

No. 709,761.

Patented Sept. 23, 1902.

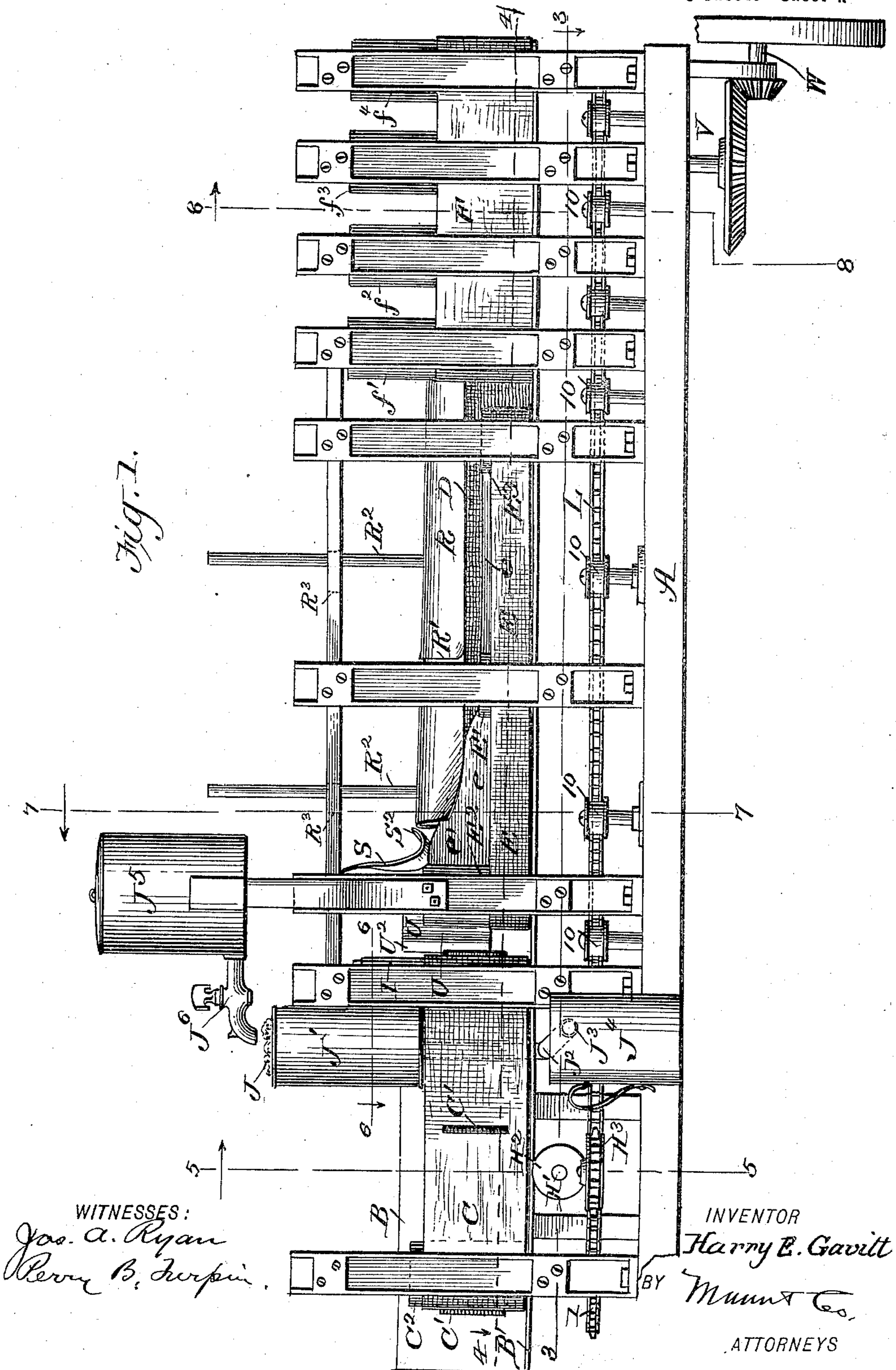
H. E. GAVITT.  
ENVELOP SEALING MACHINE.

(Application filed Nov. 14, 1901.)

(No Model.)

