No. 647,248. Patented Apr. 10, 1900.

F. B. CANODE.

MACHINE FOR SEALING ENVELOPS.

(Application filed Feb. 8, 1900.)

(No Model.) 3 Sheets—Sheet 1.

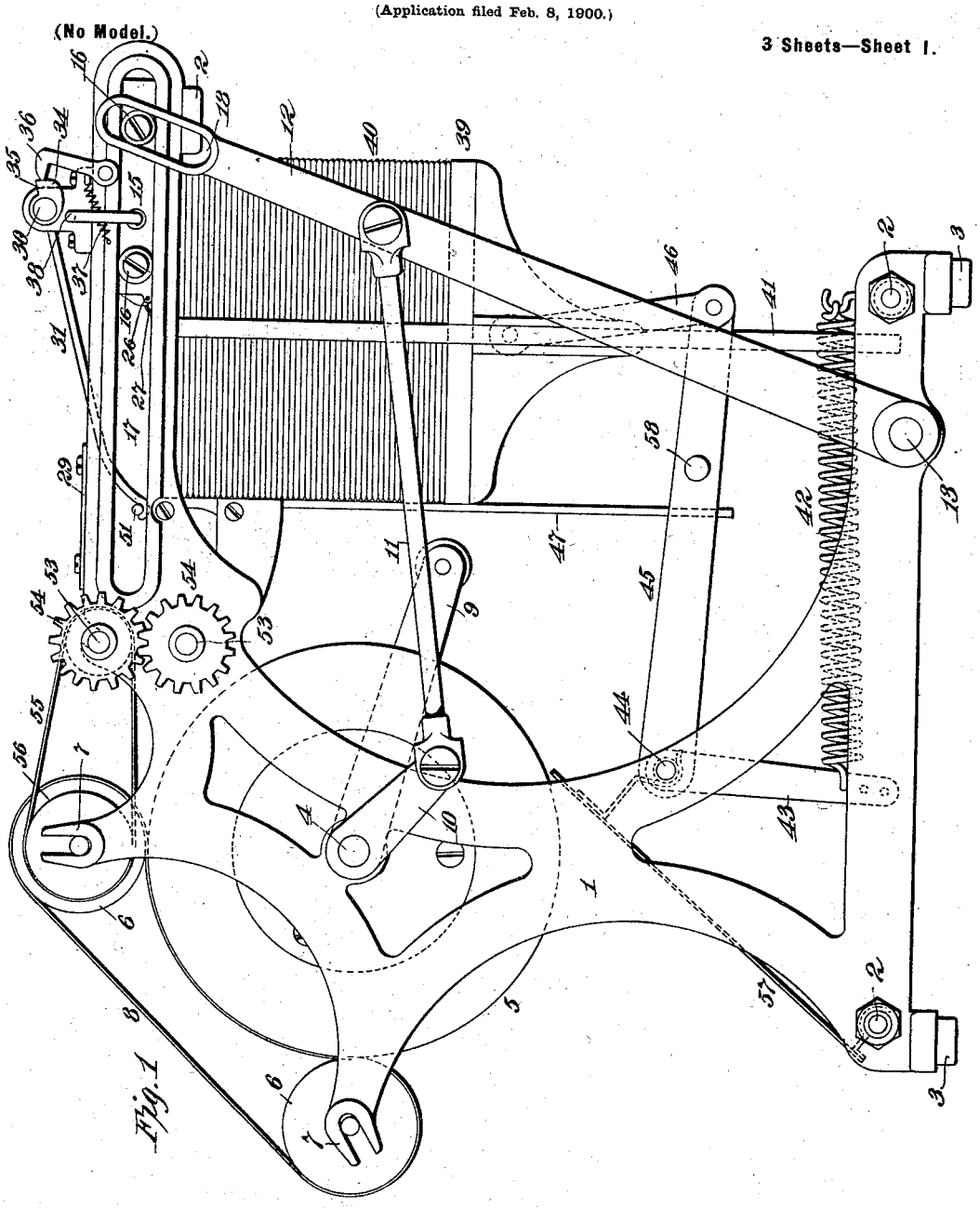

Fig. 1.

Witnesses:
Jas. S. Coleman
Jno. R. Taylor

Inventor
Frederick B. Canode
by Dyer Edmunds & Dyer
Att'ys.

