

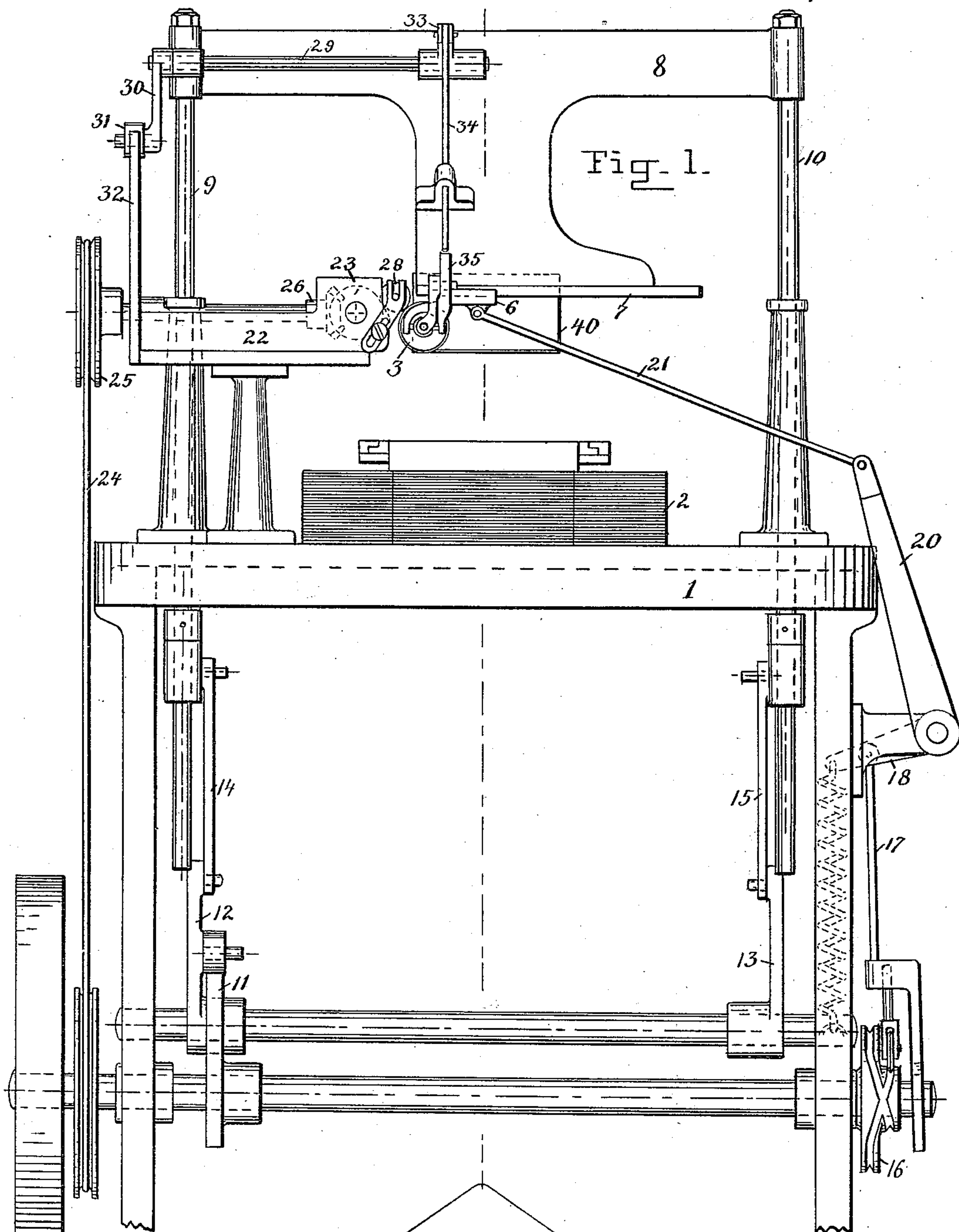
(No Model.)

2 Sheets—Sheet 1.

S. W. BALCH.
ENVELOPE MACHINE.

No. 430,057.

Patented June 10, 1890.



Witnesses=

J. Jacobsen
Chas Underdunk

Fig. 2

Inventor.