6 Sheets—Sheet 1.

*Fig. 1.*



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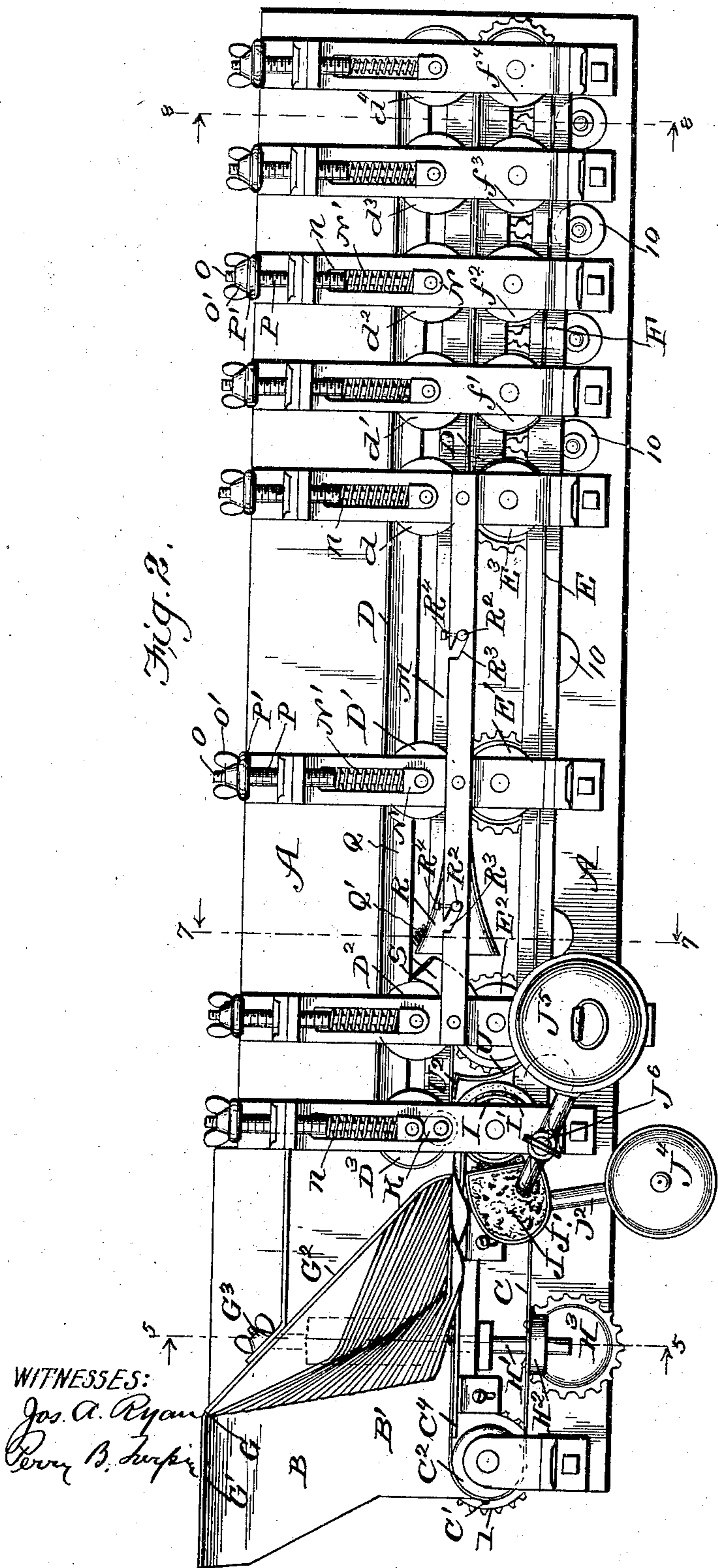
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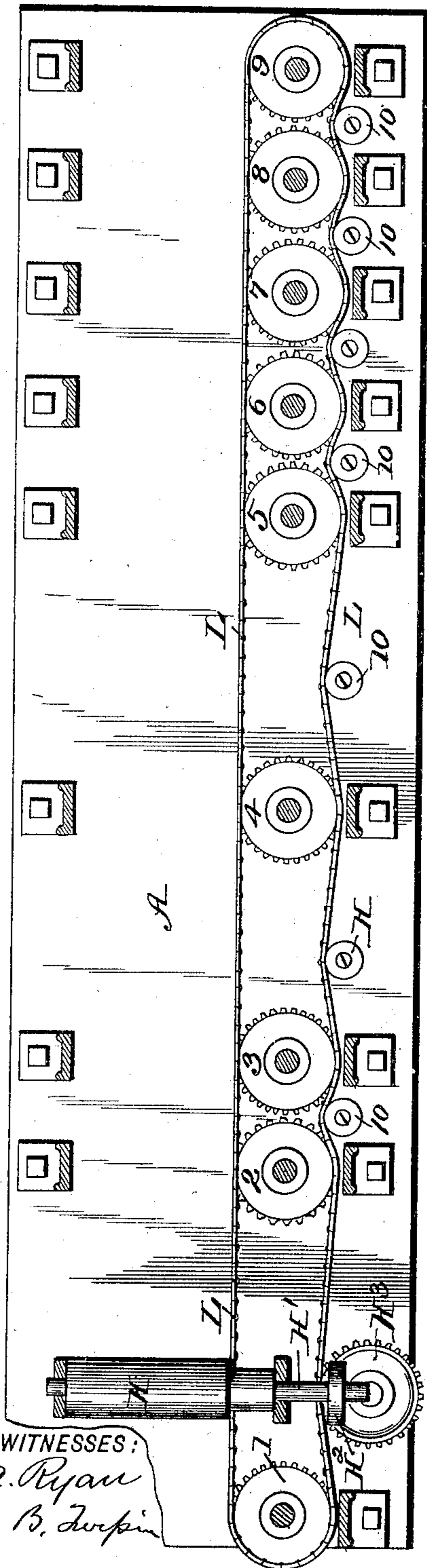
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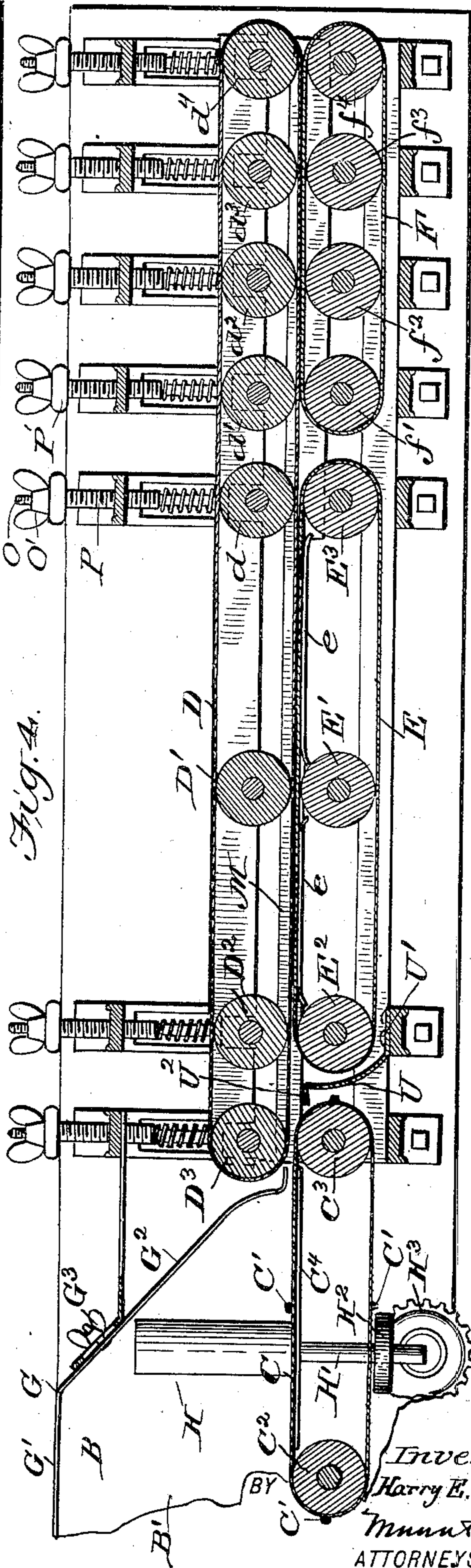
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Fig. 3.



