No. 802,930. PATENTED OCT. 24, 1905.

S. M. FRIEDE.

ENVELOP SEALING MACHINE.

APPLICATION FILED SEPT. 12, 1904.

3 SHEETS—SHEET 1.

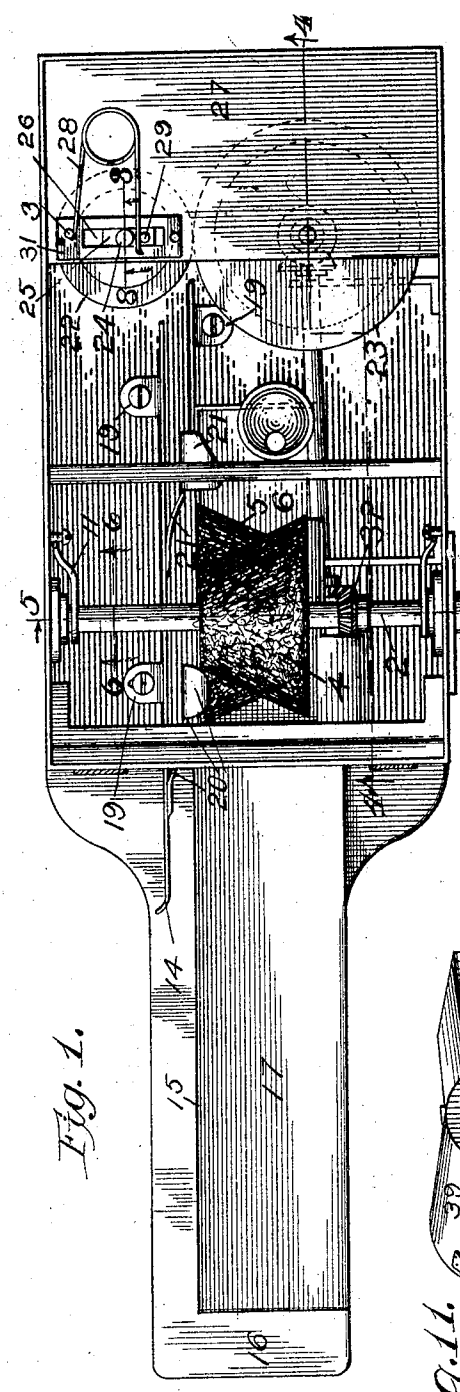


Fig. 1.