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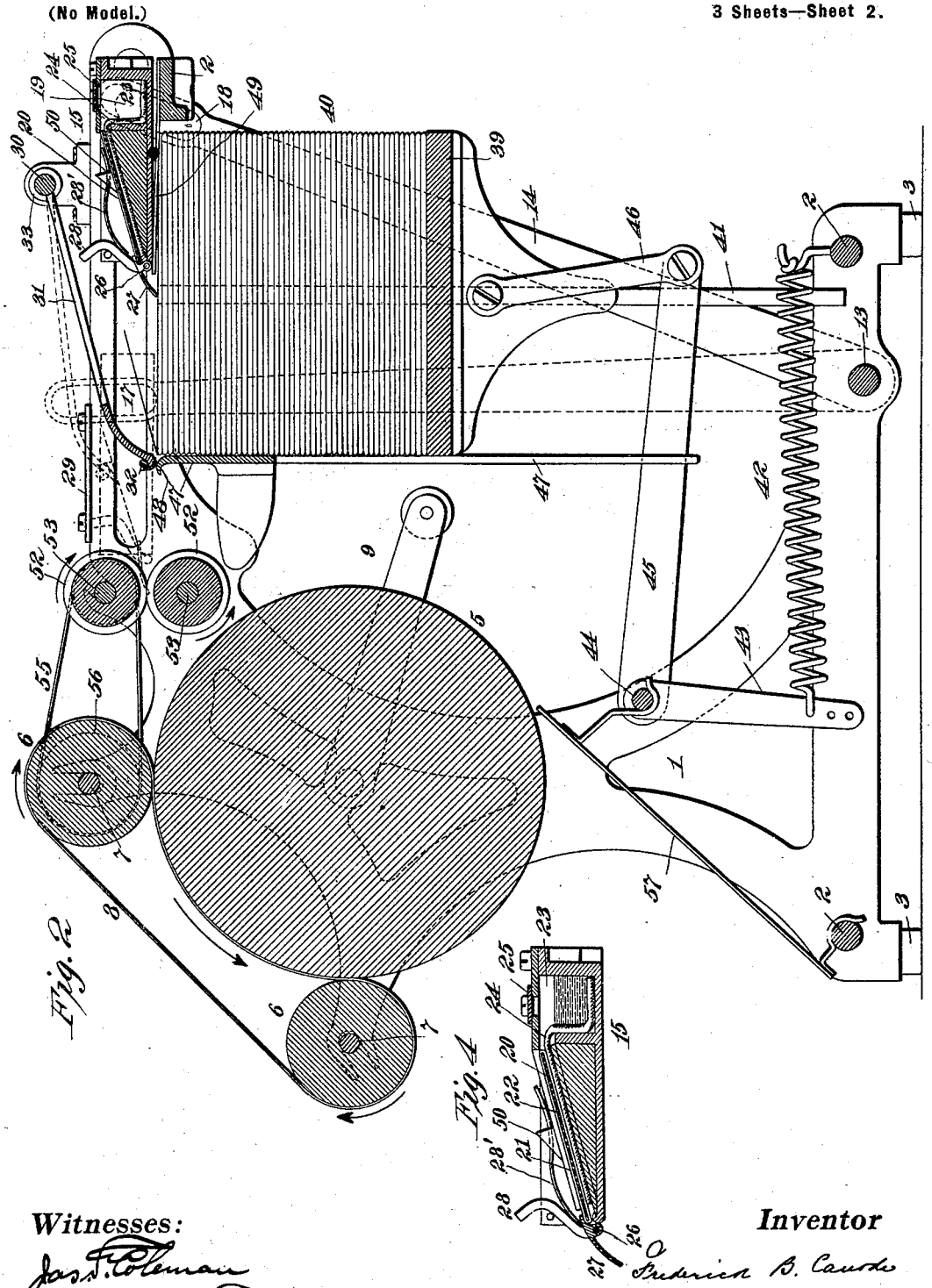

Fig. 2

Fig. 4

Witnesses:

Jas. F. Coleman

Jno. R. Taylor

Inventor

Frederick B. Canode

by Dyer Edmunds & Dyer

Att'ys.