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Fig. 4.



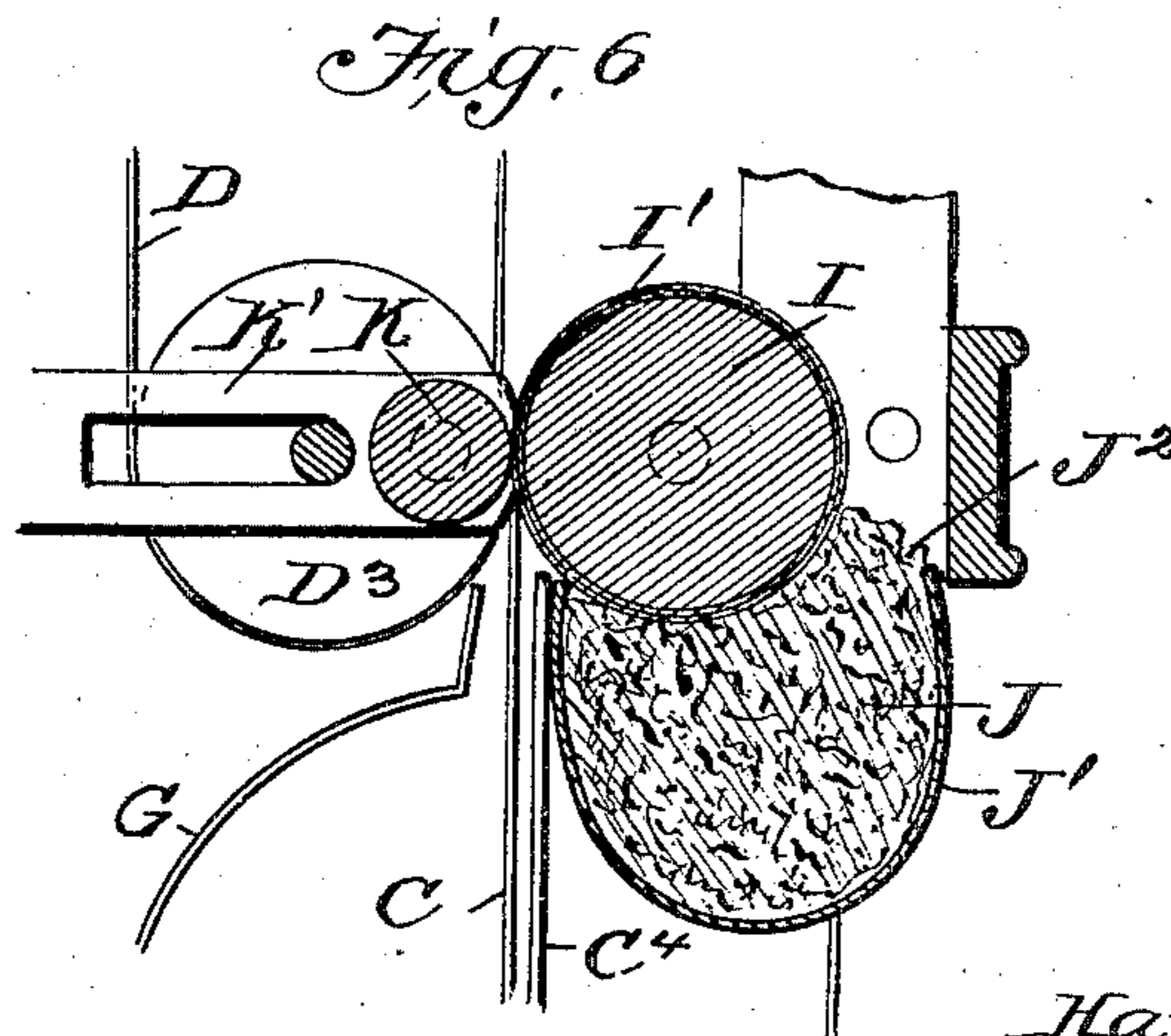
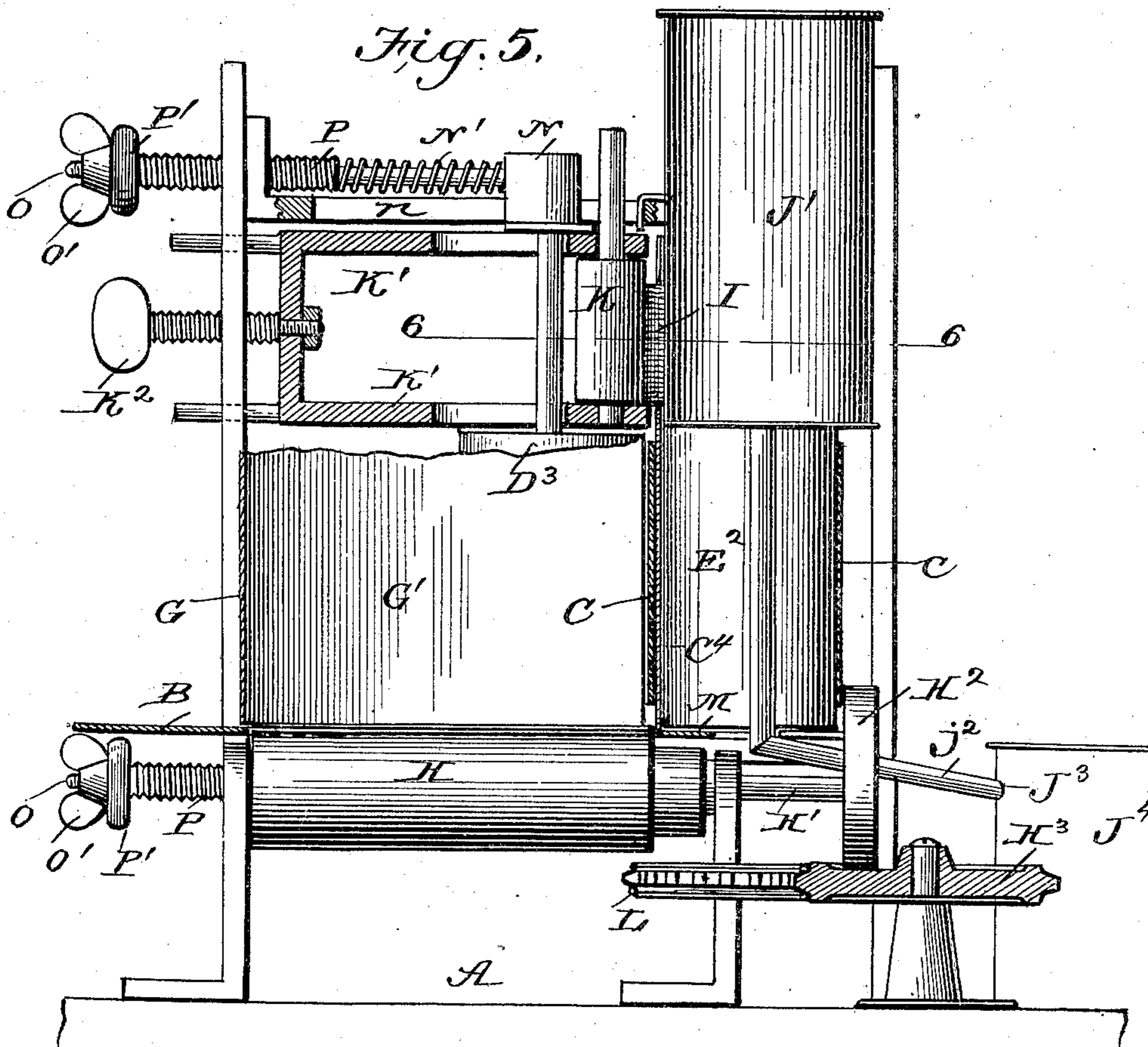
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6 Sheets—Sheet 4.



