

(No Model.)

2 Sheets—Sheet 1.

A. MILLER.
DRILL.

No. 339,572.

Patented Apr. 6, 1886.

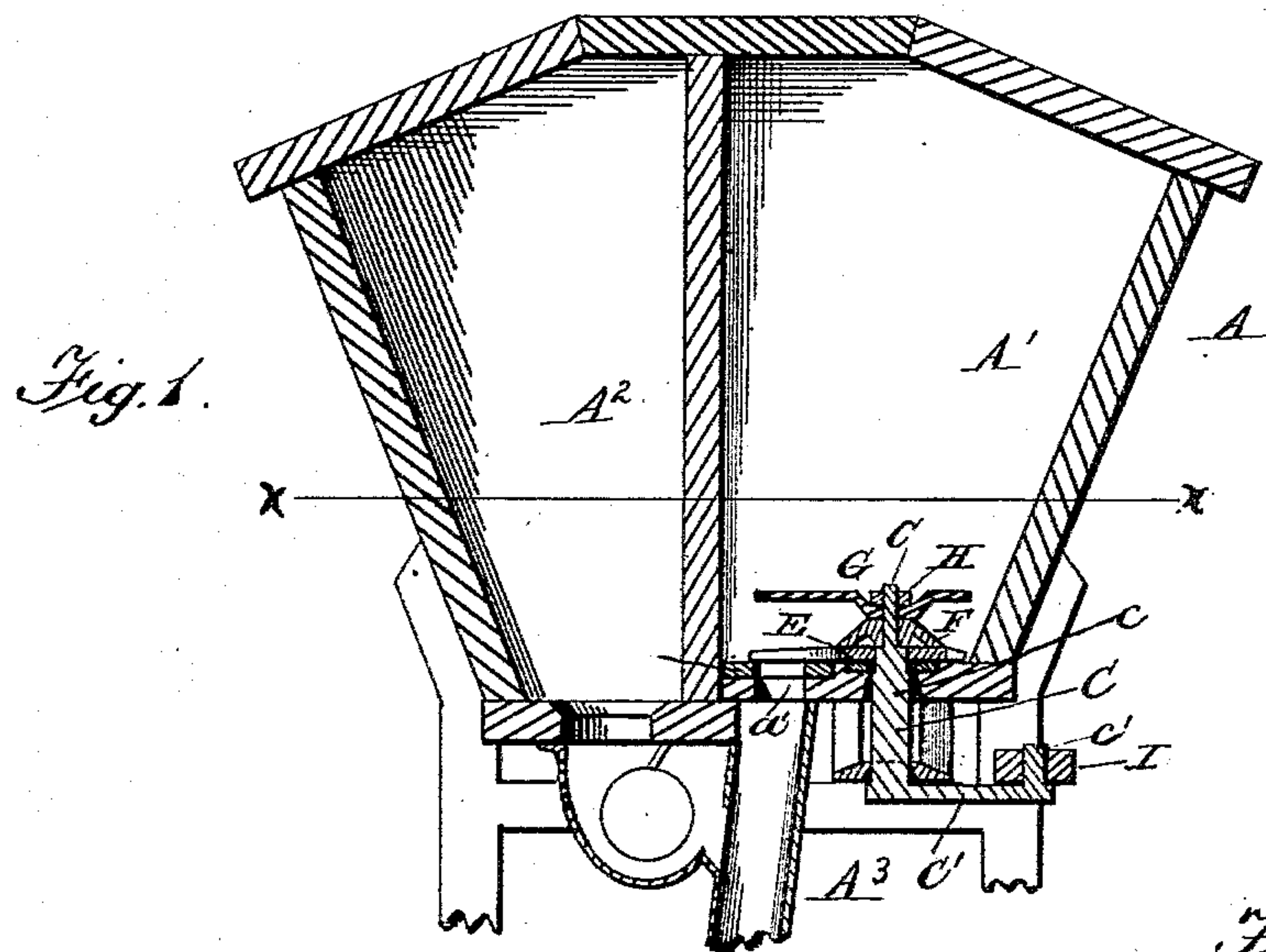