Samuel W. Balch

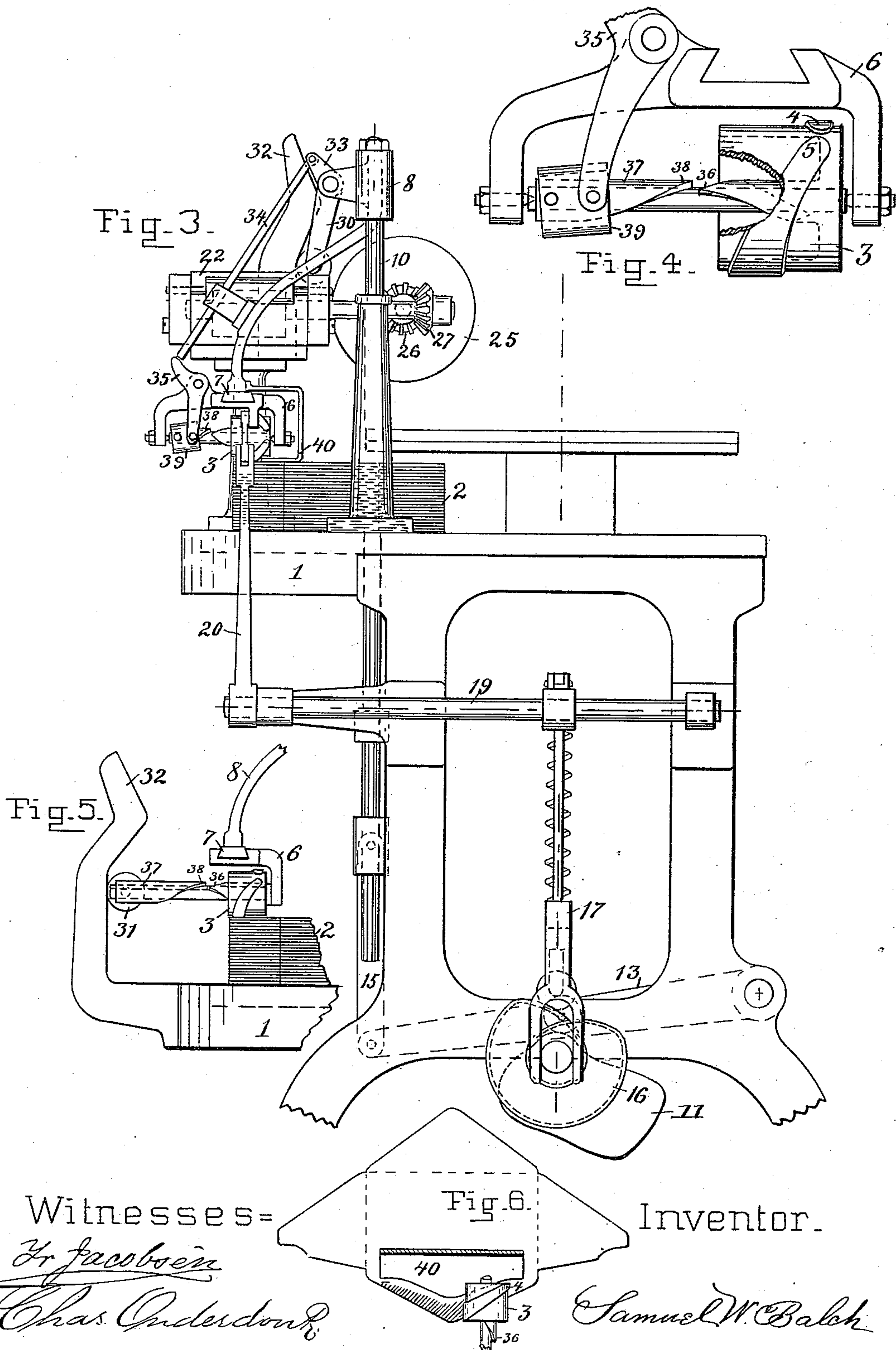
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UNITED STATES PATENT OFFICE.

SAMUEL W. BALCH, OF YONKERS, NEW YORK, ASSIGNOR TO THE EMANUEL RAU MANUFACTURING COMPANY, OF SAME PLACE.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 430,057, dated June 10, 1890.