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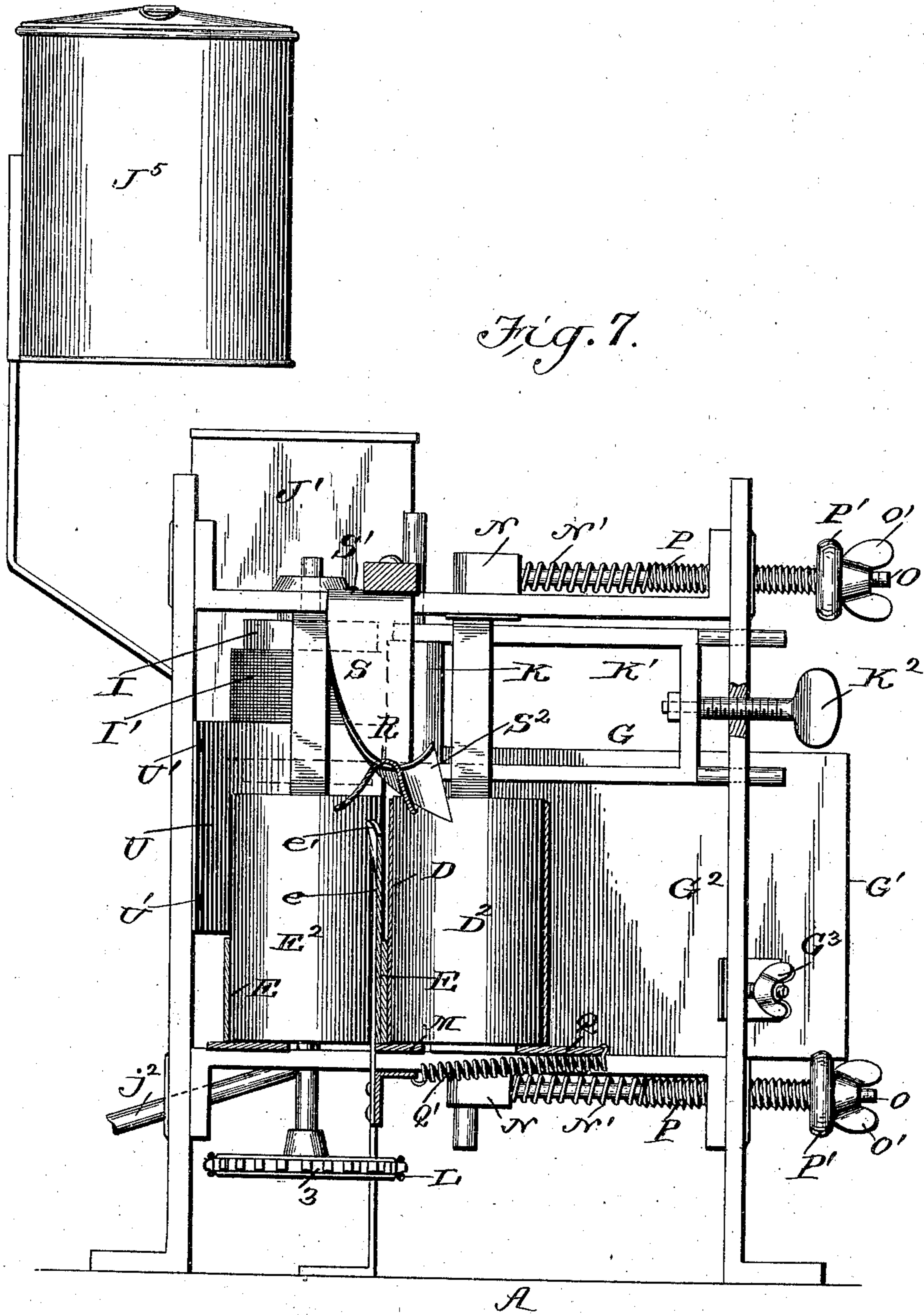
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6 Sheets—Sheet 5.