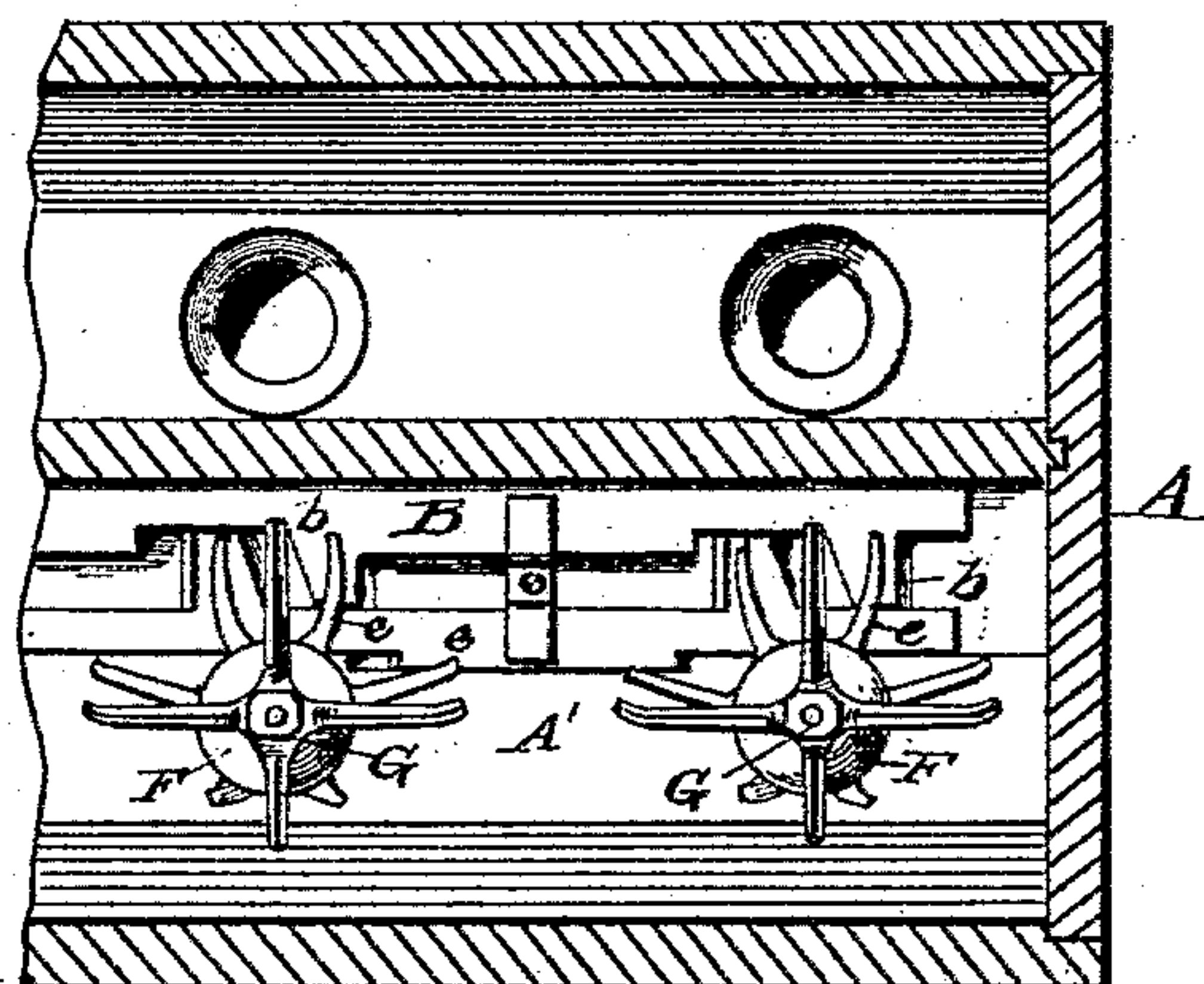
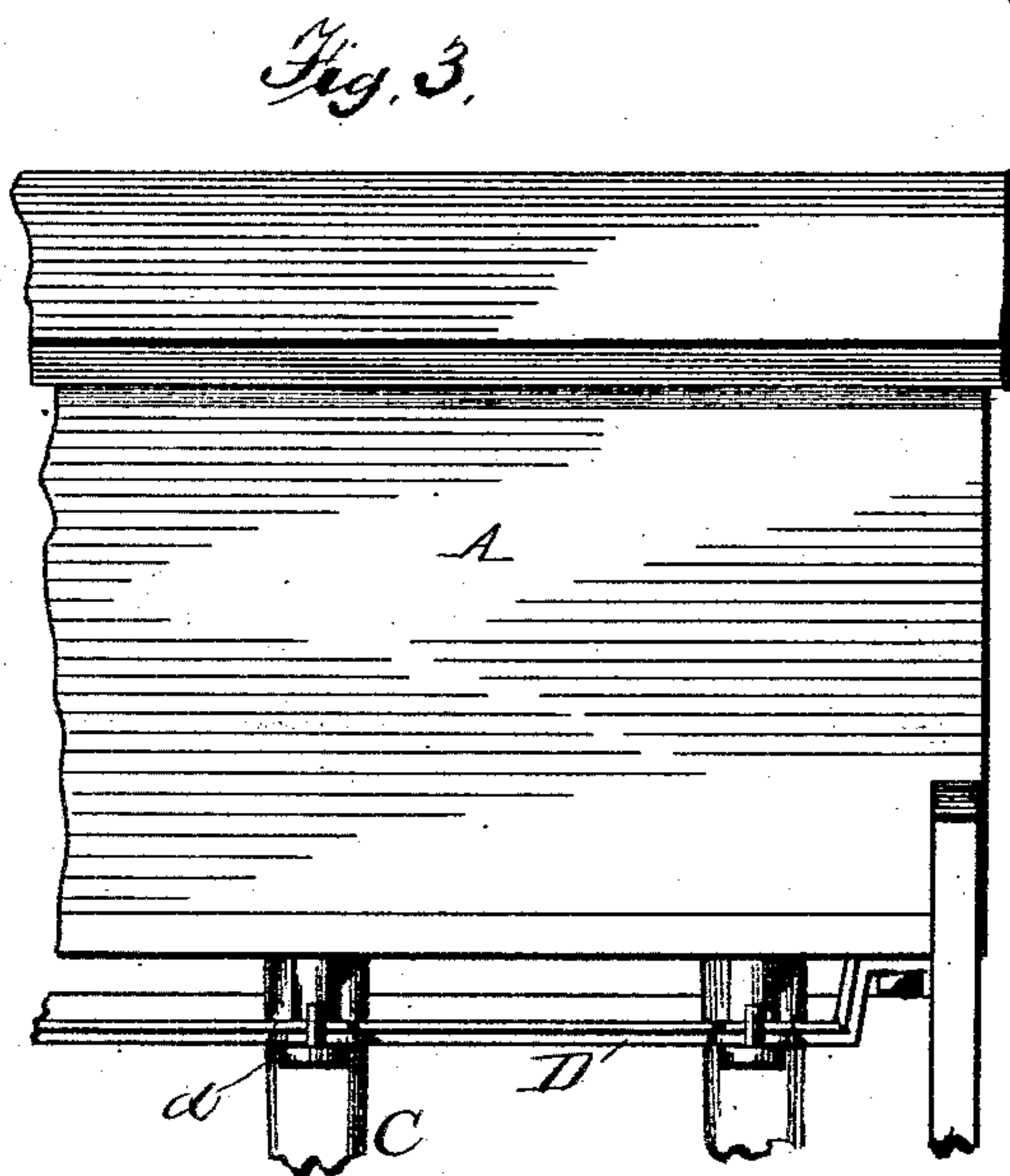


Fig. 2.