Application filed December 27, 1889. Serial No. 335,167. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. BALCH, a citizen of the United States, and a resident of the city of Yonkers, county of Westchester, State of New York, have invented new and useful Improvements in Envelope-Machines, of which the following is a specification.

My invention relates to that portion of an envelope-machine by which the gum is applied to the seal-flap of the envelope-blank. It is designed to apply the gum to this portion of the envelope-blank by means of a roller having wrapped about its circumference a raised surface corresponding in outline to the surface to be gummed. The elements of novelty introduced consist in combinations of mechanism adapted to reciprocate the carriage holding the gumming-roll relative to the pile of envelope-blanks and the means for rotating the roller to position after it has been coated with gum, all as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a front elevation exhibiting the elements of my invention, together with so much of the other parts of an envelope-machine as was deemed necessary to show the connection therewith. Fig. 2 shows the outline of an envelope-blank and exhibits by shade lines the portion that my invention is intended to gum. Fig. 3 is a side elevation of the parts shown in Fig. 1. Fig. 4 is an enlarged view of the gumming-roll and exhibits more clearly the means for rotating and setting it in the proper position. Fig. 5 shows how the gumming-roll may be set with fewer elements than are shown on the main views. Fig. 6 shows the relative position of the gumming-roll to the envelope-blank in applying the gum.

On the table of the envelope-machine 1, Figs. 1 and 3, is placed a pile of envelope-blanks 2. These are taken singly from the top of the pile and folded into envelopes by the machine. My invention applies the gum to the seal-flap of the top blank of the pile, as each in turn becomes before it is removed and folded into an envelope. The gumming-roll 3 has its convex surface of an outline corresponding to the outline of the surface to

be coated with gum, as indicated by the shaded portion of Fig. 2. This roll is supported in a carriage 6, held on a guide 7, which is a part of the cross-bar 8. This cross-bar is supported and guided in a vertical motion by two rods 9 and 10. Through these a cam 11, by the intervention of the levers 12 13 and connections 14 15, alternately lifts this cross-bar to the position shown in Fig. 1 and lets it drop, so that the gumming-roll rests on the top of the pile of blanks, as shown in Fig. 3. A second cam 16 slides the carriage 6 by means of the connections, levers, and rock-shaft 17, 18, 19, 20, and 21. This cam 16 is constructed and operates as set forth in Letters Patent granted to Emanuel Rau, No. 413,791, October 29, 1889. It has a continuous groove or track in which the edge of the cam-roll travels. Parts of this track occupy segments of concentric circles of different diameters. This track crosses itself in connecting the ends of the smaller segment with those of the larger. From this construction it will be seen that the cam-roll rests in its highest position when in the portion of track lying in the larger circle, and rests in its lowest position when in the portion of track lying in the smaller circle during the same portions of alternate revolutions of the cam-shaft. The gum is carried in a box 22. In this box is a roll 23, to which motion is transmitted through the belt 24, pulley 25, and bevel-gears 26 and 27. A distributing-roll 28 revolves in contact with the gum-box roll and serves to transfer the gum to the gumming-roll 3 when the latter is in the position shown in Fig. 1. After the gumming-roll has been in contact with the distributing-roll long enough to be revolved by the latter one full revolution and over, the cross-bar descends until the gumming-roll rests on the top of the pile of blanks. During the descent of the cross-bar means have been provided to rotate the gumming-roll more or less as may be necessary to position it so that it will apply the gum in the proper place when rolled over the envelope-blank. This is accomplished by the following mechanism: On the cross-bar is journaled a rock-shaft 29. This shaft is oscillated when the cross-bar de-

scends through the lever 30, bearing the roller 31, which travels over the cam 32, fastened to the frame-work of the machine. From this rock-shaft motion is communicated through the lever 33 and rod 34 to the lever 35, pivoted to the carriage 6. The hub of the gumming-roll 3, Fig. 4, is cut away, so as to form right and left helical surfaces meeting in a point 36. Opposing this hub is a sleeve 37, similarly brought to a point 38. A second sleeve 39 is introduced as a link connecting the end of the lever 35 with the sleeve 37. This sleeve 37, it will be seen, is constrained from revolving through its connection to the end of the lever 35. The motion communicated, as above described, to the lever 35 pushes the point 38 on the sleeve 37 forward until its action against the helical surfaces on the hub of the gumming-roll revolves it so that its point 36 is on the opposite side of the shaft from the point 38 on the sliding sleeve.

