

No. 850,880.

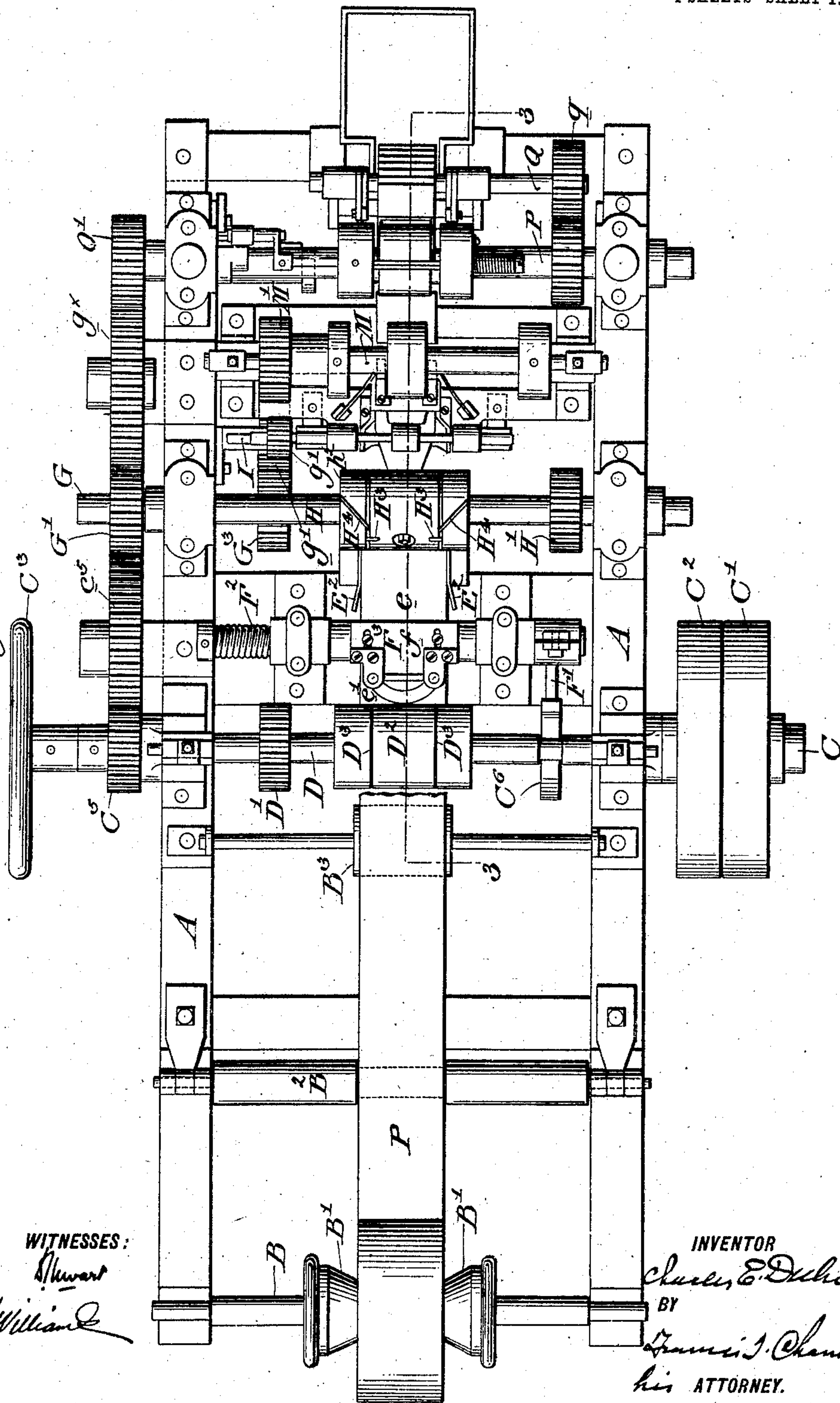
PATENTED APR. 16, 1907.

C. E. DULIN.
ENVELOP MACHINE.

APPLICATION FILED AUG. 1, 1906.

4 SHEETS—SHEET 1.

Fig. 1.