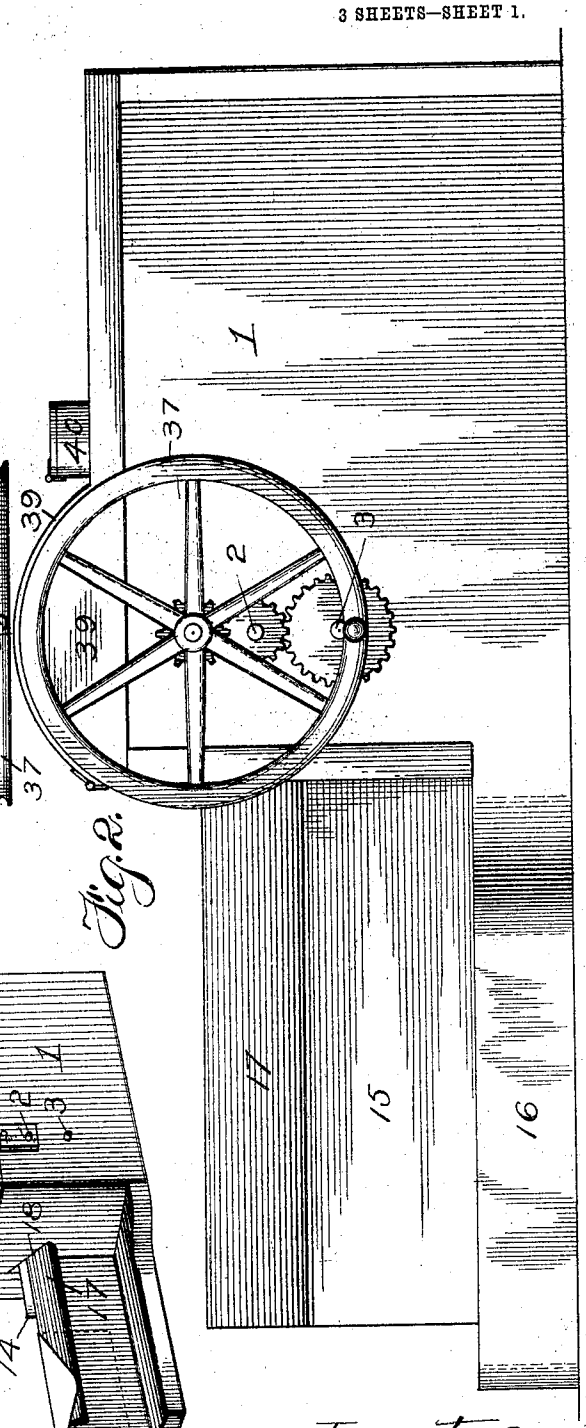


Fig. 2.

Fig. 11.

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3 SHEETS—SHEET 2.

Fig. 7.

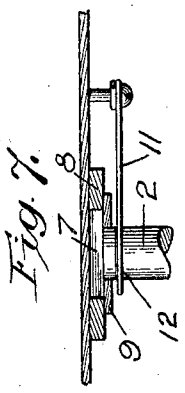
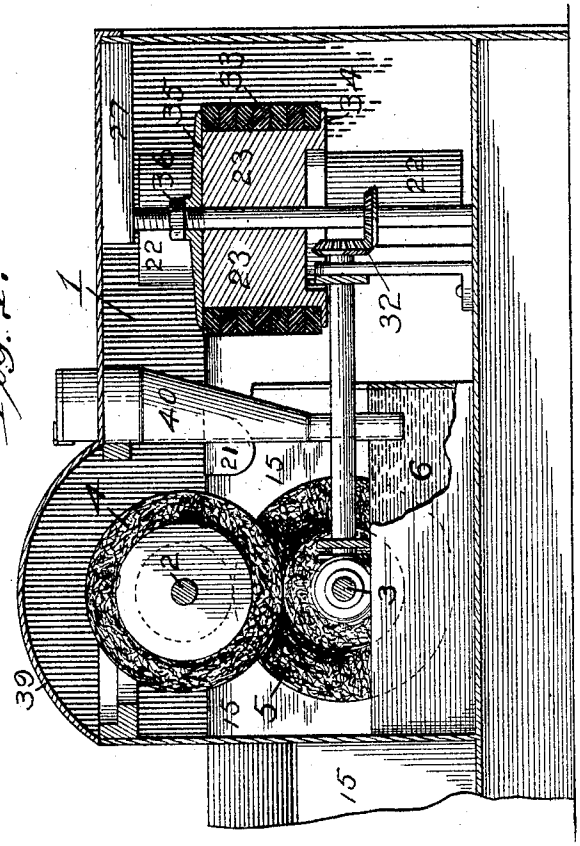


Fig. 4.



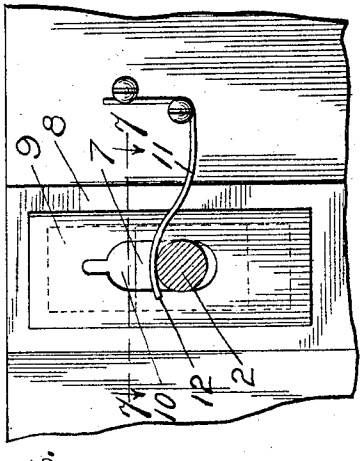


Fig. 6.

Fig. 8.

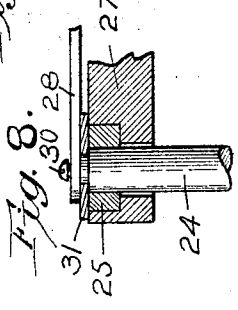
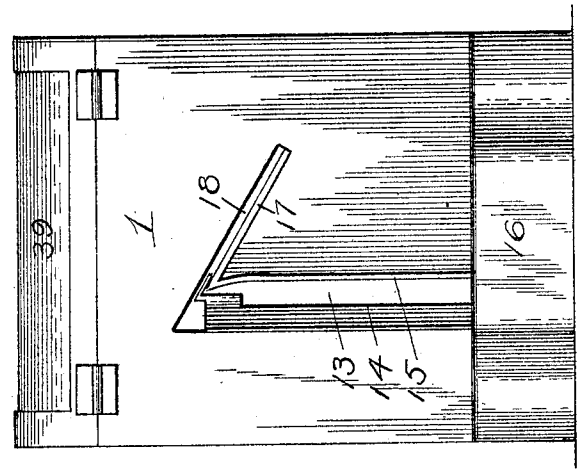


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 10.

