

M. A. STEWART.
ENVELOP MACHINE.
APPLICATION FILED JULY 25, 1907.

962,927.

Patented June 28, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

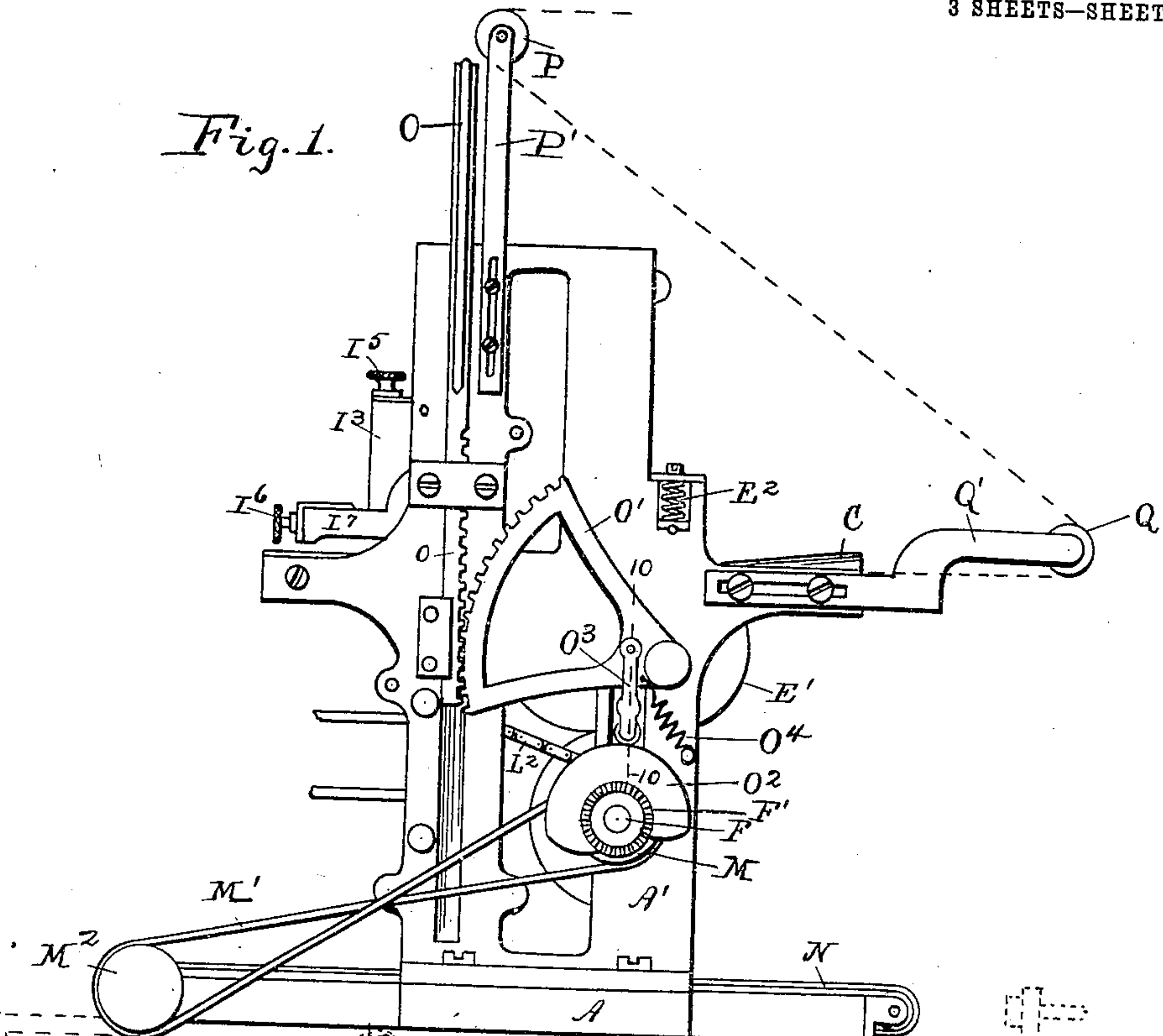
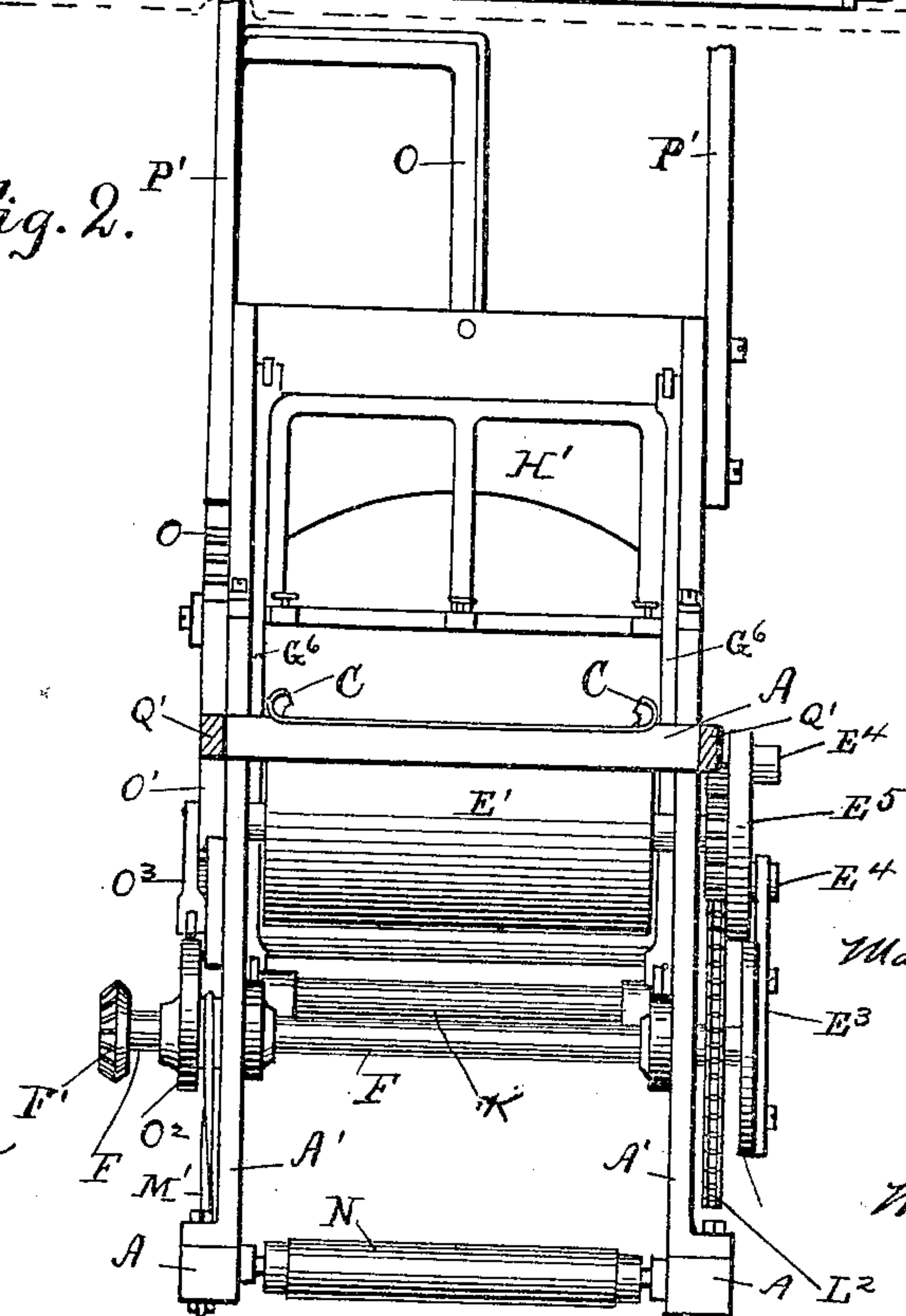


