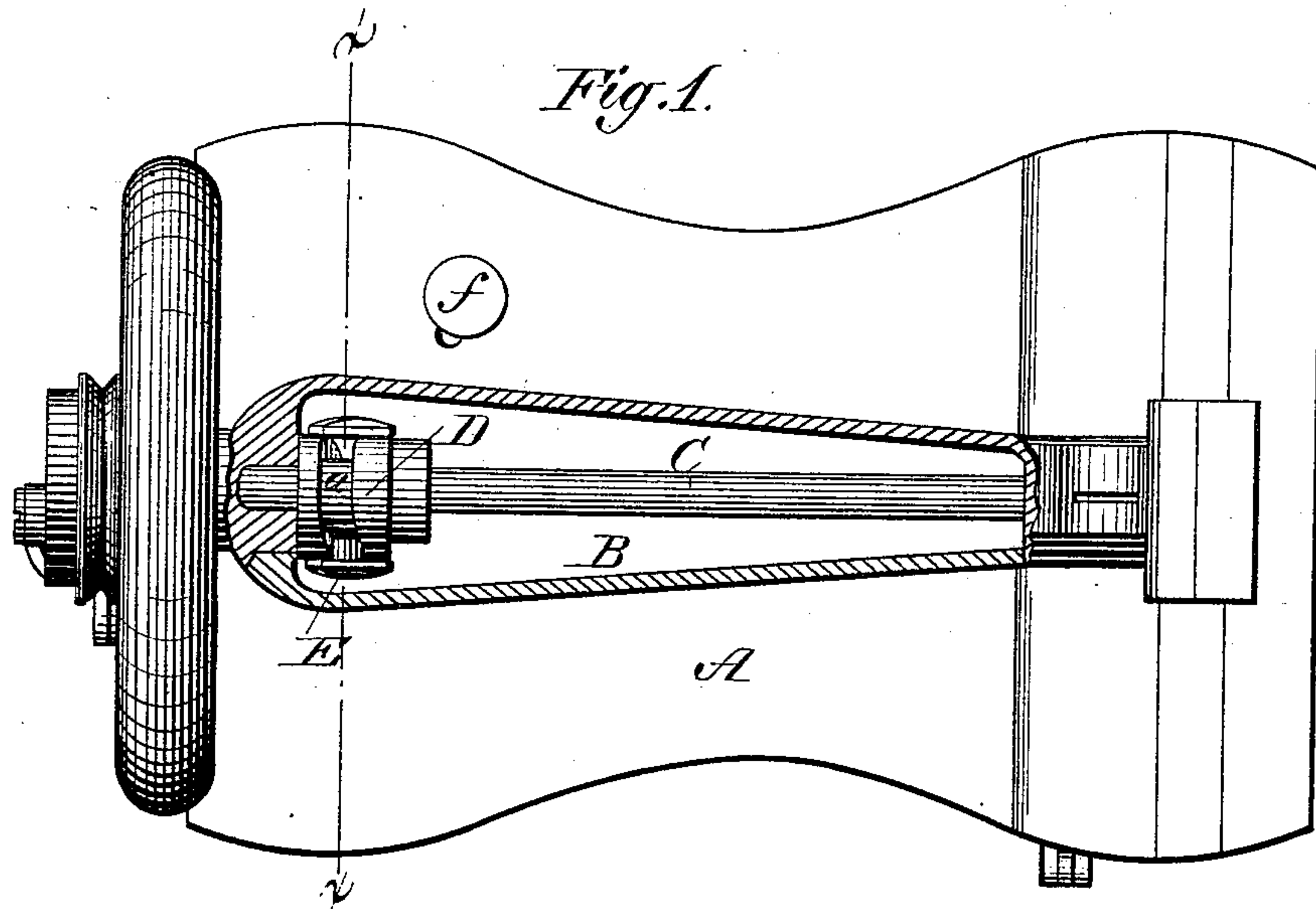


J. HOEFLER.

Feeding Device for Sewing-Machines.

No. 217,872.

Patented July 29, 1879.



Witnesses:
William W. Dodge.
Donna P. Twitchell.

Inventor:
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Fig. 3.