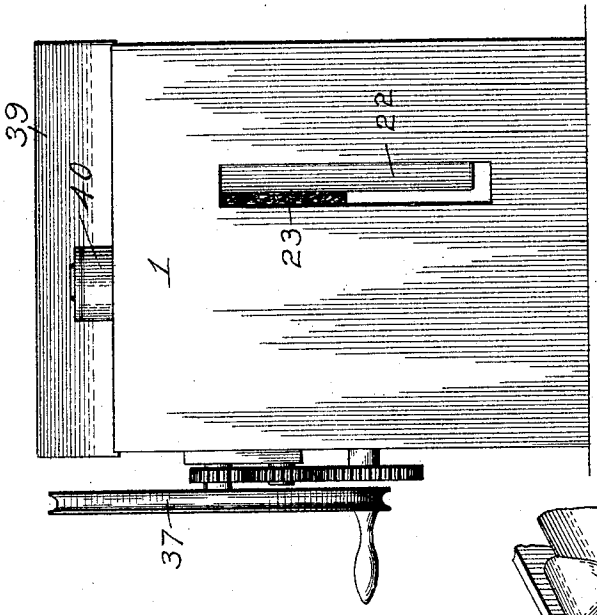


Fig. 9.

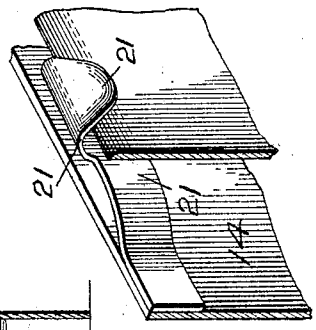
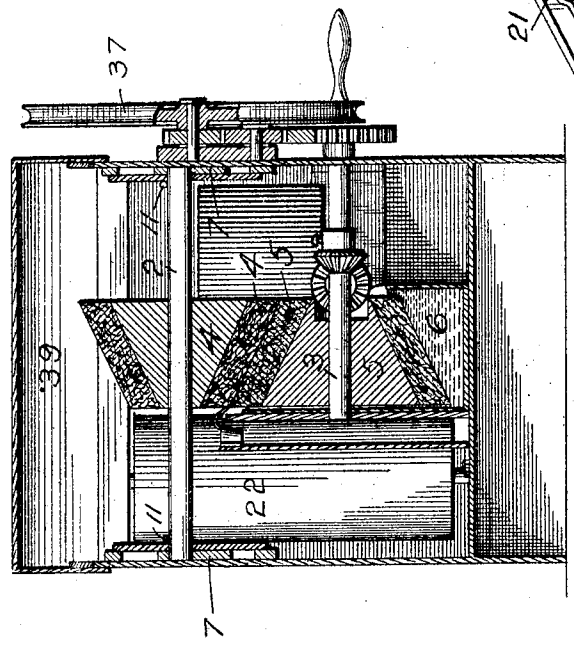


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL M. FRIEDE, OF CHICAGO, ILLINOIS.

ENVELOP-SEALING MACHINE.

No. 802,930. Specification of Letters Patent. Patented Oct. 24, 1905.

Application filed September 12, 1904. Serial No. 224,164.

To all whom it may concern:

Be it known that I, SAMUEL M. FRIEDE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Envelop-Sealing Machines, of which the following is a complete specification.

This invention relates to improvements in machines for sealing envelops, and has for its object to provide an improved and simplified construction in devices of this character capable of efficient use for the purposes intended and at the same time of being manufactured and put on the market at relatively low cost.

The invention consists in the matters hereinafter set forth, and particularly pointed out in the appended claims, and will be fully understood from the following detailed description of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of an envelop-sealing machine embodying my improvements with its cover removed. Fig. 2 is a side elevation thereof. Fig. 3 is an end elevation. Fig. 4 is a sectional side elevation of the working parts, taken on line 4 4 of Fig. 1. Fig. 5 is a transverse sectional elevation taken on line 5 5 of Fig. 1. Fig. 6 is a detail taken on line 6 6 of Fig. 1. Fig. 7 is a sectional detail taken on line 7 7 of Fig. 6. Fig. 8 is a sectional detail taken on line 8 8 of Fig. 1. Fig. 9 is a perspective detail of one of the envelop-guides. Fig. 10 is an end elevation of the casing looking at that end from which the envelop is emerged. Fig. 11 is a perspective view, reduced, of the complete apparatus.