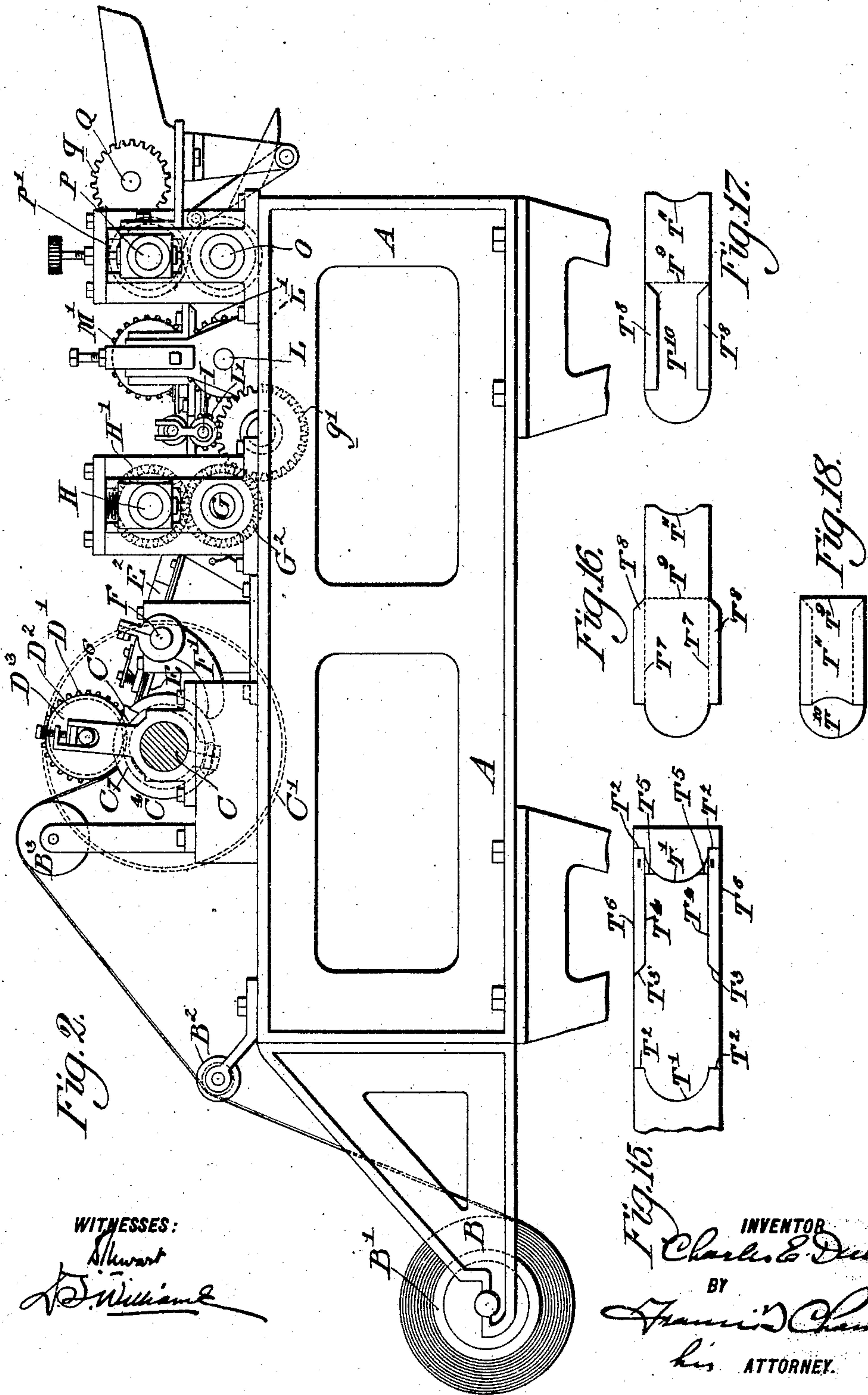
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