Attest:
W & H. Knight
S. T. Edmonds

Inventor:
Abraham Miller
By his attorneys,
Edson & Bro's.

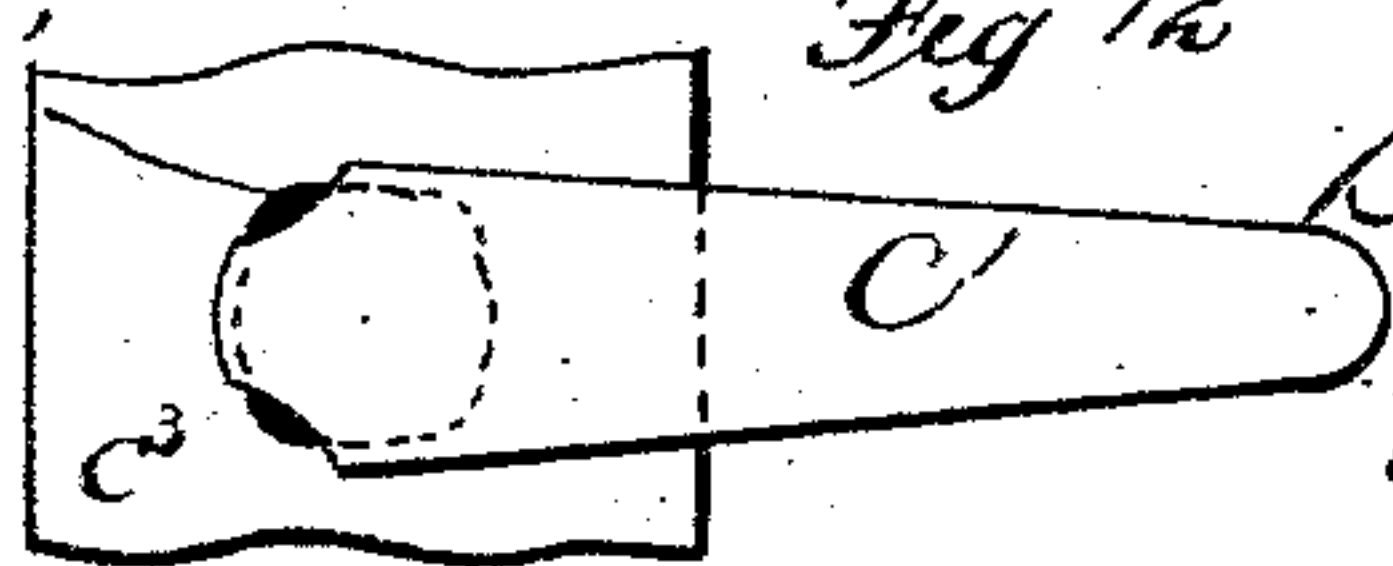