In said drawings, 1 designates a casing, of wood or metal, within which a pair of roller-supporting shafts 2 and 3 are mounted transversely in parallel relation and one above the other. Secured to these shafts to rotate therewith are moistening-rolls 4 and 5, made in the shape of similar truncated cones and reversely arranged in contact with each other, as shown in Fig. 5. Both of these rolls are surfaced with felt or an equivalent absorbent material, and the lowermost roll 5 dips down into a tank 6 of water and is kept constantly wet thereby. The uppermost roll is also kept moistened by its contact with the lower roll and at the same time operates to squeeze the excess of water from the lower roll and cause it to run back into the tank. To this end the rolls are yieldingly pressed together, in this instance by a spring-bearing for the upper shaft 2. (Illustrated in detail in Figs. 6 and 7.) As thus shown, the ends of the shaft rotate in bearing-blocks 7, that are mounted to slide vertically in vertically-slotted guide-plates 8 on the inner faces of the casing. The blocks 7 are held in the slotted guide-plates 8 by cover-plates 9, which are secured to the inner faces of the plates 8, so as to inclose the slots in the latter, and which are themselves provided with smaller slots 10, made just wide enough to admit the ends of the shaft 2. Springs 11 are then secured to the inner faces of the casing and made to bear at their free ends 12 upon the upper side of the shaft 2 near its ends, and these thus normally tend to depress the shaft and maintain the rolls 4 and 5 in intimate contact with each other. At the same time they enable the rolls to spring apart far enough to permit the flaps of the envelop to pass through between the rolls and be properly moistened thereby.

In order to reach the moistening-rolls, the envelop is fed into the casing through an aperture 13 at one of its ends, Fig. 3, and between guide-plates 14 and 15, which project from this end of the casing and are carried by an extension 16 of the base of the casing. The guide-plate 15 at the front of the inlet-opening 13 extends back a considerably-greater distance than the guide-plate 14 at the back of the slot or opening and is provided at its upper edge with a forwardly-extending flange 17, that is bent sharply downward at about the angle normally occupied by the flap of an unsealed envelop and corresponding exactly with the angle between the conical moistening-rolls 4 and 5, Fig. 5, so that the envelop can be readily placed with its back against the guide-plate 15 and with its flap overlapping the downwardly-inclined flange 17 and pushed thence into the casing until its flap passes between the rolls 4 and 5 and is moistened thereby, the body of the envelop entering through the vertical slot or opening 13, while the flap enters through a forwardly and downwardly extending branch slot 18, that runs along the top of the flange 17 where the latter joins the casing, Fig. 3.

Both guide-plates 14 and 15 are extended into the casing to a point considerably beyond the moistening-rolls 3 and 4 and are shown as secured to the bottom of the casing by screws passing through lugs 19 on the plates, of which lugs one or more are desirably slotted, so as to permit the plates to be adjusted.

The rear plate 14 also carries two deflectors 20 and 21, of which the former is located just in front of the moistening-rolls and the latter just behind them, Figs. 1, 3, 4, and 9. Both of these deflectors consist of flat metal springs secured at one end to the upper edge of the plate 14 and projecting in a forwardly-inclined direction along the line of movement of the envelop, so as to force them against the front guide 17. The first deflector 20 is also provided with a downwardly and forwardly projecting lip, which serves to guide the envelop-flap properly between the moistening-rolls. The second deflector 21 is provided with a larger lip, which is curved downwardly over the upper edge of the guide-plate 15 and serves to turn the flap of the envelop down against this guide and into a position substantially parallel to the body of the envelop preparatory to its entering the sealing-rolls. These latter are vertical rolls, designated 22 and 23, and better shown in Figs. 1, 4, and 5. The roll 22 is in this instance an idle or non-driven roll, which will desirably be covered with suitable resilient material and which is shown as extending from the bottom of the casing upwardly to a point beyond the upper edge of the envelop, Fig. 5. This roll is furthermore shown as yieldingly mounted, so as to be capable of springing back far enough to permit envelops of any thickness to readily pass between it and the front roll 23. To this end the upper extremity of its shaft or spindle 24 is journaled in a block 25, that is mounted to slide back and forth in a slot 26, cut in a horizontal wall 27, that extends across the top of the casing just above the sealing-rolls. A spring 28 is then applied to the block in such manner as to constantly urge the latter forward and press the roll 22 against the roll 23, this spring being in this instance inserted between pins 29 and 30, of which one projects from the block 25, while the other is a stationary part of the casing, Fig. 1. A cover-plate 31 is shown as passing over the slot 26 to hold the bearing-block 25 down, but is itself slotted to permit the end of the shaft in the pin 29 to project and play freely therein.