Fig. 2.



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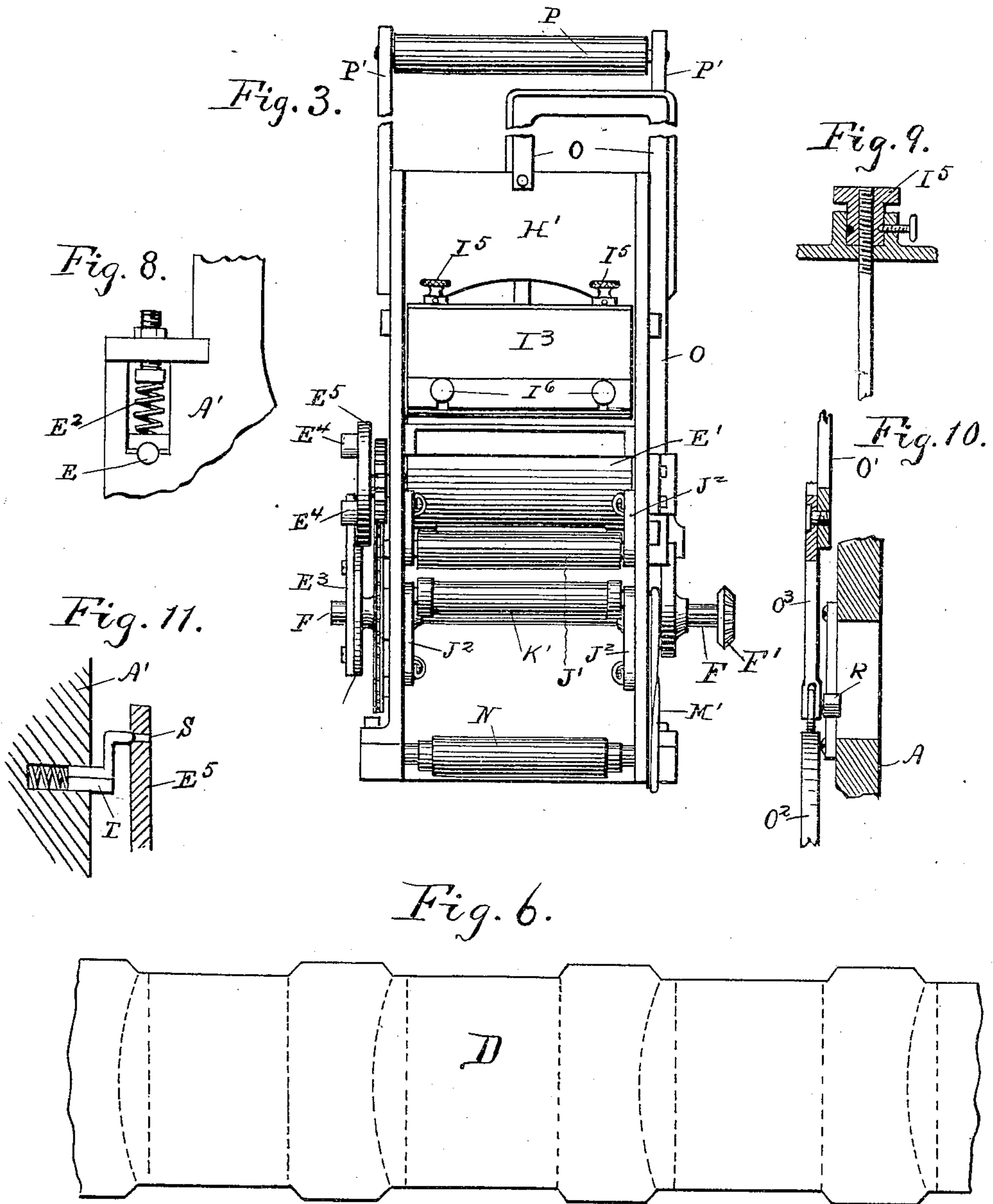
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3 SHEETS—SHEET 3.

Fig. 4.