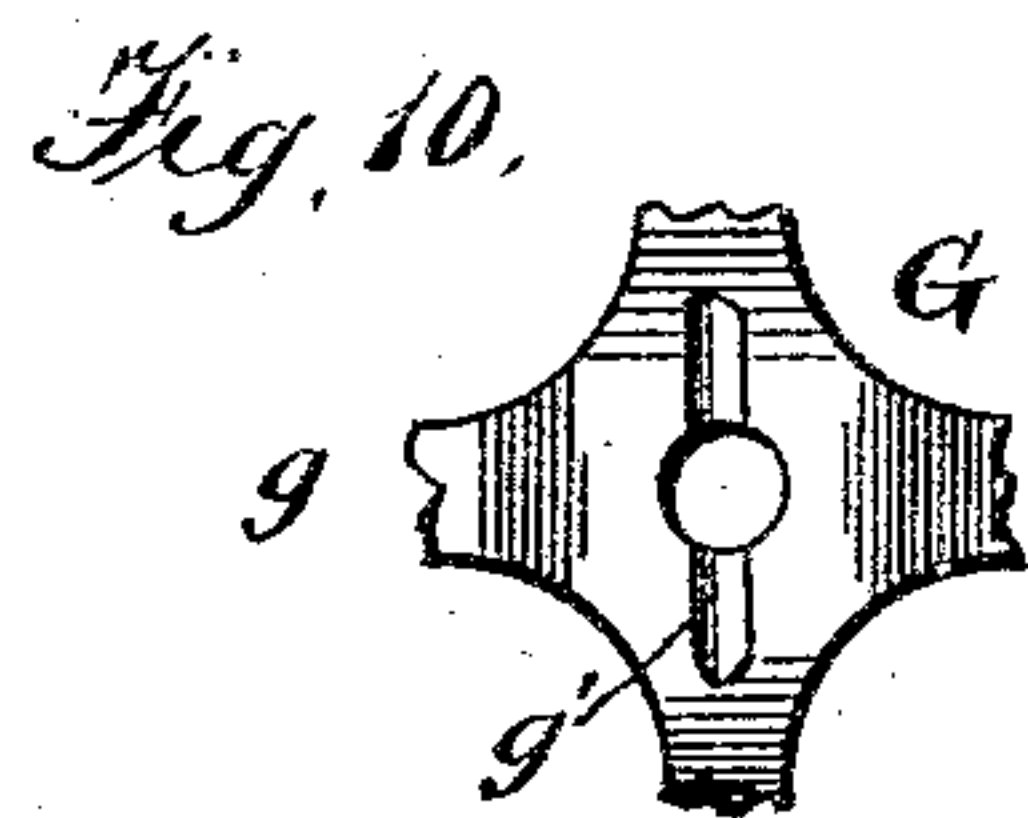
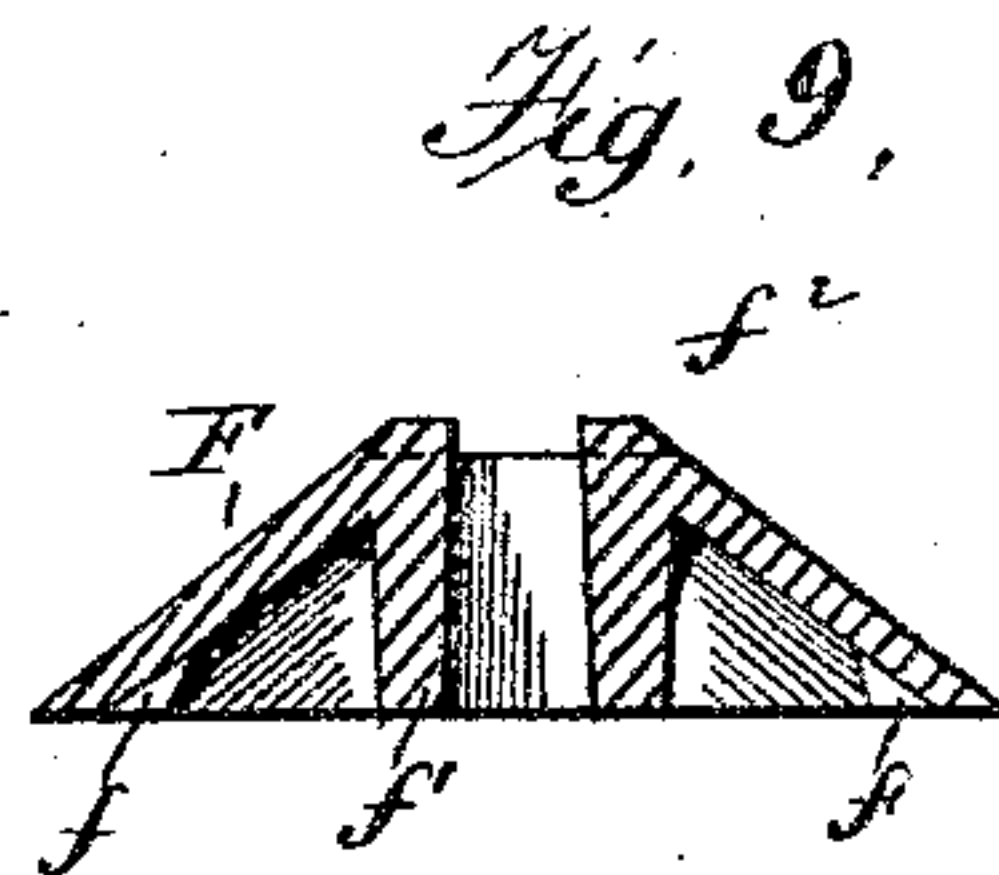
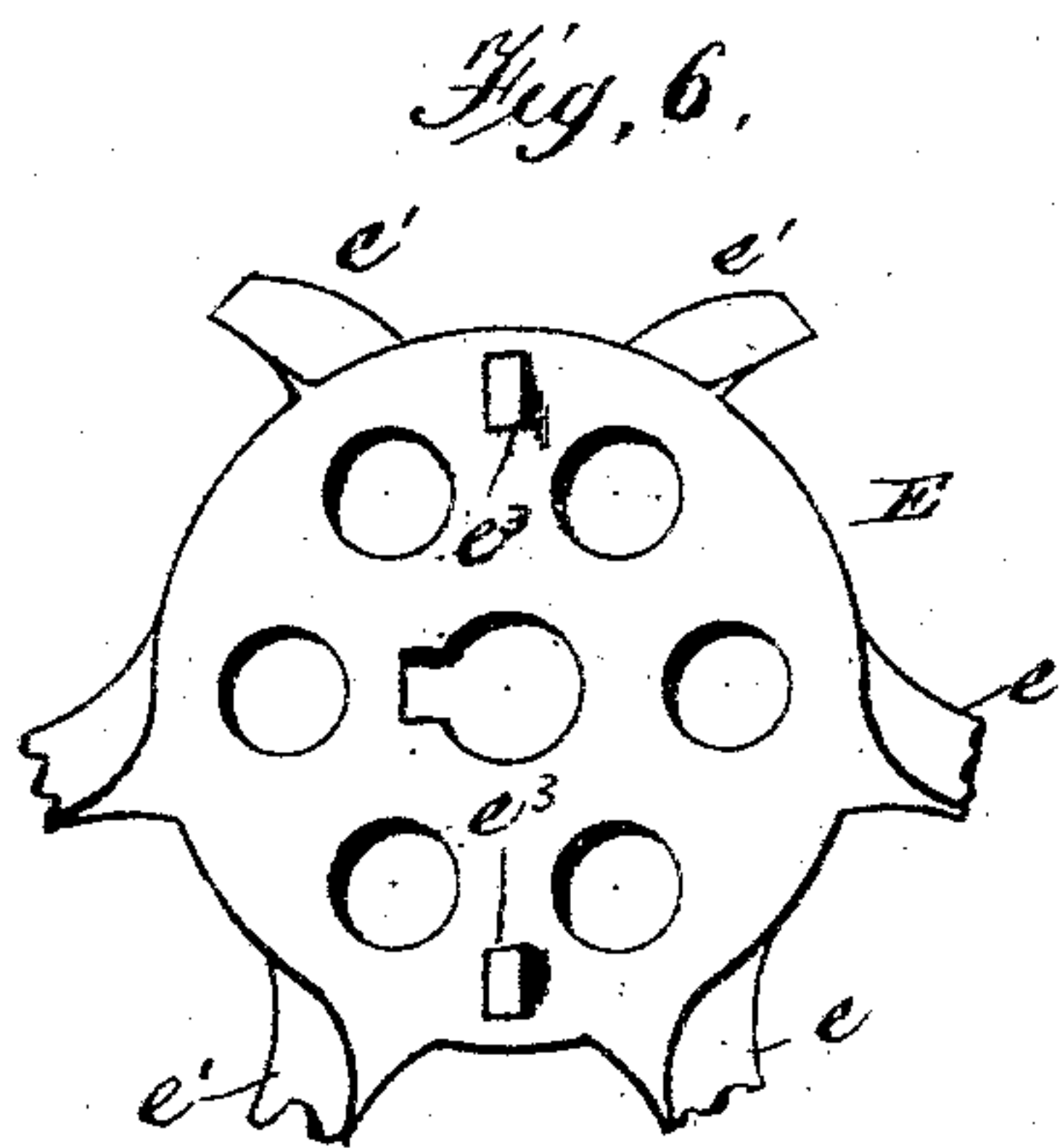