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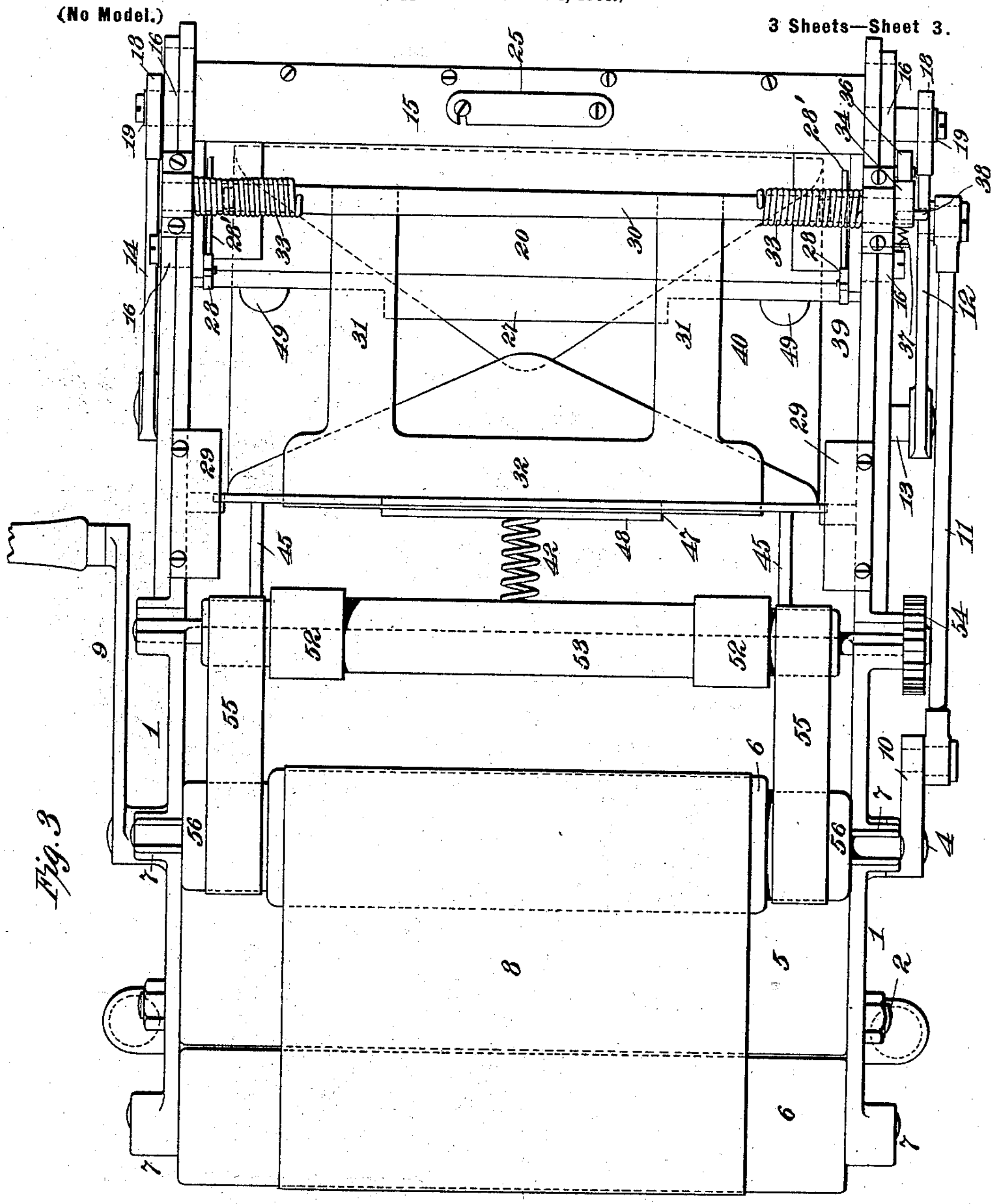

Fig. 3

Witnesses:
Jas. F. Coleman
Jno R. Taylor

Inventor
Frederick B. Canode
by Dyer Edmonds & Dyer
Att'ys.

UNITED STATES PATENT OFFICE.

FREDERICK B. CANODE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE A. B. DICK COMPANY, OF SAME PLACE.

MACHINE FOR SEALING ENVELOPS.

SPECIFICATION forming part of Letters Patent No. 647,248, dated April 10, 1900.