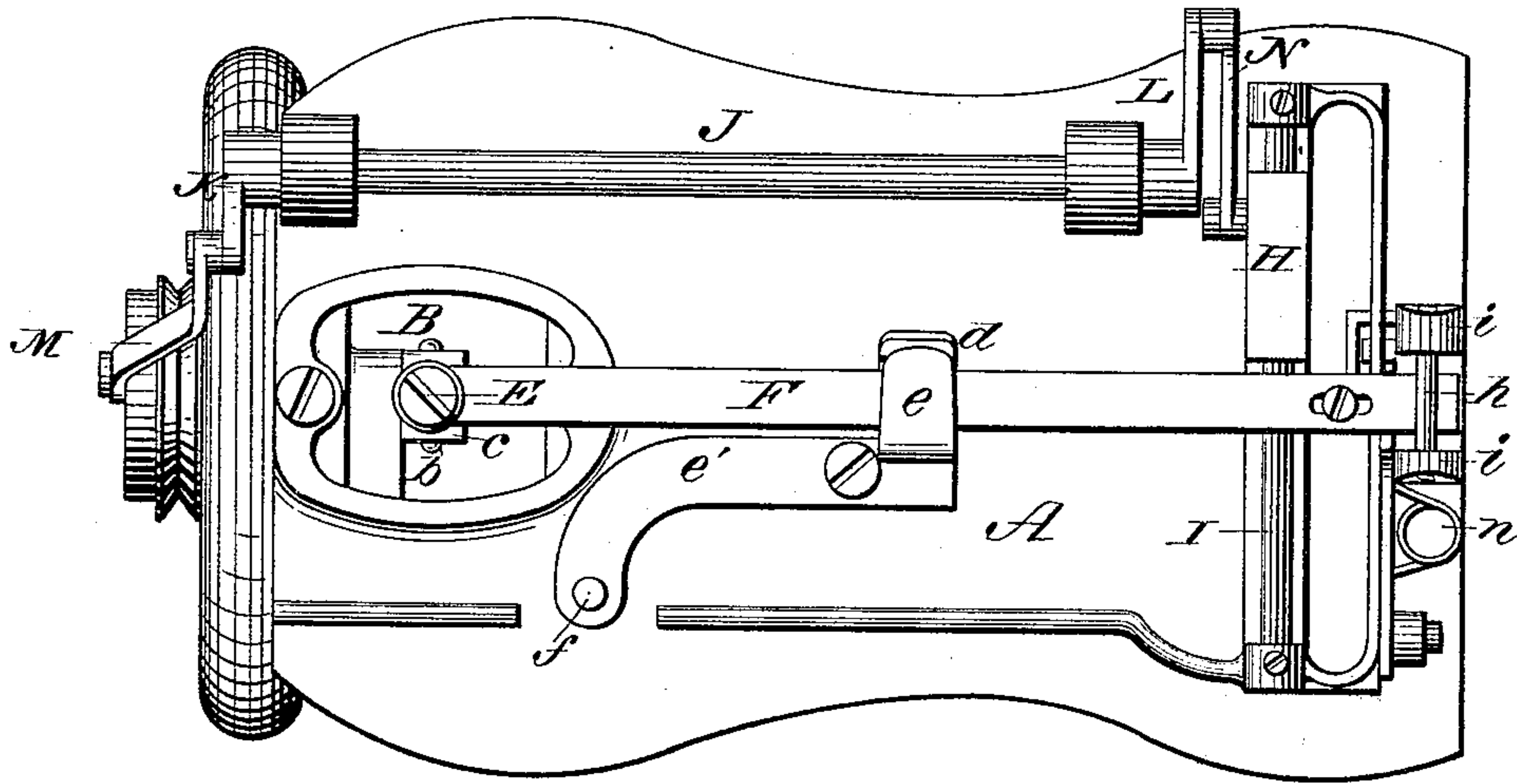


Fig. 4.