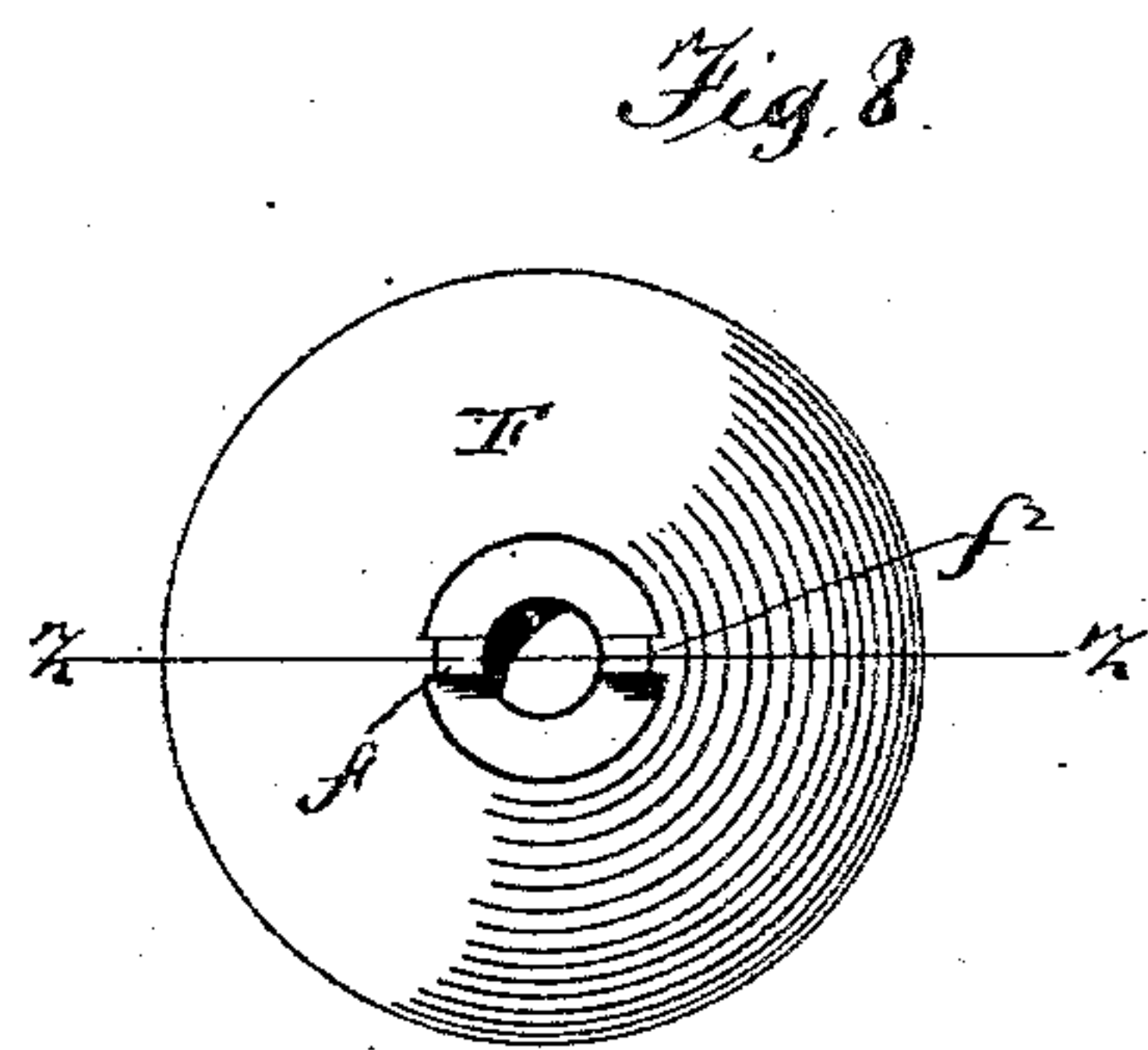
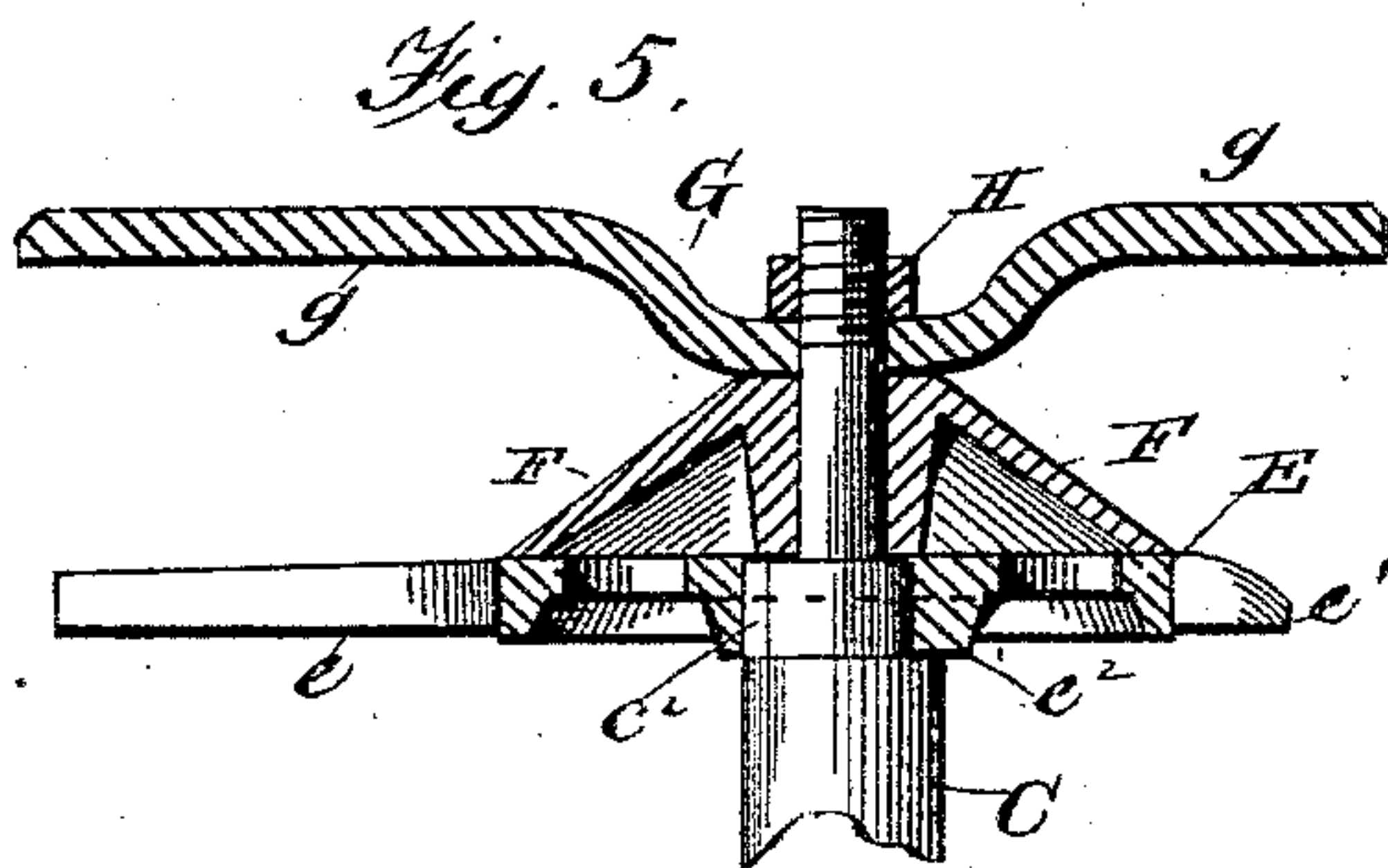
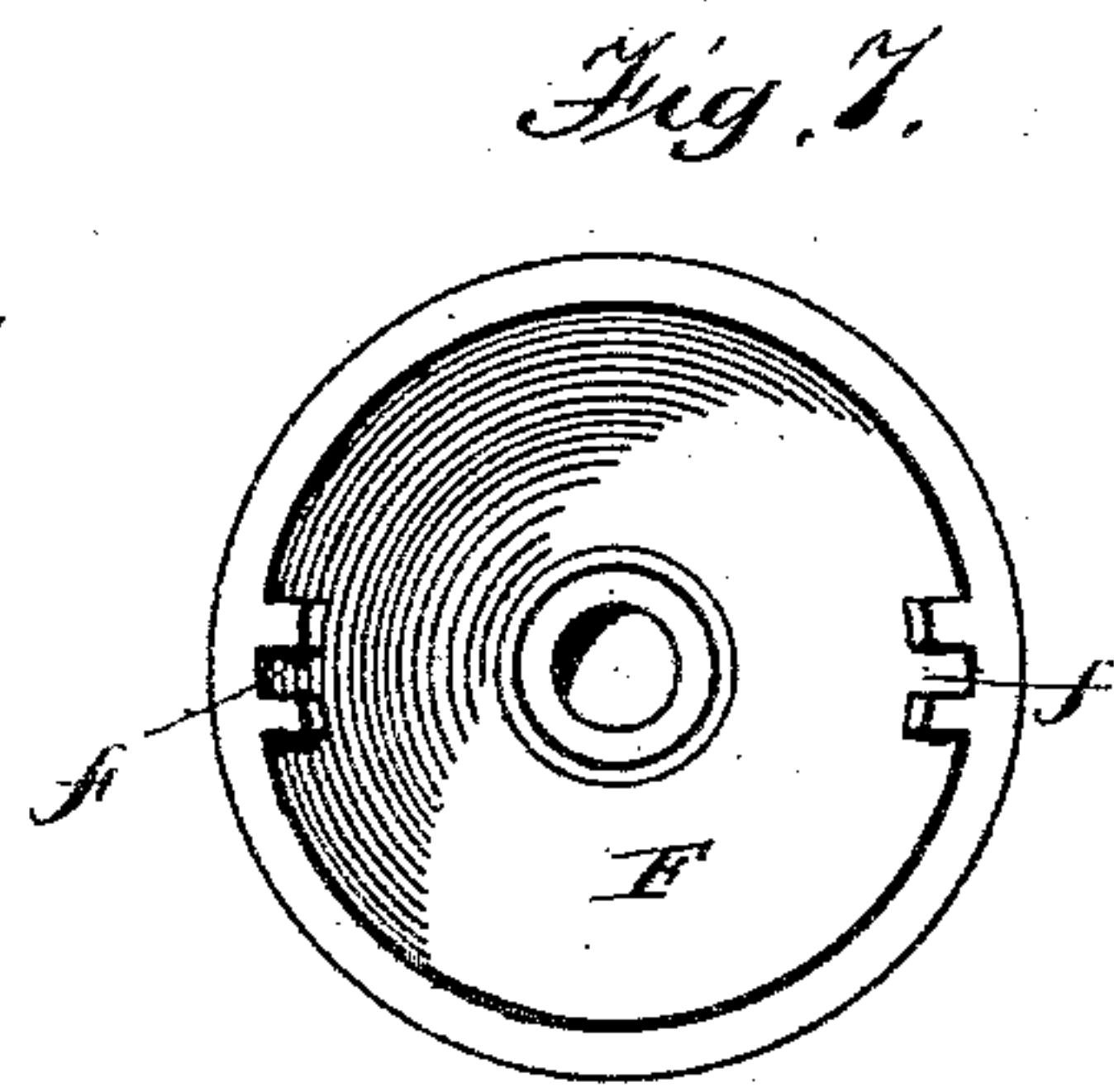