Application filed February 8, 1900. Serial No. 4,438. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK B. CANODE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Machines for Sealing Envelops, of which the following is a specification.

My invention relates to improvements in machines for sealing envelops; and the object of the invention is to provide a simple machine for the purpose capable of effectively sealing envelops with great rapidity. The machine is therefore especially adapted for use in commercial establishments wherein large numbers of circular-letters require to be sealed.

Broadly stated, my improved machine comprises a reciprocating combined feeding and moistening carriage arranged to engage beneath the flaps of a pile of envelops in such a way as to cause a moistened surface on said carriage to be brought into engagement with the adhesive substance on the flaps, the successive reciprocations of the carriage causing the envelops to be removed from the pile one at a time and simultaneously to be properly moistened, means being employed to cause the envelops to be automatically maintained in the proper position to be engaged successively and removed from the pile by the said feeding and moistening carriage and additional means being used to apply pressure to the moistened flap of each of the envelops after they have been removed from the pile and to maintain such pressure for a sufficient time to insure the effective sealing of the envelops.

The preferred construction of combined feeding and moistening carriage comprises a reciprocating head traveling horizontally in suitable guides and carrying at its rear end a well containing water, said head being provided on its upper face with a moistening-surface, made, preferably, of felt or felt-like material, which is supplied with water from the well by capillary attraction, and the head being provided at its forward end with a feeding-finger which engages beneath the flap of the envelop on the top of the pile. In order that the flap of the envelop may be brought into effective contact with the moistened surface of the carriage when the said feed-finger, together with the front portion of the reciprocating head, is introduced beneath the flap, I prefer to employ a suitable pressure-foot, which slides over the flap as the envelop is fed off of the pile by the movement of the feeding and moistening carriage, and means are preferably employed in connection with said pressure-foot to maintain it in an elevated position upon the return movement of the carriage, so that the pressure-foot will not bear against the moistening-surface, which engagement, if it did take place, would tend to force the water toward the forward end of such surface, and thereby destroy the desirable uniformity of distribution of water.

The preferred mechanism which I employ for maintaining the envelops in a vertical pile and for presenting them successively to the action of the combined feeding and moistening carriage comprises a vertically-movable platen on which the envelops are placed, flap upward and opening toward the feeding-carriage, said platen being spring-pressed vertically, so as to maintain the upper envelop in the pile in contact with a pair of flat fingers, which extend about one-half of the width of the envelop and over which the carriage reciprocates, the envelops being maintained with their upper or flap edges in engagement with a suitable guide or guides having a curved upper edge, over which the envelops are passed one at a time by the movement of the feeding-carriage. When the feed-finger on the carriage is combined with means for elevating it during the feed movement of the carriage, as is preferable, the upper edge of the guide or guides against which the pile of envelops is held is located an appreciable distance above the normal plane of the uppermost envelop, whereby the elevation of the feed-finger after it has engaged within the flap of the envelop will carry the latter up and over the said curved edge. This removes any possibility of more than one envelop being fed at a time by the movement of the reciprocating carriage and also allows the machine to operate with envelops the contents of which may vary within considerable limits.

The means which I prefer to employ for applying pressure to the envelop after it has been moistened and fed off of the pile by the carriage comprise a series of rollers with which coöperates a traveling endless belt, the latter being made conveniently of ordinary sheet-rubber, whereby the moistened envelop will be passed flap foremost between the belt and one of said rollers to receive the desired pressure. The belt is made long enough and the rollers are so proportioned as to maintain this pressure on the flap for a sufficient time to allow the flap to be effectively sealed. Provision is made in the pressure-applying means for accommodating envelops of varying thicknesses. Although the envelops after they have been successively fed off of the pile by the movements of the feeding and moistening carriage may be fed directly to the pressure-applying means of any type, I prefer to interpose between the carriage and the latter means additional devices for receiving the envelop delivered by the carriage and advancing it into contact with the pressure-applying devices, the purposes and advantages of which will be clear from a consideration of the preferred embodiment of the invention.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a machine embodying my invention in its preferred form; Fig. 2, a longitudinal sectional view thereof; Fig. 3, a plan view, and Fig. 4 an enlarged vertical section through the head of the reciprocating carriage.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 1 are the side frames of the machine, suitably strengthened by cross-braces 2. The framework thus formed may be supported upon rubber feet 3. Mounted in suitable bearings in the frames 1 is a shaft 4, carrying a drum 5. Coöperating with this drum are two rollers 6 6, the shafts of which are mounted in slotted bearings 7 7.