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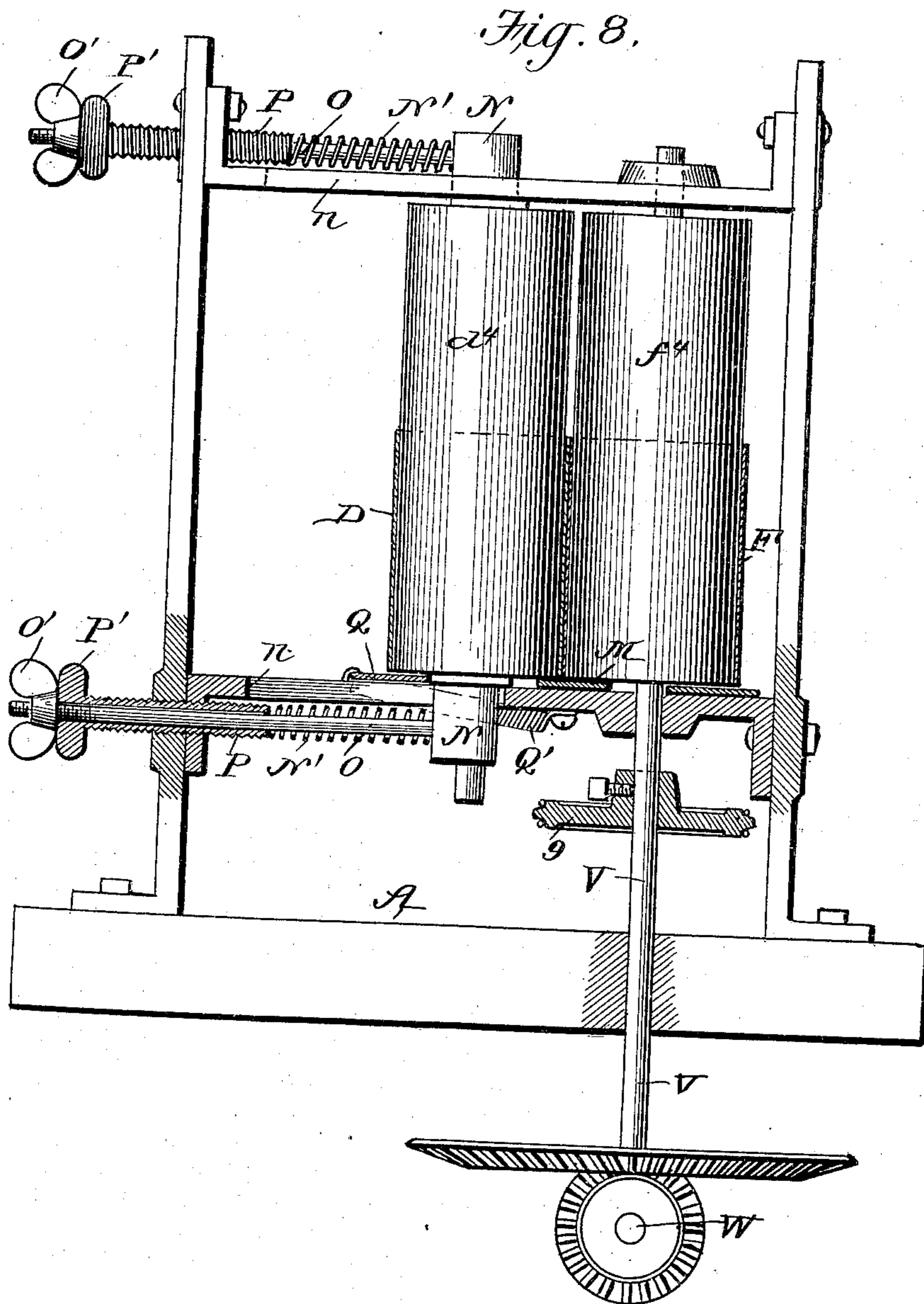
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6 Sheets—Sheet 6.



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# UNITED STATES PATENT OFFICE.

HARRY E. GAVITT, OF TOPEKA, KANSAS.

## ENVELOP-SEALING MACHINE.

SPECIFICATION forming part of Letters Patent No. 709,761, dated September 23, 1902.

Application filed November 14, 1901. Serial No. 82,230. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY E. GAVITT, a citizen of the United States, and a resident of Topeka, in the county of Shawnee and State of Kansas, have made certain new and useful Improvements in Envelop-Sealing Machines, of which the following is a specification.

My invention is an improvement in machines for sealing envelopes, and has for an object, among others, to provide novel constructions by which to feed the envelopes into the machine, moisten the flaps thereof, turn such flaps, hold the flaps turned, and finally for pressing the flaps tightly to sealed position; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a top plan view thereof, a number of envelopes being in the hopper with the flaps raised in position to be fed into the machine. Fig. 3 is a horizontal section of the machine on about line 3 3 of Fig. 1. Fig. 4 is a horizontal section on about line 4 4 of Fig. 1. Fig. 5 is a vertical cross-section on about line 5 5 of Fig. 1. Fig. 6 is a detail horizontal section on about line 6 6 of Fig. 5. Fig. 7 is a detail vertical cross-section on about line 7 7 of Fig. 1. Fig. 8 is a vertical cross-section on about line 8 8 of Fig. 1.