The front sealing-roll 23 is connected by a gearing 32 with the moistening-rolls, so as to revolve in unison therewith at an appropriate rate of speed. This roll need be made only of a depth approximately equal to the depth of the envelop-flap, inasmuch as its purpose is to press the flap against the body of the envelop to seal it. Desirably and as herein shown the surface of the roll consists of a number of separate sections or washers 33, of felt or the like, which are held between a flange 34 on the lower end of the roll and a washer 35 at its upper end, a clamping-nut 36 serving to hold the latter down upon the sections. By making the active periphery of the roll in several sections in this manner the individual sections are permitted to yield and conform more readily to any unevenness in thicknesses of the envelop caused by the varying quantities of mail inserted therein, and this insures a more perfect sealing action than would otherwise be the case.

Any suitable means may be provided for driving the rolls of the sealer thus described, consisting in this instance of a driving-pulley or crank-wheel 37, secured on the outside of the casing and geared to the shaft 3 of the lower moistening-roll. This wheel may be turned by hand or may be belted or otherwise connected with any suitable source of power. The upper moistening-roll is not positively driven, as herein shown, but obviously may be, if so desired, as may also the rear sealing-roll 22.

The operation of the sealer will be readily understood. The envelop is placed with its back against the front entrance-guide 15 and with its flap overlapping the flange 17 at the upper edge of said guide. It will then be pushed forward through the slot 17 until its flap is caught between the rolls 4 and 5, which being rotated will carry the envelop through and at the same time properly moisten its flap. As the envelop passes from these rolls 4 and 5 its flap will be turned down by the deflector 21 into a position approximately parallel and adjacent to the back of the envelop, and the continued action of the rolls and the envelop as a whole will be moved down until its forward end enters between the sealing-rolls, which will thereupon continue its motion and at the same time press the flap firmly against the back of the envelop to seal it. The envelop will then emerge from the machine through a slot 38 in the adjacent end wall of the casing, as shown in Fig. 10. A suitable hinged cover 39 gives access to the casing of the machine and enables its parts to be readily inspected, and this cover is shown as provided with a funnel 40, by which the tank 6 may be filled.

It will be seen that an advantage in employing reversed conical moistening-rolls lies in the fact that in addition to pressing the flaps against the driving-roll the driven roll subjects the flap to a sort of rubbing action somewhat similar to hand action, this rubbing action resulting from the fact that the two rolls are of varying diameter. This rubbing action also facilitates the removal of the surplus water from the driving-roll. A further advantage is that it permits the employment of the downwardly-slanted flap-guide 17, which not only avoids the necessity of bending up the flap, but also causes the flap to hold the body of the envelop to the main guide-plate 15.

I claim as my invention—

1. An envelop-sealing machine provided with a pair of moistening-rolls in the form of reversely-arranged cones one of which has an

elastic surface, a guide for the body of the envelop arranged transversely to the axes of the rolls and serving to direct the envelop-flap between the rolls, means for moistening the rolls, and means for pressing the envelop to seal it, substantially as described.

2. An envelop-sealing machine provided with a pair of moistening-rolls made in the form of reversely-arranged cones one of which has an elastic surface, means for guiding the envelop-flap between the conical rolls, means for moistening the rolls, and means for pressing the envelop to seal it, substantially as described.

3. An envelop-sealing machine provided with a pair of moistening-rolls made in the form of reversely-arranged cones having elastic surfaces, means for guiding the envelop-flap between the conical rolls, a tank into which the lower roll dips, and means for pressing the envelop to seal it, substantially as described.

4. An envelop-sealing machine provided with a pair of moistening-rolls made in the form of reversely-arranged cones having elastic absorbent surfaces and mounted on horizontal axes, a vertical guide for the body of the envelop having an incline for directing the envelop-flap between the conical rolls, means for moistening the rolls, and means for pressing the envelop to seal it, substantially as described.