8 is an endless belt passed over the rollers 6 6 and bearing on a part of the periphery of the drum 5. This belt is preferably made of sheet-rubber and is under sufficient tension to apply the desired pressure to the envelop. By mounting the shafts of the rollers 6 6 in slotted bearings, as shown, said rollers may move longitudinally in said bearings to accommodate different thicknesses of envelops. A crank 9 is secured to the shaft 4 at one side to rotate the drum 5 and the belt 8 and rollers 6 by friction. Carried by the other end of the shaft 4 is a crank 10, which connects by a pitman 11 with a reciprocating arm 12, keyed at its lower end to a rock-shaft 13, mounted in bearings in the frames 1 1. The other end of the rock-shaft 13 carries a reciprocating arm 14, which corresponds in all respects with the arm 12. These arms obviously reciprocate in unison and are designed to effect the movement of the combined feeding and moistening carriage referred to. This carriage comprises a reciprocating head 15, having antifriction-rollers 16 16, which move in slotted ways 17 in the upper part of the side frames 1. The arms 12 and 14 are provided with slotted bearings 18 at their upper ends, with which bearings a roller 19 engages. The roller 19 at each side may be mounted on the same pin as one of the antifriction-rollers 16, as shown. The upper face of the head 15 is preferably inclined, as shown, and carries a moistening-surface 20, which is made, preferably, of two layers of felt or felt-like material 21 with a central layer of perforated sheet metal 22 between them, as shown in Fig. 4. At the back of the head 15 is a well 23, containing water, which is supplied to the moistening-surface 20 by a wick 24, as shown. The well 23 may be provided with a small cover 25, closing an opening therein, through which water may be introduced from time to time.

26 is a rock-shaft which is mounted in bearings at the forward edge of the reciprocating head 15, and said rock-shaft carries a feed-finger 27, sufficiently wide to effect the proper engagement beneath the flap of the uppermost envelop. The rock-shaft 26 is provided near one or both sides with a cam-finger 28, beneath which a spring 28′ engages to normally depress the feed-finger 27 into engagement with the uppermost envelop. The side frames 1 1 carry plates 29, with which the cam finger or fingers 28 engage at the proper moment to elevate the feed-finger 27, as will be explained.

Mounted in bearings on each of the side frames 1 is a rock-shaft 30, from which extend arms 31, carrying a pressure-foot 32 at their forward ends. A spring 33 tends to turn the rock-shaft 30 and to thereby exert a downward stress upon the pressure-foot. At one end of the rock-shaft 30 is a cam 34, having a shoulder 35 therein, with which a latch 36 may engage in the operation, said latch being normally impelled toward the cam 34 by a spring 37. A pin 38, carried by the reciprocating head 15, engages the latch 36 near the end of the backward movement of the reciprocating head 15 to disengage said latch from the shoulder 35. The pin 38, as shown in Fig. 3, is provided with a horizontal inturned upper portion which engages the latch 36 above the pivot thereof.

39 represents a vertically-movable platen, upon which are placed a number of envelops 40 in a vertical pile, each envelop being flap uppermost and with the flap or upper edge facing toward the drum 5. The platen 39 is guided vertically by means of guides 41 and is impelled upward by a spring 42, which is connected to a lever 43 on a rock-shaft 44, having two arms 45, which are connected by links 46 to the platen 39. The platen 39 works in