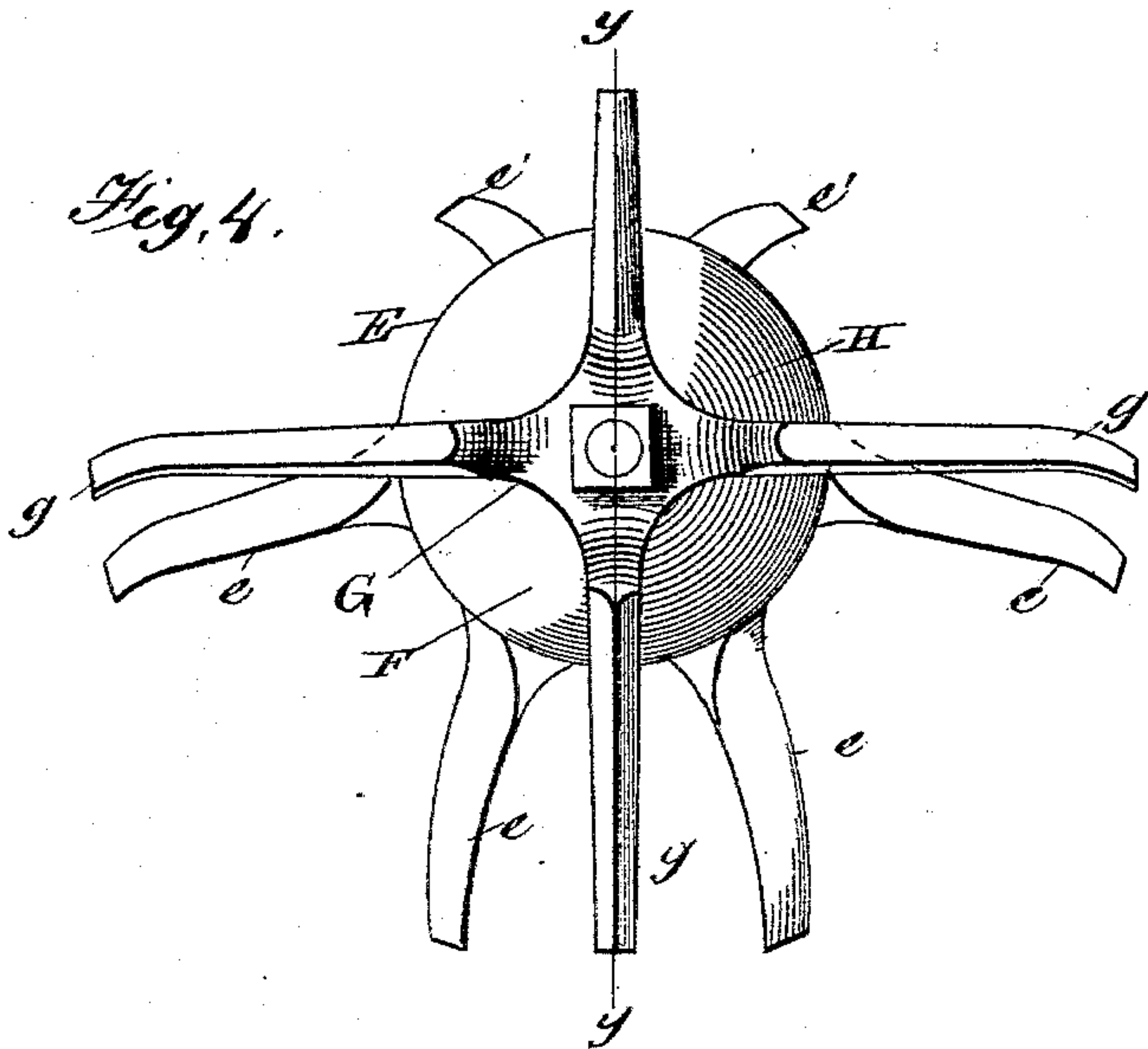
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W. H. Knight &
S. T. Edmunds