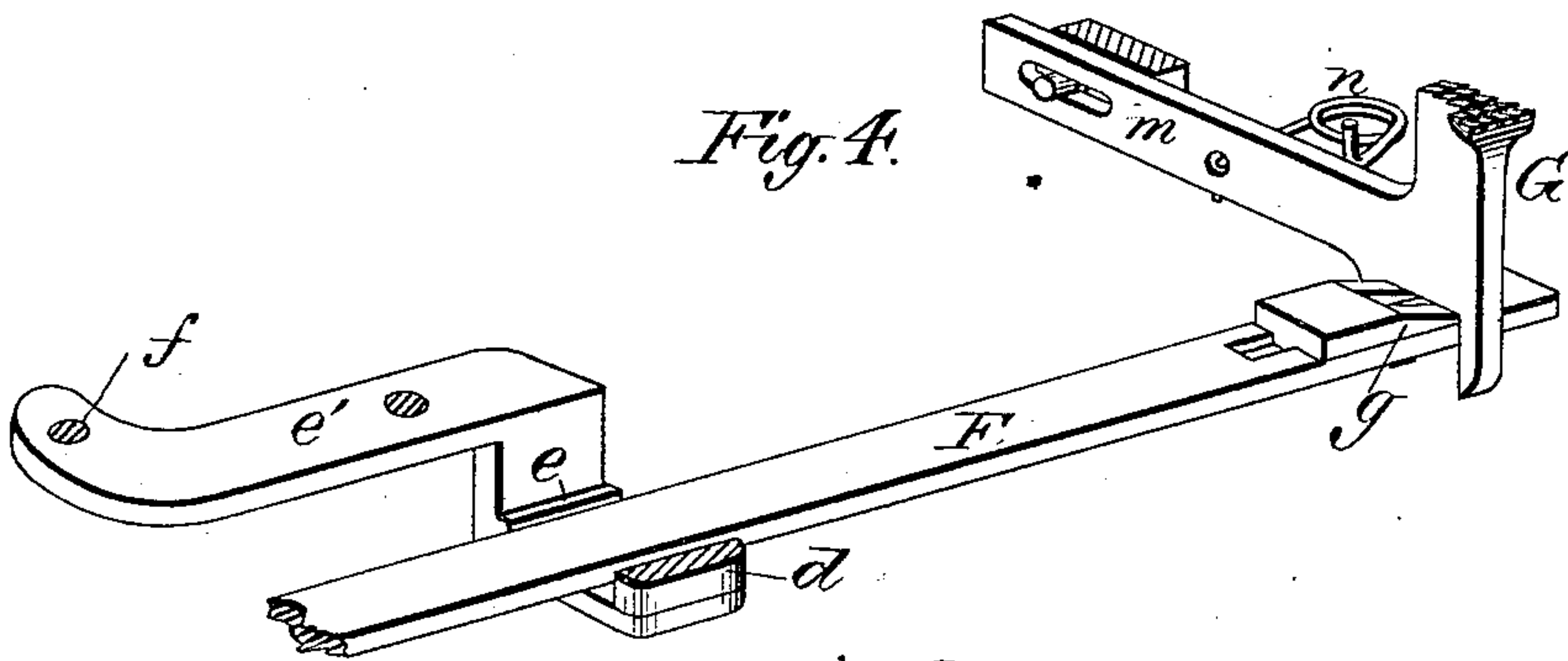
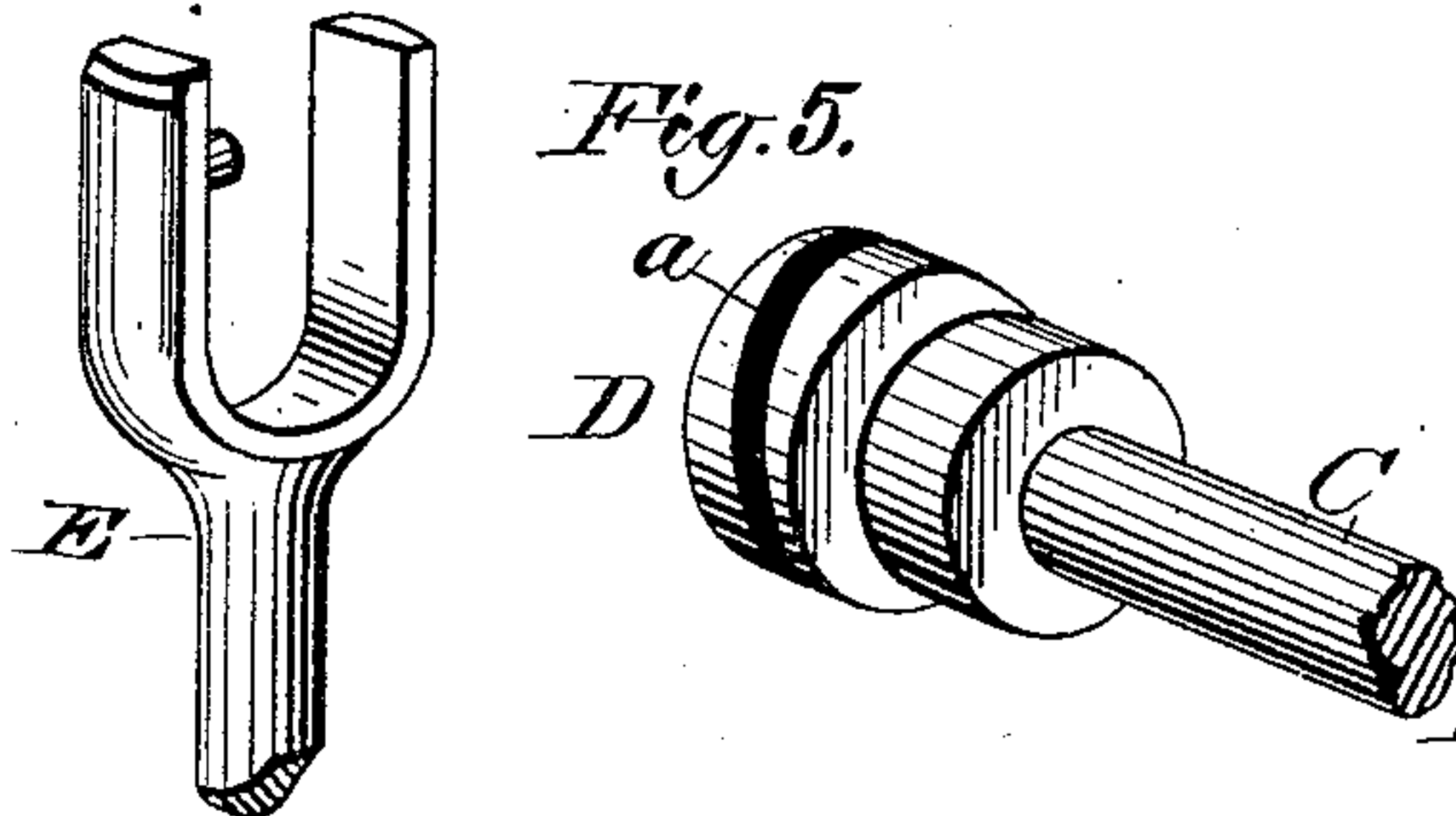