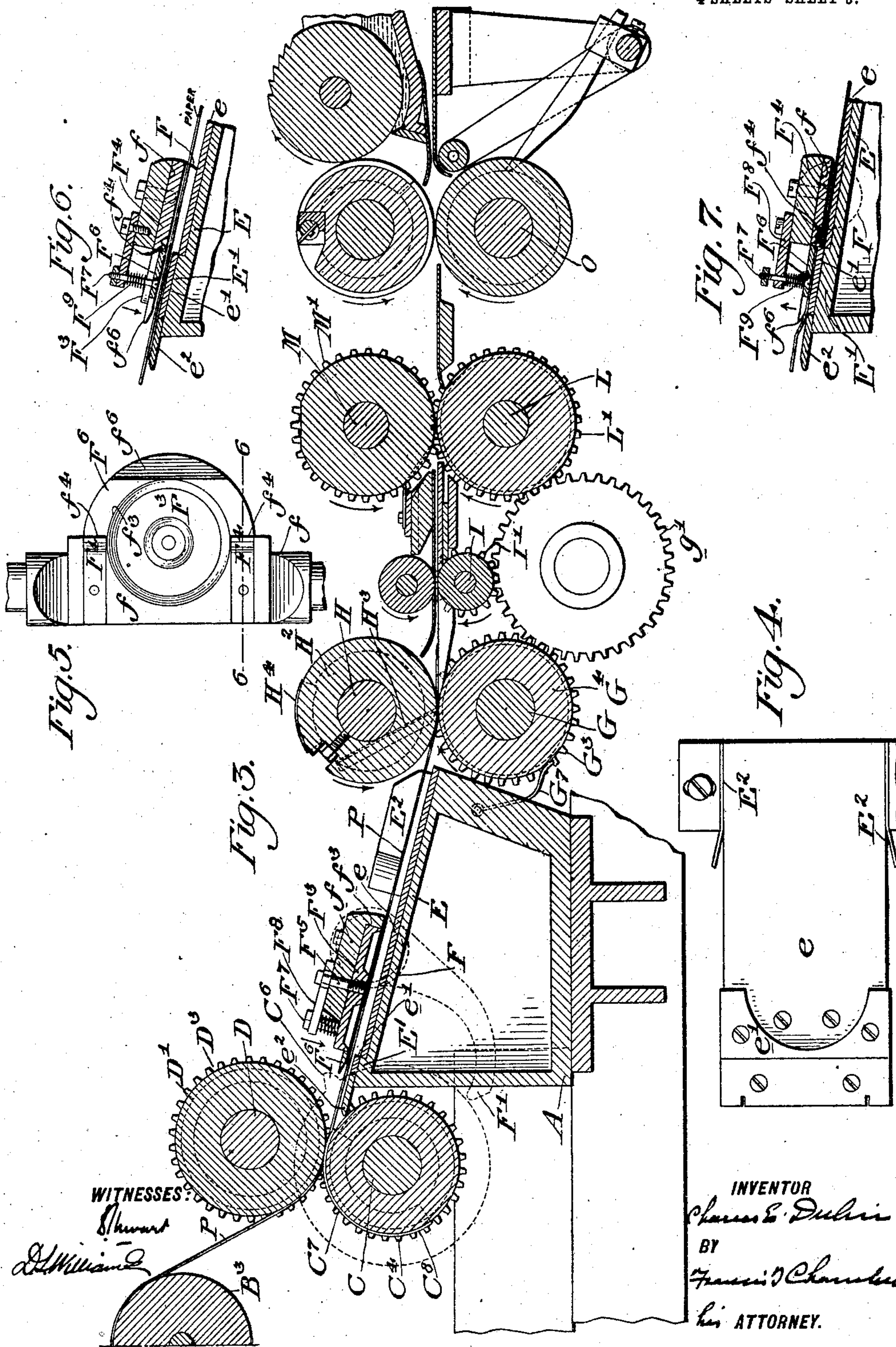
4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.