Inventor:
Abraham Miller
By his Attorneys,
Edson Bros.

UNITED STATES PATENT OFFICE.

ABRAHAM MILLER, OF NEWARK, OHIO, ASSIGNOR TO THE NEWARK MACHINE COMPANY.

DRILL.

SPECIFICATION forming part of Letters Patent No. 339,572, dated April 6, 1886.

Application filed December 11, 1885. Serial No. 185,378. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM MILLER, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to devices for feeding fertilizing material from seed-planters and the like; and the novelty consists in the construction, arrangement, and adaptation of parts as will be more fully hereinafter set forth, and specifically pointed out in the claims.

The invention consists in the several mechanisms and combinations of mechanisms fully illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a transverse section of the hopper and contiguous parts according to my invention. Fig. 2 is a horizontal section showing internal construction in top plan. Fig. 3 is a side elevation. Fig. 4 is an enlarged top plan view of the stirrers. Fig. 5 is a central vertical section corresponding to Fig. 4. Fig. 6 is a detail plan of the cutter, the arms of which operate over the feed-apertures. Fig. 7 is a bottom plan view of the cone. Fig. 8 is a top plan view, and Fig. 9 is a central section of the same. Fig. 10 is a bottom plan view of the body of the spider or stirrer. Figs. 11 and 12 represent detached detail views of the crank for operating the stirrers.

Referring to the drawings, in which similar letters of reference indicate like parts in all the figures, A designates the hopper, having fertilizer-compartment A' and seed-compartment A², both compartments having connections with the legs A³, as is common with this class of machines. The bottom of the compartment A' has a series of feed-apertures, a', the area of each of which may be adjustably regulated at will by a slide, B, having arms b, which extend across the feed-apertures a'.