Fig. 5.



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Fig. 6.

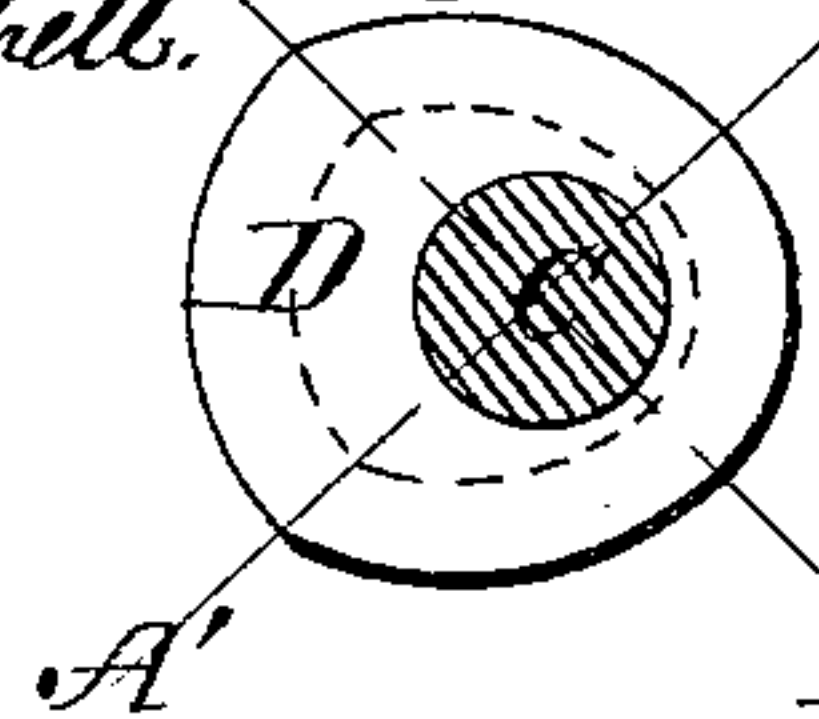


Fig. 7.