In carrying out my invention I provide a suitable base A, on which at one end I support the hopper B. In operation the envelopes are supplied to the hopper and are carried thence by an infeed-belt C and cooperating devices past a moistening device and then to a flap-turner, by which the previously-moistened flap is turned down, and is delivered to a holding device, which holds the flap turned down, but still not pressed to sealing position, during a portion of its travel through the machine, and the flap is finally pressed to sealed position and is delivered from the machine sealed ready for mailing. In effecting these results I employ, as before stated, the infeed-belt C and in connection therewith provide a main carrier-belt D and intermediate carrier-belt E and a sealing-belt F and in connection with said belts employ a driving means and supporting and adjusting means, which will be described more in detail hereinafter. From the hopper the en-

velops are delivered to the moistening device and passed thence to the flap-turner. The feeding and moistening devices constitute important features of my invention and will now be described.

The hopper B has a base-plate B', above which extends the infeed-belt C, one run of which constitutes one side of the hopper. The opposite side of the hopper is formed by the plate G, which has the outer wing G' extending approximately parallel with the infeed-belt and the inwardly-projecting wing G<sup>2</sup>, which converges toward the rear end in the direction of the infeed-belt and is adjustably supported at G<sup>3</sup> by means of a thumb-nut and screw operating in connection with a slotted carrying-bar, as will be understood from Figs. 2 and 4, to permit the adjustment of the delivery end of the hopper-plate to serve as a gage to regulate the discharge of the envelopes to the moistening devices. By adjusting this side plate G the machine may be adapted to feed envelopes of different thicknesses, thus adapting the machine for use in connection with envelopes of any ordinary bulk. The infeed-belt C may preferably be supplied with narrow strips of rubber C' or other suitable material, which will increase its hold upon the envelopes and aid in feeding the envelop to the moistening devices. I also provide an infeed-roller H, which extends transversely at the base of the hopper and projects slightly above the upper face of the face-plate of such hopper, so it will operate upon the lower edges of the envelopes and aid in feeding the same forward to the moistening devices. This roller H is driven at comparatively slow speed by extending its shaft H' and providing it with a friction-pulley H<sup>2</sup>, which bears upon a wheel H<sup>3</sup>, which wheel is driven by mechanism presently described.

From the foregoing it will be noticed I provide feeding mechanism which includes the infeed-belt, the transverse roller, and the hopper construction cooperating therewith and including a side plate which is adjustably supported so it can be set to operate as a gage, allowing but one envelop to pass of any ordinary bulk.

The belt C is supported on front and rear rollers C<sup>2</sup> and C<sup>3</sup>, which are driven by mech-

anism presently described. I find it desirable to brace the inner run of the belt C by means of a plate C<sup>4</sup> so such run of the belt is held up to its work and will not be forced out of alignment by the envelops in feeding the same to the moistening-roller. The shaft of the roller C<sup>3</sup> is extended upward and supports the moistening-roller I, which may be covered, as shown, by canvas I' or other suitable absorbent covering, so it will operate efficiently in moistening the flaps of the envelops. Moisture is supplied to the feed-roller I by a sponge J, held in a suitable carrier J' in the form of a can, having one side at J<sup>2</sup> open, so the sponge can be in direct contact with the moistening-roller I, as will be understood from Figs. 2 and 6. I support the sponge-carrier J' on the framing preferably above the infeed-belt and provide it with a discharge-tube j<sup>2</sup>, through which the surplus moisture can be discharged and delivered at J<sup>3</sup> to a suitable vessel J<sup>4</sup>, from which it can be returned to the drip-can J<sup>5</sup>, which has a faucet J<sup>6</sup>, which can be regulated to discharge water to the sponge in any desired quantity. The raised flaps are pressed against the moistening-roller by the roller K, which stands opposite the roller I and is journaled in a carrier-frame K', which may be adjusted, by means of a screw K<sup>2</sup>, to bear with any degree of force against the moistening-roller and by pressing the flap firmly there-against insure the moistening of the flap as desired.

It will be noticed, especially in Fig. 4, that the rollers C<sup>2</sup> and C<sup>3</sup> of the infeed-belt are in line with the rollers E', E<sup>2</sup>, and E<sup>3</sup> of the intermediate carrier-belt and with the rollers f', f<sup>2</sup>, f<sup>3</sup>, and f<sup>4</sup> of the sealing-belt, and the shafts of the said rollers from C<sup>2</sup> to f<sup>4</sup> project downward from the rollers and are provided with sprocket-wheels 1, 2, 3, 4, 5, 6, 7, 8, and 9, (see Fig. 3,) which are meshed by the sprocket-chain L, which is guided around idlers 10, (see Fig. 3,) so it can be properly tightened. This sprocket-chain L also meshes with the pulley H<sup>3</sup>, and so drives the base-roller H, operating within the hopper, as before described. The main carrier-belt is passed around the front roller D<sup>3</sup> and the rear roller d<sup>4</sup> and passes between its ends along the rollers D', D<sup>2</sup>, d, d', d<sup>2</sup>, and d<sup>3</sup>. As best shown in Fig. 4, the roller D<sup>3</sup> is opposite the roller C<sup>3</sup>, the roller D<sup>2</sup> is opposite the roller E<sup>2</sup>, roller D' opposite roller E', the roller d is opposite the roller E<sup>3</sup>, and the rollers d', d<sup>2</sup>, d<sup>3</sup>, and d<sup>4</sup> are opposite, respectively, the rollers f', f<sup>2</sup>, f<sup>3</sup>, and f<sup>4</sup>. The inner run of the belt E between the rollers E<sup>2</sup> and E' and E' and E<sup>3</sup> is braced by means of plates e, and at the base of the rollers supporting the main carrier-belt, the intermediate carrier-belt, and the sealing-belt I provide a plate M, upon which the lower edge of each envelop rests as it passes between the belts, as will be understood from Fig. 4. This plate M receives the lower edge of the envelop from the base-plate of the hopper and supports the envelop in its