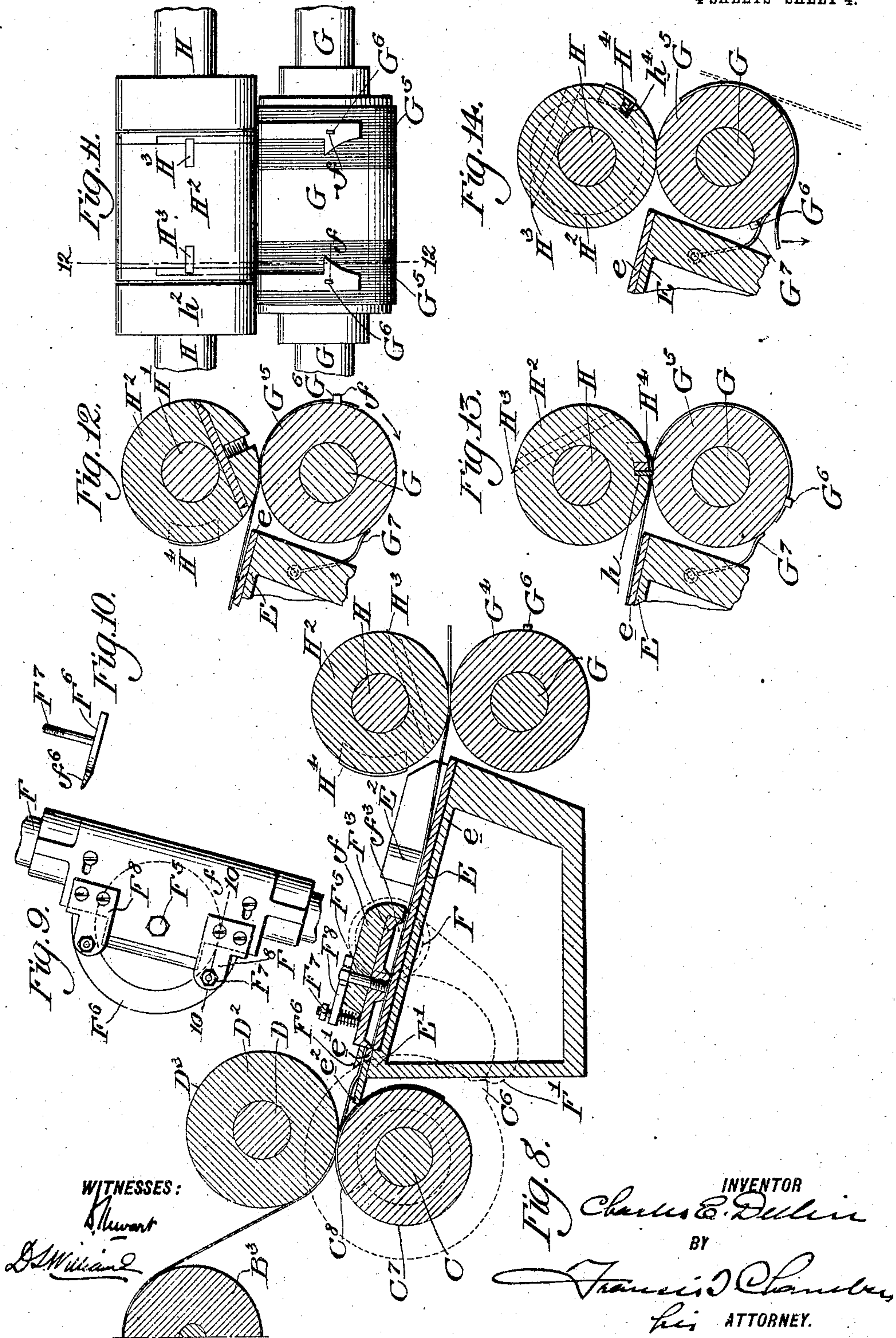
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4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