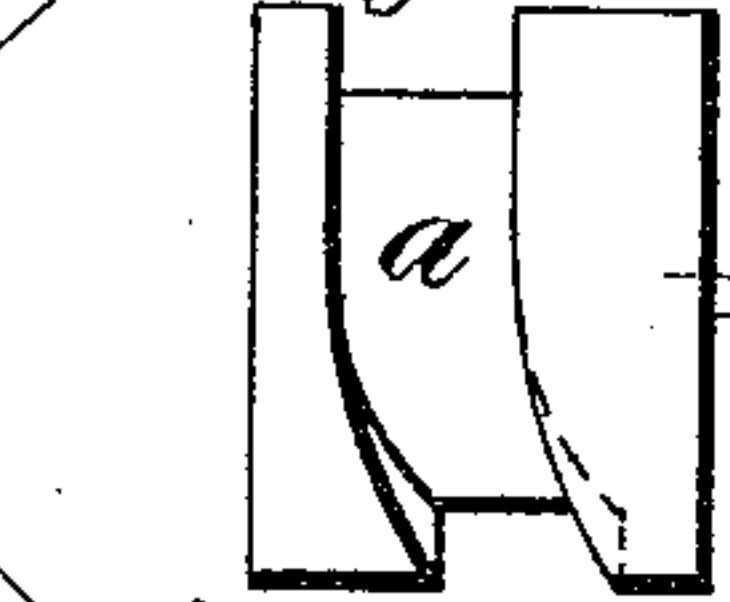
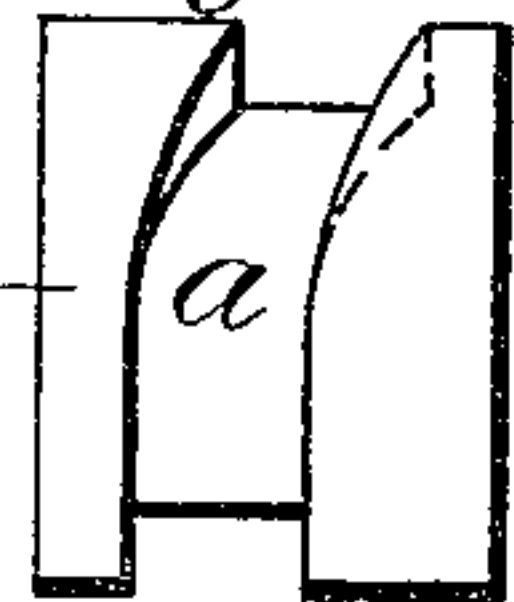


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN HOEFLER, OF ILION, NEW YORK.

IMPROVEMENT IN FEEDING DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **217,872**, dated July 29, 1879; application filed December 7, 1878.

To all whom it may concern:

Be it known that I, JOHN HOEFLER, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Feeding Devices for Sewing-Machines, of which the following is a specification.

My invention consists in a combined eccentric and cam of peculiar construction, arranged to actuate a feed-lever in the manner of controlling the length of the feed, and in minor details, all as hereinafter described in full.

Figure 1 is a top-plan view of my machine with the main arm or standard of the frame broken away, so as to expose the feed-operating cam. Fig. 2 is a vertical section on the line *xx*, Fig. 1; Fig. 3, a bottom-plan view of the machine; Fig. 4, an isometric view, showing the feed operating and regulating devices; Fig. 5, a similar view of the feed-operating cam and lever; Figs. 6, 7, and 8, additional views of the feed-cam.

Referring to the drawings, A represents the bed of the machine, and B the usual rigid hollow arm overhanging the bed to sustain the needle-bar and driving-shaft C, which latter is extended horizontally through the upper part of the arm from end to end.

As a means for operating the feeding devices, which are of the usual four-motion order, and located beneath the bed, I mount on the shaft C, within the hollow arm, a combined cam and eccentric, D, made of the peculiar form hereinafter described, and arranged to work within the upper forked end of a lever, E, which latter extends downward and connects with a horizontal lever, F, extending to the feeding-dog.

As shown in the drawings, the part D has its periphery made eccentric to the shaft, in order to impart to the lever E a vibration in one direction, and also has in its periphery a crooked slot, *a*, to impart to the lever a vibration in a line at right angles to that due to the eccentricity, the lever having a stud or roller to enter the groove, as shown. By causing the end or arms of the lever to fit closely upon the periphery and the stud to fit snugly within the groove, the single part D is caused to give the end of the lever E a positive vibra-

tion in two directions—one crosswise and the other lengthwise of the machine.

The shape of the part D is such that it gives to the lever a movement in one direction only at a time, the transverse and longitudinal vibrations taking place successively and alternately, so that the path of the end of the lever is in the form of a square or rectangle. The manner in which this is accomplished will be readily seen on reference to Fig. 6, the peripheral part of the device being eccentric only between the points A' D' and B' C', and the slotted or cam part being only oblique between the points A' B' and C' D', so that the eccentric and the cam do not act at the same but at different times.