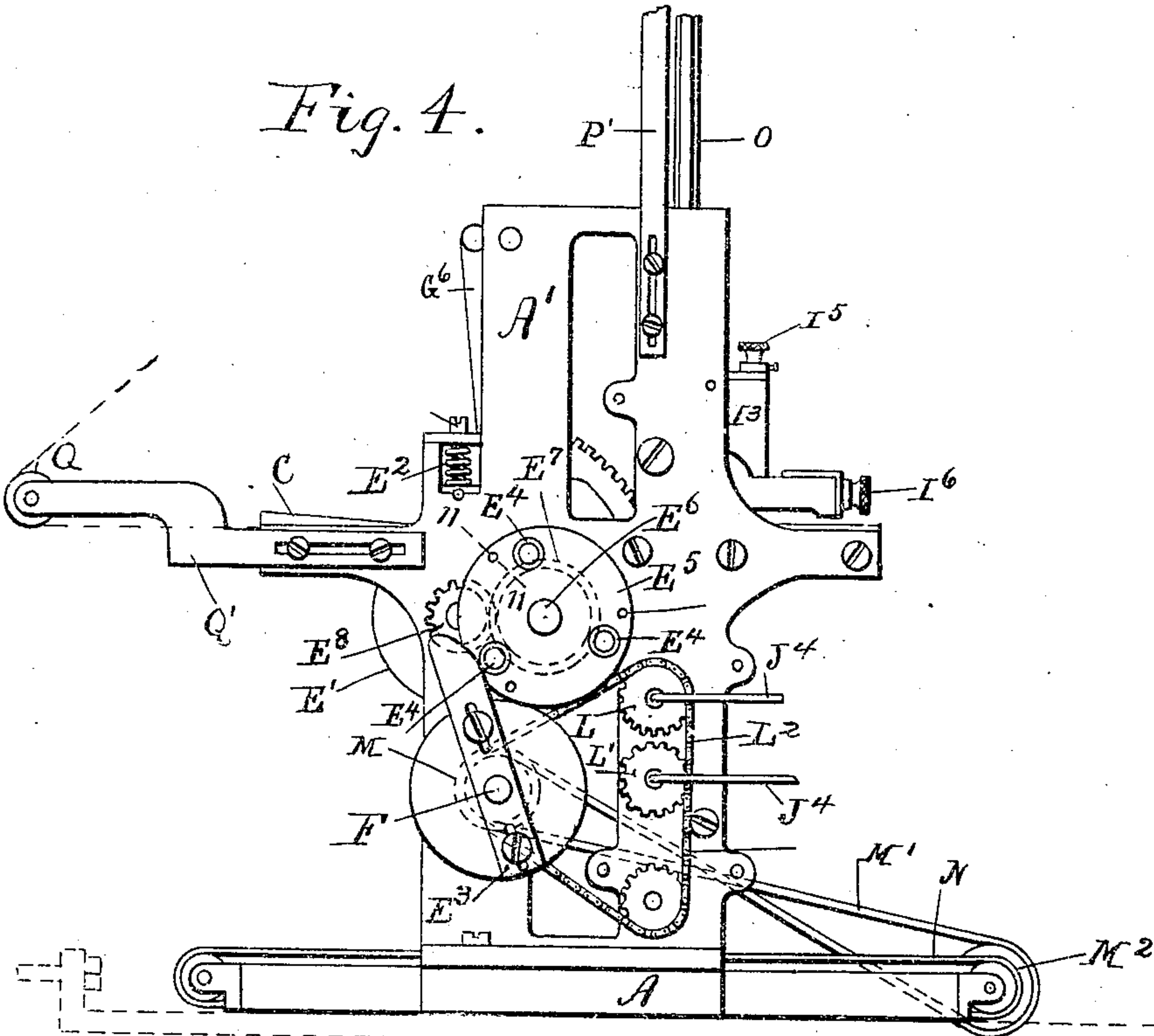
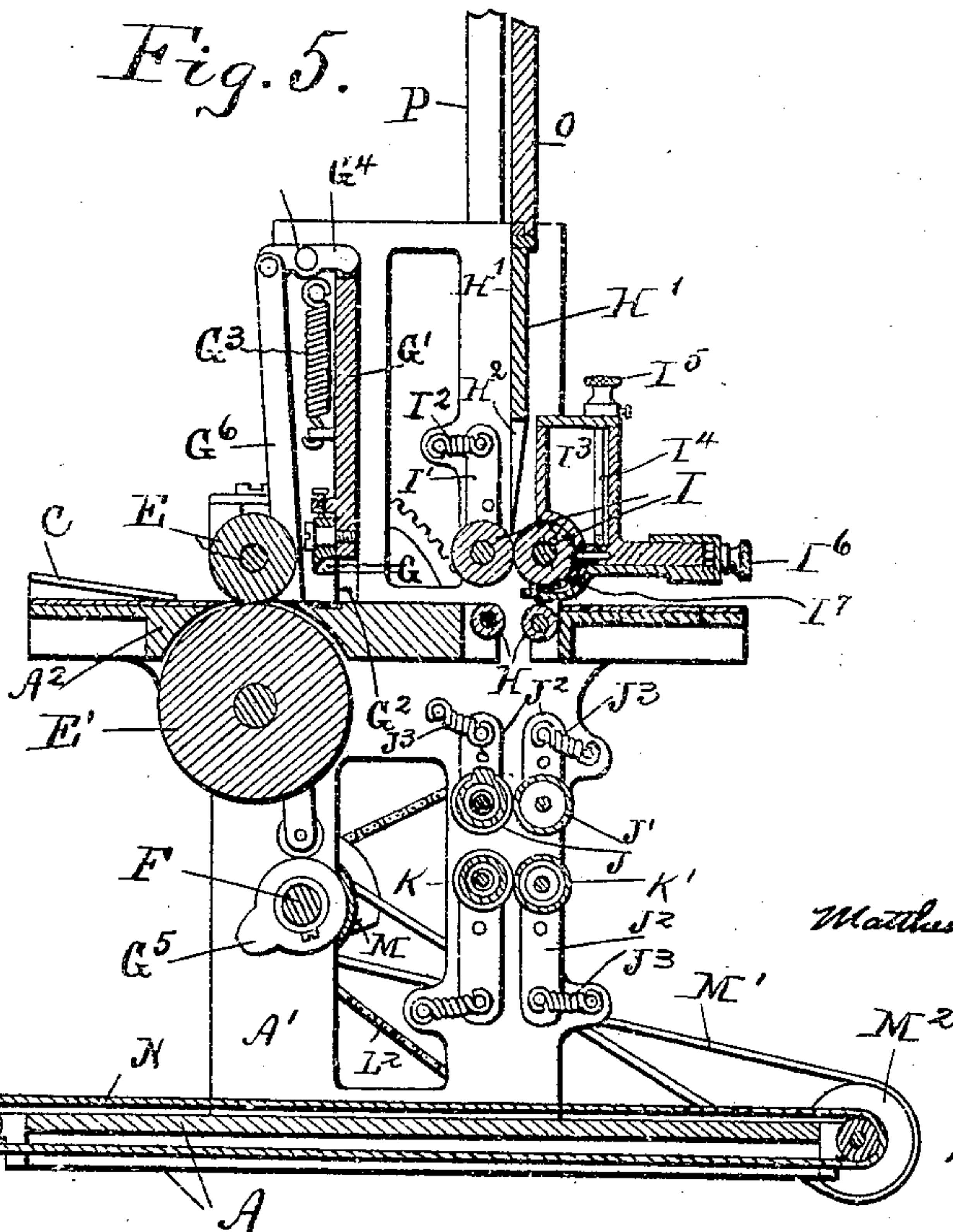