travel between the belts. The rollers D<sup>3</sup>, D<sup>2</sup>, D', and d to d<sup>4</sup> are not positively driven, but are caused to turn by their opposing rollers or the belts over which they pass, and the said rollers D<sup>2</sup>, D<sup>3</sup>, D', and d to d<sup>4</sup> are each adjustably supported and also yieldingly supported so their tension may be varied by mechanism which is best shown in Fig. 8, and the description of the adjusting and tension devices of one roller, as shown in Fig. 8, will answer for all. The rollers are supported or journaled in boxes N, and the upper and lower boxes are each connected with a rod O, which passes outward through a hollow bolt P, which is threaded in the framing and has a head P', by which it can be turned, the outer ends of the rods O being threaded to receive the winged nuts O', springs N' being arranged to bear between the boxes N and the inner ends of the hollow bolts P, as shown in Fig. 8. It will be noticed the boxes N are slidable in slotted openings n in cross-bars of the framing, so the rollers can be adjusted outward away from their opposing rollers when desired, and by means of the bolts P and O the boxes can be adjusted and the tension varied as may be desired. Plates Q underlie the outer run of the main carrier-belt and the rollers of such belt and are pressed normally inward by the springs Q', arranged at the opposite ends of the plate Q, as shown.

It will be noticed, especially in Figs. 1 and 7, that the intermediate carrier-belt E is narrower than the main carrier-belt D, so the said belt E will only engage the lower portion of the envelop or that portion below the flap, so the belt E will only operate to feed the envelop between the infeed-belt and the sealing-belt or during the travel of the envelop through the flap-holder R after the envelop leaves the flap-turner S. The flap-turner is preferably formed of sheet metal and secured at its upper end at S' to the framing (see Fig. 7) and depends thence and is twisted toward its opposite end S<sup>2</sup>, so its front face presents a surface which curves both laterally and rearwardly, as will be understood from Figs. 1 and 7, so the contact of the flap with the turner will operate to throw the flap over toward sealed position. The flap-holder R extends between the turner S and the inner end of the sealing-belt F and is preferably in the form of an inverted U in cross-section (see Fig. 7) and flares slightly at its front end or end next to the flap-turner, as shown in Figs. 1 and 2. It is preferred to divide the holder at R' into two sections and to support it from the upper framework by means of hangers R<sup>2</sup>, fitted in openings R<sup>3</sup> in the framing and secured by screws R<sup>4</sup>, permitting the convenient adjustment of the hangers up and down to set the flap-holder higher or lower, as may be desired. It will be noticed, especially in Fig. 1, that the front end of the plate e for supporting the inner run of the belt E is extended upwardly at e' nearly to the flap-turner and lies between the flap and the body of the

envelop as the flap is turned by the turner S, and so prevents the said flap from moving at once into sealed position.

A stripper U is secured at U' to the framing and has its end U<sup>2</sup> arranged adjacent to the inner end of the inner run of the infeed-belt C and operates to strip the envelop from the infeed-belt and direct it to the space between the belts D and E, as will be understood from Fig. 4 of the drawings.

In applying power to the machine the shaft of the roller f<sup>3</sup>, as shown, or of any other roller in gear with the sprocket-chain L may be extended, as shown at V in Figs. 1 and 8, and geared by bevel-gearing with a counter-shaft W, which may be driven in any suitable manner.

In operation when the parts are in the position shown in Figs. 1 and 4 and the adjustable plate of the hopper has been set to suitable position envelops may be supplied to the hopper with the flaps upturned and moved inward to position where the envelop next the infeed-belt will be operated upon by said belt to feed it to the rollers D<sup>3</sup> and C<sup>3</sup>, where it will be operated upon by the belts C and D and will be carried between the rollers K and I, being moistened by the latter. The envelop will then be stripped by the stripper U and passed to a point between the rollers D<sup>2</sup> and E<sup>2</sup> and then be acted on by the flap-turner, which will throw the flap over as it passes through the flap-holder, which will hold the flap in turned position without pressing it into seal with the body of the envelop until the envelop reaches the sealing-belt F, which will press the flap tightly to sealed position. As before suggested, the belt E is narrower than the belts D and F, so the said belts E will not press the envelop to sealed position, but will simply operate to feed the envelop, leaving the flap unsealed until it reaches the sealing-belt F. This permits the mucilage or other adhesive substance to become properly softened by the moisture before the flap is pressed to sealed position. In feeding the envelops into the machine about thirty to fifty may be placed in the hopper between the gage-plate G and the infeed-belt with their flaps turned up and with their lower edges resting upon the roller H. The gage will prevent more than one envelop from being discharged from the hopper by the infeed-belt, and more envelops may be supplied from time to time as the hopper empties itself.

The machine will seal from eight thousand to fifteen thousand envelops per hour, of any ordinary bulk, mixed sizes, and specially adjusted will seal envelops at about the same rate up to one-half inch in thickness.

It will be understood that the gage G will allow only one envelop of any ordinary thickness to pass at a time. When the envelops are all unusually thick, the gage can be specially adjusted for them.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In a machine for sealing envelops the combination of the hopper provided at one side with an infeed-belt and at its opposite side with a gage-plate whose rear end may be adjusted relatively to the infeed-belt, means for operating the infeed-belt, and means for moistening, turning and sealing the flap, substantially as set forth.

2. In a machine for sealing envelops a hopper arranged to support envelops edgewise and provided at one side with an adjustable gage-plate which may be set laterally with relation to the thickness of the envelops to be sealed, substantially as set forth.