5. In an envelop-sealing machine, the combination with a lower moistening-roll of conical form, of means for driving said roll, a tank into which the roll dips, an upper reversely-arranged idle roll of truncated conical form, yielding bearings for this idle roll, means for guiding the flap of the envelop between the rolls, and means for pressing the envelop to seal it, substantially as described.

6. In an envelop-sealing machine, the combination with a guide having a vertical wall to support the body of the envelop and a downwardly-inclined flange at the upper edge of the vertical wall upon which the envelop-flap rests, of a pair of conical moistening-rolls lying in contact along an inclined line in the plane of said flange, one at least of said rolls having an elastic absorbent surface, and means for pressing the envelop to seal it, substantially as described.

7. In an envelop-sealing machine, the combination with a guide, comprising a vertical wall, forming a support for the body of the envelop, and a downwardly-inclined flange at the upper edge of the vertical wall upon which the envelop-flap rests, of a pair of elastic-surfaced moistening-rolls lying in contact along an inclined line in the plane of said flange, a tank into which one of the rolls dips, and means for pressing the envelop to seal it, substantially as described.

8. In an envelop-sealing machine, the combination with a front guide-wall having a flange at its upper end upon which the envelop-flap may rest, of a rear guide-wall provided with deflectors for forcing the envelop toward the front wall, a pair of conical moistening-rolls, lying in contact in the plane of the flange, and between which the envelop-flap will be directed by the guide, and means for pressing the envelop to seal it, substantially as described.

9. In an envelop-sealing machine, the combination with a front guide-wall having a flange at its upper end upon which the envelop-flap may rest, of a pair of conical moistening-rolls between which the envelop-flap is directed by the guides, a tank in which one roll dips, and means for pressing the envelop to seal it, substantially as described.

10. An envelop-sealing machine provided with a pair of moistening-rolls made in the form of reversely-arranged cones mounted on horizontal axes, means for guiding the envelop-flap between the conical rolls, means for moistening the rolls, and a pair of vertically-arranged pressing-rolls between which the envelop is fed by said moistening-rolls, substantially as described.

11. An envelop-sealing machine provided with a pair of moistening-rolls made in the form of reversely-arranged cones mounted on horizontal axes, means for guiding the envelop-flap between the conical rolls, means for moistening said rolls, and a pair of vertically-arranged pressing-rolls, one member of which is geared to and driven by one member of the moistening-rolls, substantially as described.

12. An envelop-sealing machine provided with means for moistening the envelop and means for pressing the envelop to seal it, including a pressing-roll having a yielding surface consisting of a plurality of separate washers of yieldable material, substantially as described.

13. In an envelop-sealing machine, the combination with a guide having a vertical wall to support the body of the envelop and a downwardly-inclined flange at the upper edge of the vertical wall upon which the envelop-flap rests, of a pair of conical moistening-rolls lying in contact along an inclined line in the plane of said flange, a pair of pressing-rolls mounted on vertical axes arranged on opposite sides of the plane of the vertical guide, and means for rotating the moistening and pressing rolls, substantially as described.

14. In an envelop-sealing machine, the combination of a supporting-base, a moistening-tank, a pair of moistening-rolls carried by horizontal shafts, means for operating these rolls, a pair of sealing-rolls mounted on vertical shafts beyond the moistening-rolls, the line of contact between these rolls lying in a vertical plane with one end of the moistening-rolls, means for driving the sealing-rolls, and means for guiding the envelop in a vertical position past the ends of the moistening-rolls

and between the sealing-rolls, the flap being moistened in transit between the moistening-rolls and being pressed against the body of the envelop by the sealing-rolls.

15. In an envelop-sealing machine, the combination of a supporting-base, a pair of moistening-rolls and means for driving them, a pair of sealing-rolls beyond the moistening-rolls and means for driving these sealing-rolls, the shafts of these sealing-rolls being arranged at right angles to the shafts of the moistening-rolls and the line of contact of the rolls being approximately in line with the ends of the moistening-rolls, a guide-plate for guiding the body of the envelop past the ends of the moistening-rolls and to the sealing-rolls, and means for manipulating the envelop-flap during transit whereby the flap passes between the moistening-rolls as the envelop passes the ends thereof and is folded toward the body of the envelop before the envelop is presented to the sealing-rolls.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 15th day of July, A. D. 1904.

SAMUEL M. FRIEDE.

Witnesses:

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KATE A. COSTELLO.