All of the elements above mentioned are not necessary to the operation of setting the gumming-roll, as may be seen by reference to Fig. 5, where, by making the shaft rigid to the carriage 6 and the gumming-roll loose thereon, placing the cam 32 opposite the end of the sleeve 37, and splining this sleeve to the shaft, the rock-shaft 29, levers 30, 33, and 35 and connections may be dispensed with. Although this latter construction has fewer parts, I do not find it convenient to use in practice, as the cam 32 is in the way of placing the envelope-blanks on the table. During the descent of the cross-bar and the setting of the gumming-roll the mechanism for sliding the carriage rests with it at the left end of its guide. The gumming-roll therefore rests first on the left end of the seal-flap and is so turned that the end of the surface of this roll is in contact with this end of the flap. A presser-foot 40 is carried by the cross-bar and adjoins the gumming-roll. The purpose of this presser-foot is to hold the envelope-blank down, so that it will not be lifted up by sticking to the gumming-roll.

In Fig. 1 the gumming-roll 3 is shown in contact with the distributing-roll 28. The cross-bar 8 is in its highest position on account of the cam-roll on the lever 12 resting on the highest part of the cam 11, and the carriage 6 is at the extreme left on account of the cam-roll for the cam 16 resting on the lowest part of this cam. Commencing with the elements in this position and rotating the cam in the direction of the hands of a watch, Fig. 3, the first result will be the dropping off of the cam-roll on the lever 12 from the high part of the cam 11 and the descent of the cross-bar by its weight until the gumming-roll rests on the top of the pile of blanks. Next the inclined portion of the cam 16 comes under its cam-roll and commences to lift it. The parts now occupy the position shown in Fig. 3. The lifting of the cam-roll by its cam 16 draws the carriage 6 from left to right across the pile of envelope-blanks,

and the gumming-roll applies the gum to the top blank of this pile. Next the inclined portion of the cam 11 comes under its cam-roll, returning the cross-bar to its highest position, so that the gummed blank may be removed. The revolution of the shaft now is completed; but the cycle of motions is not yet finished, as the carriage is now at the right-hand side of the machine, whereas it started at the left-hand side. On tracing the action of the cams through a second revolution the cam-roll again drops off from the high part of its cam 11 and the cross-head descends. Next the cam-roll on the cam 16 descends from the segment of the larger to that of the smaller circle on this cam, the carriage 6 is pushed from right to left across the pile of envelope-blanks, and the gumming-roll rolls on the gum in this direction. This being completed, the inclined portion of the cam 11 again comes under its cam-roll, the cross-bar is again lifted to its highest position, and the parts are again brought to the position first described. In following through the above cycle of motions it will be seen that the gumming-roll will coat one blank from left to right and a second one from right to left before returning to the distributing-roll for a fresh coat of gum.

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

1. The combination, with the table of an envelope-machine for supporting envelope-blanks, of a cross-bar carrying a guide above and parallel to said table and having a vertical motion, a carriage supported from said guide so as to travel thereon, a gumming-roll supported in said carriage in a position to roll upon the surface of envelope-blanks placed on said table, and cams and connecting mechanism to reciprocate said cross-bar in a vertical direction and slide said carriage on its guide, together with frame-work carrying the table, guiding the cross-bar, and affording the necessary supports for the cams and mechanism, substantially as and for the purpose set forth.

2. In an envelope-machine, the combination of a gumming-roll having its surface shaped to correspond to the surface on the envelope-blank to be gummed and a hub pointed by the meeting of right and left helical surfaces, a sliding sleeve similarly pointed to the hub of the gumming-roll and opposite thereto, a shaft carrying said gumming-roll and opposing sleeve, a carriage supporting said shaft, mechanism for vertically reciprocating this carriage, a cam to slide said sleeve against the hub of said gumming-roll and rotate this latter to position, and a frame-work carrying said form and said mechanism, substantially as and for the purpose set forth.

SAMUEL W. BALCH.

Witnesses:

FR. JACOBSEN,
CHAS. ONDERDONK.