close proximity to one or more guides 47, which are vertically arranged in the machine and which are provided with a curved upper edge 48. The guide may be a series of flat vertical fingers arranged side by side or a single flat vertical plate secured to the side frames 1 and to one of the cross-braces 2, or it may be composed of a number of vertical guide-fingers secured to a guide-plate near their upper ends. This latter is the construction which is illustrated in the drawings. The curved upper edge of the guide 47, in which expression I include any mechanical device or devices for guiding the envelops in their vertical movement, is preferably arranged with respect to the pressure-foot 32 so that when the sliding reciprocating head 15 is moved backward to the position shown in Fig. 2 to its full extent said pressure-foot will bear upon said edge. The upward movement of the envelops carried by the platen 39 may be limited by the reciprocating head 15; but such a construction would not be desirable, as the return movement of the head might tend to dislodge the uppermost envelop. I therefore prefer to employ a pair of flat horizontal fingers 49, which are secured to the rear upper cross-brace 2 and which extend approximately half-way of the width of the envelops. By employing these fingers the forward portion of the envelop will by reason of the elasticity of the pile tend to be elevated slightly, so that the feed-finger 27 will be always brought into engagement beneath the flap in the operation. As the reciprocating head 15 is moved forward, carrying the envelop with it, the pressure-foot 32 will engage with the flap of the envelop and with the moistening-surface 20, so as to be elevated to the position shown in dotted lines, Fig. 2. This movement rocks the shaft 30 and may be relied upon to bring the shoulder 35 beneath the latch 36. I prefer, however, to employ a cam or cams 50, which are carried by the reciprocating head 15 and which engage the ends of a rod 51, carried by the pressure-foot, so that near the completion of the forward movement of the head 15 the cams 50 will engage the rod 51, and thereby elevate the pressure-foot from contact with the moistening-surface of the head.

While, as I have stated, the top envelop after it has been fed off of the pile by the movement of the reciprocating head may be directed to the pressure devices, yet I prefer to employ for this purpose two sets or pairs of feed-rollers 52 52, which may be thick rubber rings carried by the shafts 53 53. The bearings for the upper shaft are slotted, as shown, so as to accommodate different thicknesses of envelops. The shafts 53 are preferably simultaneously driven from each other by gears 54, and said shafts are driven by a pair of belts 55, running over reduced portions 56, formed on the adjacent roll 6, as shown. The parts are so proportioned that the peripheral speed of the rollers 52 is higher than that of the pressure-belt 8.

The machine may be provided with a guide 57, for guiding the sealed envelops after they have left the machine, and with a handle 58, by which one of the levers 45 may be drawn down to depress the platen 39 when a new pile of envelops is to be placed thereon.

The operation of the machine described is as follows: Power being applied to the handle 9 to rotate the drum 5, the endless belt 8 and the rollers 6 6 will be driven by friction and the feed-rollers 52 52 will be driven from the belts 55 and gears 54. These parts turn constantly in the direction of the arrows. The rotation of the shaft 4 reciprocates the arms 12 and 14 to carry the head 15 from the position shown in full lines to that shown in dotted lines, Fig. 2. A number of envelops are placed on the platen 39, and the uppermost envelop of the pile will be kept in contact with the flat fingers 49, with the flap uppermost. On the rear movement of the reciprocating carriage the feed-finger 27 presses down over the flap; but on the return movement of said carriage the said finger will engage beneath the flap until the finger strikes the forward or upper edge of the envelop within the flap. At this moment the cam-fingers 28 engage the plates 29, so as to elevate the feed-finger 27, and thereby elevate the forward edge of the envelop above the curved edge of the guide 47. The continued movement forward of the carriage causes the flap to be passed beneath the pressure-foot 32, which will be elevated, and the pressure of that foot will force the adhesive portion of the flap into intimate engagement with the moistening-surface. The end of the forward movement of the carriage brings the feed-finger 27 between the two sets of feed-rollers 52, which engage the envelop on both sides of the feed-finger and draw the envelop off of and away from the feeding-carriage and feed it between the belt 8 and the drum 5, which elements carry the envelop out of the machine and apply pressure to the flap in transit, so as to effectively seal it. Near the end of the forward movement of the reciprocating head 15 the pressure-foot will be elevated sufficiently, either by reason of the incline of the upper surface of the head or by reason of the cams 50, if used, to bring the shoulder 35 beneath the latch 36, which will then be drawn by the spring 37 into engagement with said shoulder. This engagement locks the pressure-foot in an elevated position during the rearward movement of the carriage and prevents the pressure-foot from pressing upon the moistened surface 20, and thereby destroying the even distribution of water on that surface. On the return movement of the reciprocating head 15 the feed-finger 27 will be released by the disengagement of the cam-fingers 28 with the plates 29, and will press upon the next envelop presented, so that upon the next forward stroke of the carriage that envelop will be moistened and fed off of the pile, as explained.