During each rotation the cam has two periods of action and two intermediate periods when it does not act, and also two periods of action on the part of the eccentric and two of non-action. In other words, the device moves the lever, in relation to the operator, first to the left, then to the rear, then to the right, and then forward again to its original position.

In order that the lever may receive this four-motion movement, it is mounted at its middle on a transverse pivot, *b*, in a block, *c*, which is sustained by a longitudinal journal in the hollow arm of the frame.

I am aware that a four-motion feed has been heretofore produced by means of a cam and a spring; but by my improvements I am enabled to produce four positive motions of the feed-operating lever by means of a single rotating device.

The lower end of the lever is made of a spheroidal form, and seated in the end of the horizontal lever F, which passes at its middle between two bearings, *d* and *e*, (the former fixed and the latter adjustable,) which rest against the vertical edges of the lever. The bearing *e* is mounted on the end of a lever, *e'*, so that it may be moved to and from the bearing *d*, in order to permit more or less play of the lever F, for the purpose of changing the length of the feed, as will be presently explained. The free end of lever *e'* is provided with a clamping-screw, *f*, extending up through the bed, and serving as a convenient means of changing and fixing the length of the stitch from above.

The lever F is provided at its forward end with a top wedge or incline, *g*, and said forward end is supported on a rod, *h*, between two lugs, *i*, as shown in Figs. 3 and 4, the arrangement permitting the lever to move both sidewise and endwise, but preventing vertical play.

The feeding-dog G, which is provided with teeth extending up through a slot, as usual, is provided with a long slotted arm, *m*, bearing on a pin beneath the bed, and is arranged to bear at its forward end upon the wedge *g*, and to fit down closely over the edges of the lever and wedge, as shown in Fig. 4, so that by moving the end of the lever laterally it will be caused to move the feed-dog forward and back, and that by moving the lever endwise the wedge will be caused to raise or lower the dog.

The operation of the feed mechanism is as follows: The device D, imparting the four-motion movement to the upper end of the lever E, causes the lower end of the same to follow a similar movement in the opposite direction. The lower end of the lever E first moves the lever F forward endwise, causing its wedge to raise the feed-dog; then swings the rear end of the lever forward, causing it to vibrate between the bearings *d e* as a fulcrum, so that its forward end will advance the feed-dog; then draws the lever back endwise to drop the feed-dog, and finally swings the rear end of the lever backward, so that its front will retract the dog. As the rear end of the lever F receives the same motion at all times, the distance which it moves the feed-dog may be varied by adjusting the movable bearing so as to permit more or less lost motion on the part of the lever. A spring, *n*, urging the feed-dog constantly backward and downward, keeps the lever F from rattling and playing loosely. It is, however, not positively necessary to use the spring *n*, since the dog will fall by gravity and be carried endwise by the lever; but as its use renders the action of the parts smoother and less noisy it will ordinarily be employed. The shuttle-carrier H is mounted on a round rod, *I*, sustained by studs on the under side of the bed of the machine; and to prevent the

said carrier from turning over, its upper face is flattened and arranged to slide against or upon a corresponding flat face on the under side of the bed.

In order to impart the motion to the shuttle-carrier I mount lengthwise of the bed, in bearings projected from its under face, a shaft, J, provided at its ends with cranks K and L, the former connected by a pitman, M, to a crank-pin on the outside of the main driving-pulley, and the latter connected by a pitman, N, to the shuttle-carrier, as shown.

The machine constructed as above described is extremely cheap and simple in its construction, easy in its action, and positive in nearly all its motions.

Having described the machine, what I claim is—

1. In combination with the forked lever E, the combined cam and eccentric D, constructed and arranged as described, so as to give a positive four-motion action to the lever.

2. The rotary device D, having an eccentric periphery and a cam-groove therein, in combination with the forked lever having the stud or roller, as shown and described, whereby a four-motion movement is imparted to the lever.

3. The combination of the forked lever E and the combined cam and eccentric D, constructed in the peculiar manner described and shown, whereby it is adapted to impart to the lever four positive motions, one at a time.

4. The combination of the cam and eccentric D, lever E, lever F, with the wedge or incline thereon, and the feed-dog G, as shown.

5. The feed-operating lever F, in combination with the fixed and the movable bearings, as shown.

6. The combination of the feed-dog G and spring *n*, the lever E, mechanism for imparting a four-motion movement thereto, and bearings *d e*, as described.

JOHN HOEFLEER.

Witnesses:

THOS. RICHARDSON,
G. O. ROSBACH.