3. An envelop-sealing machine having its hopper arranged to support envelops edgewise and provided at one side with a gage-plate standing at an inclined angle to the direction of length of the machine, means for adjustably supporting the gage-plate and means for feeding the envelops substantially as set forth.

4. In an envelop-sealing machine a hopper provided transversely across its bottom with the feed-roller projecting into the hopper and arranged to operate upon the lower edges of the envelops, means for operating the said roller, and gage devices for controlling the discharge of the envelops from the hopper substantially as set forth.

5. A machine substantially as described provided with means for moistening and sealing the flaps of the envelops and having a hopper provided at one side with an adjustable gage-plate, at its opposite side with an infeed-belt, and at its bottom with a transverse feed-roller, substantially as set forth.

6. In an envelop-sealing machine the combination with a suitable framing of the hopper provided at one side with an adjustable gage-plate and at its opposite side with the infeed-belt, the rollers supporting the infeed-belt, the intermediate carrier-belt and the sealing-belt in line with each other and in rear of the infeed-belt, the main carrier-belt lying opposite the sealing-belt, the intermediate belt and the inner end of the infeed-belt, means for driving the belts, flap-turning devices, and flap-moistening devices substantially as set forth.

7. In a machine substantially as described the combination of means for feeding the envelops and for moistening the flaps thereof, the devices for turning the flaps toward sealed position, the main carrier-belts, the intermediate carrier-belt opposite and extending parallel to the main belt, and the sealing-belt opposite the main carrier-belt in rear of the intermediate belt, the intermediate belt being of less width than the sealing-belt substantially as set forth.

8. In a machine substantially as described the combination of the hopper provided at one side with an adjustable gage-plate and at its opposite side with an infeed-belt and

at its bottom with a transverse feed-roller, a moistening device at the discharge end of the hopper, flap-turning devices in rear of the moistening device, the main carrier-belt, the intermediate carrier-belt, the sealing-belt, and means for driving the belts substantially as set forth.

9. In a machine for sealing envelopes the combination of the moistening device, means for feeding the envelopes to and past the moistening device, sealing devices in rear of the moistening device, a flap-holder arranged between the moistening device and the sealing devices and means at the front end of the flap-holder by which the flap may be turned toward the sealing position, substantially as described.

10. The combination in an envelop-sealing machine of the hopper provided at one side with an adjustable gage-plate and at its opposite side with the infeed-belt, the sponge-holder at the discharge end of the hopper and provided with an opening in one side, the moistening-roller operating at one side in said opening and arranged to receive the flap of the envelop discharged from the hopper, the pressing-roller opposite the moistening-roller, and means for turning and sealing the flap substantially as set forth.

11. In an envelop-sealing machine the combination with devices for feeding and moistening the envelop, of a flap-turner in rear of the moistening devices and a channeled or U-shaped flap-holder in rear of the flap-turner, substantially as set forth.

12. An envelop-sealing machine comprising moistening devices, means for feeding the envelopes to the moistening devices with the flap turned up, flap-turning devices in rear of the moistening devices, and opposing belts in rear of the moistening devices and arranged with their runs vertically edgewise, substantially as and for the purposes set forth.

13. In an envelop-sealing machine the combination with means for moistening and turning the flaps, of the opposing carrier-belts, means for driving the belts on one side and devices for adjusting the opposite belt substantially as set forth.

14. In a machine for sealing envelopes the combination of the infeed-belt, the intermediate carrier-belt, and the sealing-belt and the rollers of said belts having shafts provided with sprocket-wheels, of the sprocket-chain meshing with the sprocket-wheels whereby to drive said belts, and the main carrier-belt, substantially as set forth.

15. In a machine substantially as described, the combination with the main framing, and the main carrier-belt and its rollers, of the bearing for said rollers slidable in the main frame, the tubular bolts threaded in the main frame, the rods passed through said tubular

bolts and secured at their inner ends to the bearings and provided at their outer ends with nuts, and the springs on said rods between the bearings and the tubular bolts, substantially as set forth.

16. The combination in a machine substantially as described of means for feeding the envelopes, moistening the flaps and turning said flap toward sealing position, the sealing-belt, an opposing belt, end rollers supporting said belts, and rollers operating within the belts between their end rollers and arranged to press the envelop successively as it is passed between the belts, substantially as set forth.

17. The combination in the machine substantially as described of the hopper having an infeed-belt, a base-roller and an adjustable gage-plate opposite the infeed-belt, the moistening-roller in rear of the discharge end of the hopper, flap-turning devices in rear of the moistening-roller, the main carrier-belt, the intermediate carrier-belt, and the sealing-belt, substantially as set forth.

18. A machine for sealing envelopes having a feed-hopper arranged to support envelopes edgewise and provided with a feed-roller extending at a right angle to the envelopes and adapted to operate upon the edges of the envelopes to feed the same lengthwise.

19. The combination in an envelop-sealing machine with belts for feeding and sealing the envelopes, of a flap-moistening roller and a pressing-roller opposite the moistening-roller, the latter being arranged above the plane of the carrier-belts and to operate upon the upturned flap of the envelop, and means for turning the flap toward sealed position, substantially as set forth.

20. A machine for sealing envelopes having a feed-hopper, an infeed-belt at one side thereof and arranged vertically edgewise whereby it may operate upon one face of the envelop and the transverse feed-roller extending across the bottom of the feed-hopper.

21. The combination in an envelop-sealing machine, of a longitudinally-extending flap-holder or trough, and mechanism at the front end of said holder by which to turn the flap toward the sealing position.

22. An envelop-sealing machine having a hopper adapted to feed envelopes longitudinally edgewise and provided at one side with a gage-plate extending diagonally to the direction of feed of the machine, and adjustably in the direction of its length whereby its longitudinal movement will operate to adjust the gage-plate laterally, substantially as shown and described.

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