Fig. 5.



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UNITED STATES PATENT OFFICE.

MATTHEW A. STEWART, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE MATT STEWART COMPANY, OF MEMPHIS, TENNESSEE, A CORPORATION OF MAINE.

ENVELOP-MACHINE.

962,927.

Specification of Letters Patent. Patented June 28, 1910.

Application filed July 25, 1907. Serial No. 385,524.

To all whom it may concern:

Be it known that I, MATTHEW A. STEWART, citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Envelop-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to manufacturing envelopes from a previously formed strip, the functions of the machine being to fold the strip, divide it, gum and again fold, and deliver the envelopes upon a carrier.

In the accompanying drawings, Figure 1 is a side elevation of the machine. Fig. 2 is an elevation looking from the right in Fig. 1. Fig. 3 is a similar view looking from the left. Fig. 4 shows that side of the machine opposite the side seen in Fig. 1. Fig. 5 is a vertical section in a plane substantially parallel to the sides seen in Figs. 1 and 4. Fig. 6 shows a portion of the formed strip, or stock, used by the machine. Fig. 7 is a side view of a portion of a folding blade. Fig. 8 is a detail view of a feed-roller adjusting device. Fig. 9 is a detail view of a portion of paste apparatus. Fig. 10 is a section on the line 10—10, Fig. 1. Fig. 11 is a section on the line 11—11, Fig. 4.

The machine is usually employed as an attachment for strip forming and printing apparatus forming no part of the invention and hence is shown as supported by attaching bars seen only in dotted lines.