Opposite each aperture a' is a bearing, c, in which operates an oscillating shaft, C, having a crank-arm, C', and a crank-pin, c'. These several shafts C are also journaled at d in a cast-metal bar, plate, or frame, D, which ex-

tends along the bottom of the hopper, parallel with the same, and at a distance therefrom. As in the operation of these devices the arms C' operate below the bar, plate, or frame D, and the shaft C can be taken out at any time by taking off the nut on the upper end, the fertilizing material is liable to work into the boxes and bearings in the bottom of the hopper, and become packed and clogged, if not allowed to pass through, as is also the case in the boxes of the frame, bar, or plate D below.

My metal frame, bar, or plate D is important in being cheap, inexpensive to make, and neat in appearance. The top side being chamfered or beveled off outward from around the bearings or boxes, the fertilizer material that passes through the bearings above is prevented from getting into the lower bearings by being worked away by the beveled top of the bar, and by the bearings in the bar or plate being on the upper side, and the holes in the lower side of plate or bar being larger than the bearings, what fertilizer material might get into the lower journal could easily work through without the liability of clogging the shaft. The bearings d' are not circular, and do not conform to the shape of the shafts C, which operate therein. They are cut away at places, as seen at d', and the crank-arm C' also has cut-away places, (seen at c³,) which allow any of the material which may have worked through the boxes and bearings above to gravitate through the boxes and bearings in the frame or plate and prevent its lodging and packing therein.

E designates a spider or stirrer and feeder, which, for convenience of description, I will call a "cutter." It has arms e, the outer ends of which are curved toward the outlets to gather in the fertilizer material toward the outlets and sow it as clean as possible out of the hopper. These radial arms operate over the feed-orifices a', to keep them open and cause the fertilizer material to work out regularly in the quantities desired. Shorter arms e' serve to loosen up the material behind the stirrers and assist in working it from the rear of the hopper toward the outlets.

The cutter or stirrer and feeder E is forced to oscillate with the shaft C in each set by

reason of a spline-and-groove connection, as seen at c^2 , and a boss, e^2 , which forms a journal upon the under side of the spider, said journal projecting down into bearings c of the hopper.

5 Upon the upper face of E are lugs e^3 , which engage with recesses f , formed in the bearing-surface of cones F, each of which has a sleeve, f' , which receives the extension of the shaft C, and each of which has lugs f^2 upon its upper bearing-surface, as seen in Fig. 8. The cone F rests with its larger diameter upon the face or upper side of the stirrer and feeder and the lower sides of the stirrer and feeder rest upon the interior surface of the bottom of the hopper, so as to make a tight joint, and by reason of the engagement of the parts e^3 and f the cone is forced to move with the shaft C in each set. The shape of the cone F serves to prevent the fertilizing material from lodging thereon.

G designates the upper stirrer or spider, having upwardly-extending radial arms g and recesses g' , which receive the lugs f^2 of the cone F. These spiders G (there being one to each set) are secured upon the apexes of the cones by nuts H, which engage the threaded upper ends of the shafts C.

I do not confine myself to the upwardly-extending radial arms, as by making the cone a little higher the arms or stirrers can be made straight.

I designates a reciprocating or vibrating bar, which connects with the several crank-pins c' and from which motion is imparted to the several shafts C and their stirring devices.

In practice this construction is important. The cone serves not only to make a comparatively tight journal and to gradually incline the gravitating material away from the axis of motion, but it holds the stirrer-spider at a height in the material that prevents such material from packing, and not coming in contact with the lower stirring and feeding fingers, which act directly over the discharge-orifices, help to work the fertilizer material more freely and completely out of the hopper through the discharge-openings therein.

The feeding and stirring fingers have flat lower sides and preferably curved cutting-edges arranged on reverse sides, so as to force the material toward the discharge-opening and feed it out of the hopper. The body of the spider E is cut away or perforated to lessen the weight.

The operation of the several parts will be readily understood.

Modifications in detail of construction may

be made within wide limits without departing from the principle or sacrificing the advantages of the invention, the essential features of which will be apparent from the foregoing description in connection with the drawings.

What I claim is—

1. In a fertilizing attachment for seed-planters, a stirrer-spider and a cutter-spider, each having a series of fingers and an oscillating movement, said spiders separated by a cone, all the parts locked upon and adapted to oscillate with a single shaft, as and for the purpose set forth.

2. The combination, with feed-apertures and oscillating shafts, of cutter-spiders, as E, having cutter-arms e , and shorter stirrer-arms e' , stirrer-spiders having arms and intermediate cones, the cutter-spiders locked to the shafts, and the upper stirrers and cones being forced to move with the lower cutter, as set forth.

3. In a fertilizer-distributor attachment as described, the combination, with the castings C C' and bar I, of the cast-metal plate or bar D, having bearings d , cut away to prevent lodgment of fertilizer, as set forth.

4. The combination, with the bar I and shafts C, crank-arms C', and pins c' , with cut-away portions c^3 , of the metal plate or bar D, having bearings d , cut away at d' , the cutters, cones, and stirrers, and nuts H, substantially as specified.

5. In a fertilizer-distributor, the combination, with a hopper having adjustable feed-orifices a' and bearings or boxes c , of the stirrer-shafts C, and the cutters E, having boss e^2 , cutter-arms e , and the stirrer-arms e' , as set forth.

6. In a fertilizer-distributor, the combination, with a hopper having adjustable feeding-orifices, of the lower stirrer E, cones F, and shafts C, having their lower bearings between the arms C' and the bottom of hopper, as and for the purpose specified.

7. In a fertilizer-distributor, the outer ends of the oscillating feeding-fingers on opposite sides of the shaft curved inwardly—that is, curved toward the opening in the hopper on the opposite sides of which said fingers are arranged—as and for the purpose set forth.

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

ABRAHAM MILLER.

Witnesses:

JOSH CLINEDINST,
RICH'D. T. CLARKE.