Near the end of this return stroke of the carriage the pin 38 strikes the latch 36, disengaging it from the shoulder 35, and permits the pressure-foot to once again descend, so as to apply pressure to the flap as the flap passes beneath it.

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

1. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, and means for subsequently applying pressure to the flap, substantially as set forth.

2. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, and means coöperating with the reciprocating carriage for automatically applying pressure to the flap, substantially as set forth.

3. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, pressure devices for applying pressure to the flap delivered by said carriage, and intermediate mechanism for withdrawing the envelop from the carriage and depositing it into the pressure-applying devices, substantially as set forth.

4. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, means for subsequently applying pressure to the flap, and a spring-pressed feed-finger carried by said carriage for engaging beneath the flap of the outermost envelop, substantially as set forth.

5. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, means for subsequently applying pressure to the flap, a spring-pressed feed-finger carried by said carriage for engaging beneath the flap of the outermost envelop, and means for elevating said finger during the forward stroke of the carriage, substantially as set forth.

6. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, means for subsequently applying pressure to the flap, a spring-pressed feed-finger carried by said carriage for engaging beneath the flap of the outermost envelop, a cam-finger connected to the feed-finger, and a stationary plate with which the cam-finger engages to elevate the feed-finger during the forward stroke of the carriage, substantially as set forth.

7. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, means for subsequently applying pressure to the flap, and a spring-pressed pressure-foot coöperating with the carriage for forcing the engaged flap into contact with the moistening-surface of the carriage, substantially as set forth.

8. In an envelop-sealing machine, the combination of means for supporting envelops in a pile, flap outermost, a reciprocating moistening and feeding carriage movable with respect to the outer envelop of the pile, whereby the said carriage may engage beneath the flap of the outermost envelop and apply moisture thereto, means for moving said carriage so as to withdraw the engaged envelop from the pile, means for subsequently applying pressure to the flap, a spring-pressed pressure-foot coöperating with the carriage for forcing the engaged flap into contact with the moistening-surface of the carriage, and means for locking the pressure-foot in an elevated position at the completion of the forward movement of the carriage and for unlocking the pressure-foot at the completion of the return movement of the carriage, substantially as set forth.

9. In an envelop-sealing machine, the combination of means for supporting envelops in

a vertical pile and for impelling the pile vertically upward, a pair of flat fingers for engaging the uppermost envelop and limiting its ascent, and a reciprocating feeding and moistening carriage and means for moving the same, whereby the carriage may engage with its forward edge beneath the flap of the uppermost envelop to force the latter horizontally off the pile, substantially as set forth.

10. In an envelop-sealing machine, the combination of means for supporting envelops in a vertical pile and for impelling the pile vertically upward, a pair of flat fingers for engaging the uppermost envelop and limiting its ascent, a reciprocating feeding and moistening carriage and means for moving the same, whereby the carriage may engage with its forward edge beneath the flap of the uppermost envelop to force the latter horizontally off of the pile, and a spring-pressed pressure-foot for applying pressure to the flap of the uppermost envelop to engage it with the moistening-surface of the carriage, substantially as set forth.

11. In an envelop-sealing machine, the combination of means for supporting envelops in a vertical pile and for impelling the pile vertically upward, a pair of flat fingers for engaging the uppermost envelop and limiting its ascent, a reciprocating feeding and moistening carriage and means for moving the same, whereby the carriage may engage with its forward edge beneath the flap of the uppermost envelop to force the latter horizontally off of the pile, a spring-pressed pressure-foot for applying pressure to the flap of the uppermost envelop to engage it with the moistening-surface of the carriage, and means coöperating with the carriage for applying pressure to the envelop after it has been fed off of the pile by the movement of the carriage, substantially as set forth.

12. In an envelop-sealing machine, the combination of means for supporting a number of envelops in a vertical pile, flap uppermost, a reciprocating carriage the forward edge of which engages beneath the flap of the uppermost envelop, a moistening-surface carried by said carriage, and a water-well reciprocating with the carriage and supplying water to said surface, substantially as set forth.

13. In an envelop-sealing machine, the combination of means for supporting a number of envelops in a vertical pile, flap uppermost, a reciprocating carriage the forward edge of which engages beneath the flap of the uppermost envelop, a moistening-surface carried by said carriage, a water-well reciprocating with the carriage and supplying water to said surface, and a pressure-foot for applying pressure to the flap to force it into engagement with the moistening-surface, substantially as set forth.