In the drawings, A, A' represents a suitable frame and A² a horizontal table fixed in the frame and having at its front side curved guides, C, adapted to fold inward the lateral wings of a continuous formed strip, D, (Fig. 6) which has been properly scored for folding. This stock strip, on leaving the guides, passes between feed rollers, E, E', the upper of which is pressed down upon its companion by an adjustable spring E², shown most clearly in Fig. 8, while the lower roller is intermittently rotated from a power shaft F, itself actuated in any desired manner, as by a gear F'. The motion is transmitted from the shaft by an arm E³ fixed to or carried by the shaft, in position to strike, in each revolution, one of three roller studs E⁴ upon the face of a disk E⁵ borne by a stud E⁶ upon the frame, the disk being rigidly connected with a gear E⁷

which meshes with a pinion E⁸ upon the shaft of the feed roller. The roller studs are 120° in angular distance from each other, and it is obvious that each revolution of the shaft F turns the disk through one third of a revolution. The parts are so proportioned that this movement advances the stock strip through a distance equal to the length of an envelop blank.

After each feeding movement, the strip is severed by a knife G secured to a slide G' which moves in a way G² and is normally held at its highest point by a spring G³. The slide is forced down at intervals by the pressure of the free end of a centrally pivoted lever, G⁴, forcibly swung upon its pivot by a cam G⁵ upon the shaft F acting through a link G⁶ connected with the outer end of the lever. The blank thus severed lies upon two slightly separated parallel rollers, H, nearly flush with the table and at right angles with the path of the strip, and at the proper time it is gummed, folded, and pushed down between the rollers by a blade H' having at its lateral edges depending portions H² projecting below the central portion of its edge. Above the rollers H are paste rollers I upon opposite sides of the path of the blade, one of them being mounted in pivoted links I' and normally pressed against its neighbor by a spring I². Alongside the other roller is fixed a paste receptacle I³ having in its bottom a delivery slot controlled by a wedge I⁴ which is adjusted at each end by thumb nuts I⁵. The paste escaping through the slot falls upon a curved slide I' rigidly connected with the paste receptacle or as shown, integral therewith, conforming to the curvature of the roller I and so located that when moved horizontally toward or from the roller, the upper part of the passage between the two is correspondingly narrowed or widened. The slide is adjusted with respect to the roller by screws I⁶ rotating without advance in a fixed member and in threaded engagement with the slide. As the blade descends, it forces the paste rollers apart and receives from them paste upon the marginal portion of its body and upon the downward projections. The descent of the blade continues so far as to push the folded blank between a pair of rollers J, J', which carry it to another pair of rollers K, K' and during this descent the lower margin of the body of the

blade applies gum to the marginal portion, or sealing flap, of one side of the blank while the projecting portions of the fork-like blade gum the end portions of the blank, which in this case have been previously folded inward. The four rollers are mounted in pivoted links J^2 , and those of each pair are yieldingly pressed together by the action of springs, J^3 .

One roller of each pair may be mounted in fixed bearings if desired, and one roller of the upper pair is centrally diminished so that as the folded blank passes only its pasted margins are pressed. One roller of each pair is hollow and receives steam or other heating agent through axial pipes, J^4 , in a well known manner. Two corresponding rollers of the two pairs are driven in the same direction by means of sprocket wheels L , L' upon their shafts and a sprocket chain L^2 from a sprocket wheel upon the shaft F . The shaft F also bears a pulley M which by means of a belt M' and a pulley M^2 drives an endless conveyer belt N upon which the completed envelops are delivered by the rollers K , K' and by which they are carried away.

The stock strip D may be and usually is brought to the proper point for entering the guides C by passing it over idler rollers P and Q , borne, respectively, by adjustable arms P' and Q' fixed to the frame.

The folding and pasting blade moves in the manner already described in a suitable way in the frame and is raised therein by means of a rigid rack bar O secured to its upper edge and carried laterally outward and down alongside the frame A' , where it is engaged by a segmental gear O' pivoted to the frame and actuated by a cam O^2 upon the shaft F , the cam acting through a link O^3 to overcome the resistance of a strong spring O^4 which tends to force the segment to swing downward. The link O is guided in its movements by a roller R , upon its rear face, running in a way on the frame A' .

In order that the disk E^5 may stop accurately at the end of each of its forward movements and remain fixed until it is again forced forward, I provide it with sockets in its inner face and at equal angular distances apart and mount in a recess in the frame A' a non-rotating spring bolt T having a conical or rounded end to enter the recesses in succession as the disk rotates and hold the latter against accidental rotation and in exactly the proper position.

What I claim is:

1. In apparatus of the class described, the combination with means for folding inward the lateral portions of a stock strip and advancing the strip intermittently, of means for cutting envelop blanks from the end of the strip, a folding and pasting blade provided with lateral depending portions ar-

ranged to reciprocate across the path of the blanks, devices arranged to apply paste to one side of the blade as it approaches the blanks, and a pair of co-acting yielding rollers in position to receive the blade and blank as the former folds and pushes the latter from its initial position.