CHARLES E. DULIN, OF NORTH TONAWANDA, NEW YORK, ASSIGNOR TO
UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ENVELOP-MACHINE.

No. 850,880.

Specification of Letters Patent.

Patented April 16, 1907.

Original application filed November 5, 1901, Serial No. 81,116. Divided and this application filed August 1, 1906. Serial No. 328,648.

To all whom it may concern:

Be it known that I, CHARLES E. DULIN, a citizen of the United States of America, residing in North Tonawanda, in the county of Niagara and State of New York, have invented a certain new and useful Improvement in Envelop-Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My present invention relates to machinery for manufacturing envelops from a continuously-fed strip of paper, and particularly to the mechanism for cutting envelop-blanks from said strip.

The object of my invention is the provision of blank-cutting mechanism suitable for use in rapidly and efficiently manufacturing a peculiar style of envelop.

The nature of my improvements will be best understood as described in connection with the drawings, in which they are illustrated, and in which—

Figure 1 is a plan view of the machine; Fig. 2, a side elevation with the belt-wheels on the main driving-shaft removed. Fig. 3 is a sectional elevation through the operative parts of the machine, taken on the line 3 3 of Fig. 1. Fig. 4 is a plan view of the table upon which the web of paper is severed into lengths to be formed into envelops. Fig. 5 is an inverted view of the oscillating cutter used to sever the blanks in connection with the table of Fig. 4. Fig. 6 is a longitudinal section through the cutter and table, taken as on the line 6 6 of Fig. 5, showing the cutter in elevated position. Fig. 7 is a similar sectional view showing the cutter in depressed position. Fig. 8 is a sectional view similar to that shown in Fig. 3, showing the knife in depressed position. Fig. 9 is a top view of the oscillating cutter. Fig. 10 is a side view of the stripper attached to the cutter, taken as on the line 10 10 of Fig. 9. Fig. 11 is a front view of the trimming-rolls. Fig. 12 is a cross-section through the trimming-rolls, taken on the line 12 12 of Fig. 11. Figs. 13 and 14 are sectional views of the trimming-rolls, showing their operation upon the sections of the paper strip. Fig. 15 is a plan view of the strip, showing the cuts made upon it in converting it into blanks to be manufactured into envelops. Fig. 16 is a view of the blank. Fig. 17 is a view of the

blank with its edges turned, and Fig. 18 a view of the complete envelop.

A indicates the frame of the machine; B, the shaft supporting cones B', upon which in turn the roll of paper is supported. From this roll the paper strip P is shown as leading upward over guide-rolls B² and B³ to the first pair of feed and slitting rolls, (indicated at D² C⁷), the said roll C⁷ being secured on the main driving-shaft C of the machine, to which are also secured fast and loose pulleys C' and C², a hand-wheel C³, a gear-wheel C⁴, which engages a gear-wheel D⁷ on the shaft D, to which is secured the upper feed-roll D². This upper feed-roll is, as shown, grooved at D³ D³, and the lower feed-roll C⁷ is provided with projecting knives C⁸, which extend into these grooves and which slit the paper on the lines T⁴ T⁴ of Fig. 15. The shaft C has also attached to it a cam (indicated at C⁶) and a second gear-wheel, (indicated at C⁵), which, through an intermediate gear c⁵, (see Fig. 1,) communicates motion to a gear G', secured to the shaft G, to which shaft is secured a gear-wheel G², driving, through the gear-wheel H', the shaft H and also a third gear-wheel G³, which communicates motion through the intermediate gear g' to the shaft I through its gear-wheel I' and to the shaft L through its gear-wheel L', said gear-wheel L' in turn actuating the shaft M through its gear M'. The gear-wheel G', before mentioned, in turn communicates motion through an intermediate gear-wheel g^x to the shaft O through its gear O', and this shaft in turn is provided with a gear-wheel which engages the gear-wheel P', secured to the shaft P, the said gear-wheel P' also engaging and driving a shaft Q through its gear q. All of the above parts, it will be observed, are continuously and positively in motion.

Returning now to the operative part of the machine, the slitting and feed rolls on the shaft C and D slit and deliver the paper over the table E, which near its upper end is formed with an upwardly-extending shoulder E', said shoulder supporting a knife-edge e' and a backwardly-extending receiving-plate, (indicated at e²), while the table proper, E, is shown as covered by a thin plate e and near its bottom edge is provided with lateral guide-blades, (indicated at E² E²). Extending across the table and supported in suitable bearings is the rock-shaft F of the oscillatory

cutter, having attached to it a lever-arm F' , which is held in contact with the cam C^6 by the action of a spring F^2 . (See Fig. 1.) As shown, the rock-shaft F is cut away, flattened, and somewhat extended at the center, as indicated at f , and to the under side of this flattened portion is secured what is preferably, as shown, a circular knife F^3 , having a downwardly-extending cutting edge (indicated at f^3) and secured to the oscillatory shaft by a central bolt, (indicated at F^5 .) This circular construction of the knife enables it to be angularly adjusted and fresh cutting edges brought into operation. Also secured to the flattened portion of the oscillatory shaft are the cutters or knives F^4 F^4 , having sharp cutting edges f^4 , fitting against the opposite sides of the circular knife F^3 . Extending close to the face of the knife F^3 and between the cutters F^4 is the stripper-plate F^6 , having its front end preferably bent slightly upward, as indicated at f^6 . This stripper-plate is by means of upwardly-extending pins and springs F^9 secured to fingers F^8 , extending out from the flattened portion f of the shaft, the springs holding the stripper normally flush with the knife-edge, but arranged to permit it to move upward when necessary.