14. In an envelop-sealing machine, the combination of a vertically-movable spring-pressed platen carrying a pile of envelops flap uppermost, a guide mounted adjacent to the platen for guiding the flap or upper end of said envelops, and a reciprocating feeding and moistening carriage arranged to engage beneath the flap of the uppermost envelop to thereby carry the engaged envelop over the upper edge of said guide, substantially as set forth.

15. In an envelop-sealing machine, the combination of a vertically-movable spring-pressed platen carrying a pile of envelops flap uppermost, a guide mounted adjacent to the platen for guiding the flap or upper end of said envelops, a reciprocating feeding and moistening carriage arranged to engage beneath the flap of the uppermost envelop to thereby carry the engaged envelop over the upper edge of said guide, and a feed-finger mounted on said carriage for engaging said flap, substantially as set forth.

16. In an envelop-sealing machine, the combination of a vertically-movable spring-pressed platen carrying a pile of envelops flap uppermost, a guide mounted adjacent to the platen for guiding the flap or upper end of said envelops, a reciprocating feeding and moistening carriage arranged to engage beneath the flap of the uppermost envelop to thereby carry the engaged envelop over the upper edge of said guide, a feed-finger mounted on said carriage for engaging said flap, and means for elevating said finger during the forward stroke of the carriage to carry the envelop up and over the upper edge of the guide, substantially as set forth.

17. In an envelop-sealing machine, the combination of a spring-pressed platen carrying a vertical pile of envelops flap uppermost, a vertical guide adjacent to said platen, flat restraining-fingers for limiting the upward movement of the pile, and a reciprocating combined feeding and moistening carriage reciprocating over the pile and arranged to engage beneath the flap of the uppermost envelop, substantially as set forth.

18. In an envelop-sealing machine, the combination of a spring-pressed platen carrying a vertical pile of envelops flap uppermost, a vertical guide adjacent to said platen, flat restraining-fingers for limiting the upward movement of the pile, a reciprocating combined feeding and moistening carriage reciprocating over the pile and arranged to engage beneath the flap of the uppermost envelop, and means for applying pressure to the envelop removed from the pile by the movement of said carriage, substantially as set forth.

19. In an envelop-sealing machine, the combination of a spring-pressed platen carrying a vertical pile of envelops flap uppermost, a vertical guide adjacent to said platen, flat restraining-fingers for limiting the upward movement of the pile, a reciprocating combined feeding and moistening carriage reciprocating over the pile and arranged to engage beneath the flap of the uppermost envelop, means for applying pressure to the envelop removed from the pile by the movement of

said carriage, and connections between the pressure-applying devices and said carriage, whereby said devices will move in unison, substantially as set forth.

20. In an envelop-sealing machine, the combination of a drum to which power is applied, an endless belt coöperating with said drum, means for supporting a vertical pile of envelops flap uppermost, a reciprocating combined feeding and moistening carriage for moistening the flap of the uppermost envelop and simultaneously removing it from the pile, and connections between the drum and said carriage, substantially as set forth.

21. In an envelop-sealing machine, the combination of a drum to which power is applied, an endless belt coöperating with said drum, means for supporting a vertical pile of envelops flap uppermost, a reciprocating combined feeding and moistening carriage for moistening the flap of the uppermost envelop and simultaneously removing it from the pile, connections between the drum and said carriage, and feed-rollers located between the carriage and said drum for removing the envelop from the carriage and directing it between the drum and said endless belt, substantially as set forth.

22. In an envelop-sealing machine, the combination of a spring-pressed platen carrying a pile of envelops, a reciprocating carriage movable horizontally above said pile for engaging the flap of the uppermost envelop and simultaneously moistening it, a feed-finger on said carriage for engaging beneath the flap, and feed-rolls for receiving the envelop removed from the pile by the carriage, said rolls being separated by a greater extent than the length of said finger, whereby the finger may carry the envelop into actual contact with the feed-rolls, substantially as set forth.

This specification signed and witnessed this 3d day of February, 1900.

FREDERICK B. CANODE.

Witnesses:
GEORGE E. BENDER,
A. B. DICK.