2. The combination with means for folding inward the lateral portions of a stock strip and intermittently advancing the latter, of means for cutting blanks from the end of the advanced strip, a folding and pasting blade arranged to reciprocate across the path of the blanks, a roller arranged to apply paste to the blade as it approaches the blanks, a pair of co-acting, yielding rollers in position to receive the advancing blade and blank, and a second pair of parallel rollers in position to engage the folded edge of the blank so advanced and prevent its return with the retreating blade.

3. The combination with a suitable table having a narrow opening for the downward passage of envelop blanks, of means for at intervals feeding envelop blanks to position over said opening, a fork-like blade arranged to fold the blanks and push them through said opening in succession, and means for applying gum to those portions of the blade that meet parts of the blank to be gummed.

4. In an envelop machine, the combination with a pair of rollers yieldingly pressed together and touching near their ends only, of a blade arranged to reciprocate in the plane passing between the rollers, to push envelop blanks between the same, and means for applying paste to the face of said blade.

5. The combination with means for folding inward the lateral portions of a stock strip, of feed rolls engaging the strip, a plate rotated by the shaft of one of the rolls and provided with a series of lateral projections spaced at equal intervals about the shaft, a second parallel shaft, a rigid arm rotating with the second shaft in the plane of said projections into and out of their common path to push them successively through equal angular distances, means for cutting a blank from the strip after each advance, a folding and pasting blade, provided with lateral depending portions, arranged to reciprocate across the path of the blanks, devices arranged to apply paste to one side of the blade as it approaches the blanks, and a pair of co-acting yielding rollers in position to receive the blade and blank as the former folds and pushes the latter from its initial position.

6. The combination with a paste roller, of a curved paste-applying member conforming to the curvature of the roller's surface, means for at will varying the distance of the paste applying member from said roller, and means for supplying paste in said member.

7. The combination with strip feeding rolls, of a plate rotated by the shaft of one roll and provided with a series of projections equally spaced about the shaft and
 5 with a corresponding series of recesses, an arm arranged to rotate bodily in the plane of the projections about an axis at one side of said shaft into and out of their path to push them forward successively, a spring
 10 pressed stud having a rounded end in position to enter said recesses in succession, as the arm releases the plate, and urge the plate to stop in exact position, means for cutting a blank from the strip after each
 15 movement of the feed rolls, a folding and pasting blade arranged to reciprocate across the path of the blanks, a roller arranged to apply paste to the blade as it approaches the blanks, a pair of co-acting yielding rolls in
 20 position to receive the advancing blade and blank, and a second pair of rollers in position to engage the folded edge of the blank so advanced and prevent its return with the retreating blade.

8. The combination with a suitable table
 25 having a narrow opening for the downward passage of envelop blanks, of means for at intervals feeding envelop blanks to position over said opening, a fork-like blade ar-
 30 ranged to fold the blanks and push them through said opening in succession, means for gumming those portions of the blade that meet parts of the envelop blank to be gummed, and a pair of compressing rollers
 35 arranged to receive the blade and folded blank carried thereby and adapted to press

against the blade the parts only that are to receive the gum.

9. The combination with a pair of internally heated rollers, of a fork-like reciprocating blade arranged to fold blanks and thrust them between said rollers, and means for applying gum to one face of said blade, one of said rollers being centrally cut away, whereby the portion gummed by the forked
 40 part of the blade receives the entire pressure of the rollers, substantially as set forth. 45

10. The combination with a suitable table provided with a narrow opening, of parallel rollers mounted in the opening and approxi-
 50 mately flush with the table, means for intermittently advancing a formed envelop strip over said rollers, means for folding inward the lateral margins of the strip as it advances to position, means for severing from
 55 the end of the strip an envelop blank lying over said rollers, a suitable blade arranged to fold the blank and push it between said rollers, means for applying paste to the proper parts of the blade, a pair of rollers
 60 in position to receive the folded blank as it is pushed down by the blade, means for rotating the rollers last mentioned, and a conveyer in position to receive the envelops discharged by the rollers. 65

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

MATTHEW A. STEWART.

Witnesses:

FREDERICK K. DENNY,
 WILBUR F. OSBORN.