The shape of the stationary cutter e' is shown in Fig. 4 and corresponds to the cutters F^4 and the portion of the circular cutter F^3 lying between these stationary cutters. The strip of paper is fed over the table E , and when a determined length has been fed forward the cam C^6 , acting on the arm F' , causes the rock-shaft F to move downward from the position shown in Fig. 6 to that shown in Fig. 7, severing the paper on the lines T' T^2 , as indicated in Fig. 15, the stripper F^6 holding the end of the strip against the top of the cutter e' , while the knives press the severed portion of the strip down to the surface of the plate E .

The elastic stripper, while holding the end of the strip against the top of the cutter e' , as described, prevents it from moving forward; but the feed-rolls are in constant operation, and there is consequently a slack formed between the feed-rolls and the stripper; but as soon as the upward movement of the knife, carrying with it the stripper, disengages the edge of the paper the elasticity of the paper causes it to spring forward, taking up the slack, so that the machine operates exactly as though there were no interruption in its feed.

Before the paper is severed, as above described, its forward end passing between the guides E^2 has come between the rolls H^2 and G^4 , which rolls are secured on the shafts H and G and act partly as feed-rolls and partly as trimming-rolls. The lower roll G^4 has a copper center, on each side of which are rawhide extensions, (indicated at G^5 G^5 , see Fig. 11,) and from these rawhide extensions extend pins, (indicated at G^6 G^6 .) The up-

per roll H^2 is made in three sections, the outer ones being indicated at h^2 h^2 and the inner one being angularly adjustable on the shaft. To the outer section h^2 of the roll are secured the knives H^4 H^4 , which make the cuts indicated at T^5 T^5 in Fig. 15, the operation of the rolls H^2 and G^4 being to sever from the blank the strips indicated at T^6 T^6 in Fig. 15 and complete the formation of the blank, as shown in Fig. 16.

As the blank is fed from the table E to the rolls G^4 and H^2 it is pressed down over the pins G^6 , which pass into the grooves between the roll-sections H^2 and h^2 and which hold the strips T^6 to the face of the roll G^4 as they are cut off from the blank, as shown in Fig. 11. These strips T^6 are finally stripped from the roll G^4 by the action of stripping-fingers G^7 . (Shown in action in Fig. 14.)

After the blanks are cut out in the manner hereinbefore described the parts T^8 of each blank are folded on the lines T^7 , and the portion of the blank T^{11} is folded back on the line T^9 against the part T^{10} of the blank and secured thereto by paste to form the completed envelop shown in Fig. 18.

I have not thought it necessary to describe in the present application the mechanism for folding and pasting the blank, as I have shown, described, and claimed this mechanism in my copending application, Serial No. 81,116, filed November 5, 1901, of which the present application is a division.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an envelop-machine, the combination with constantly-acting feed mechanism, of a table over which the paper strip is fed, said table having a transverse elevated knife-edge, an oscillating cutter having cutting edges acting with said knife-edge to sever the paper into lengths, and a stripper supported by said cutter and connected to the cutter by resilient means acting to grasp and arrest the motion of the paper above the knife, and hold it until the knife is retracted.

2. In an envelop-machine, the combination with constantly-acting feed mechanism, of a table over which the paper strip is fed, said table having a transverse elevated knife-edge, an oscillating cutter acting with said knife-edge to sever the paper into lengths and the rotating trimming mechanism acting to cut off lateral strips of the front end of the blanks, as they pass forward in the machine after being severed by the oscillating cutter.

3. In an envelop-machine, the combination with feed mechanism of a table over which the paper strip is fed, said table having an elevated knife-edge, an oscillating cutter acting with said knife-edge to sever the paper into lengths, trimming mechanism including the rolls H^2 G^4 which make the final cuts, after the blanks have been severed by

the oscillating cutter and while they are fed forward therefrom, said mechanism acting to cut off lateral strips of the front end of the blanks, and one of said rolls having pins G⁶ 5 G⁶ which hold the ends of the severed strips to it and stripping-fingers G⁷ G⁷ acting to disengage the strips from the pins and roll.

4. In an envelop-machine, an oscillating cutter for severing lengths from a paper strip 10 having in combination a circular knife-blade F³ adjustable in angular position and lateral fixed blades F⁴ F⁴.

5. In an envelop-machine, an oscillating cutter for severing lengths from a paper strip having in combination a circular knife-blade 15 F³ adjustable in angular position and lateral fixed blades F⁴ F⁴ in combination with a stripper F⁶ secured to the oscillating cutter by springs.

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Witnesses:

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W. M. SUTTON.