

Feb. 2, 1954

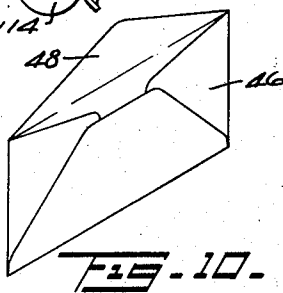
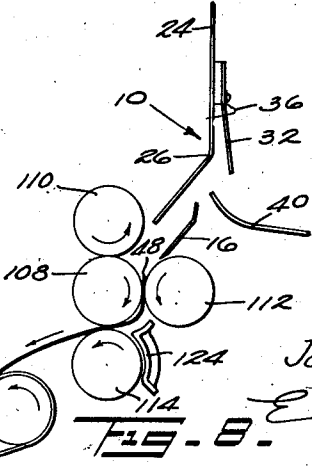
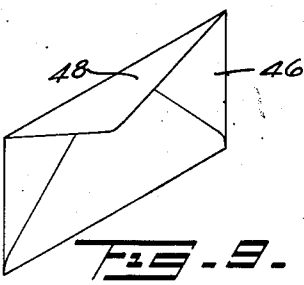
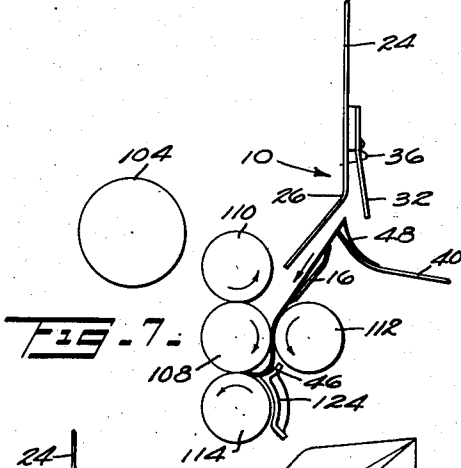
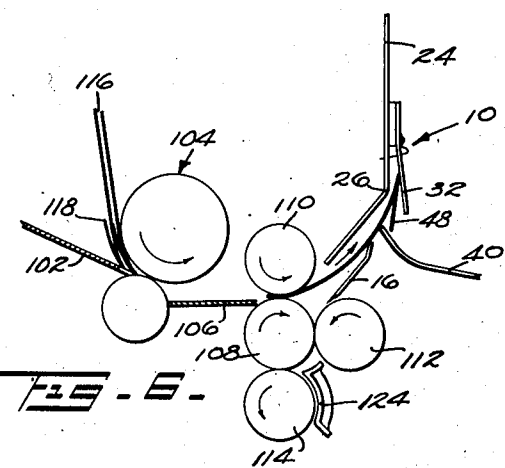
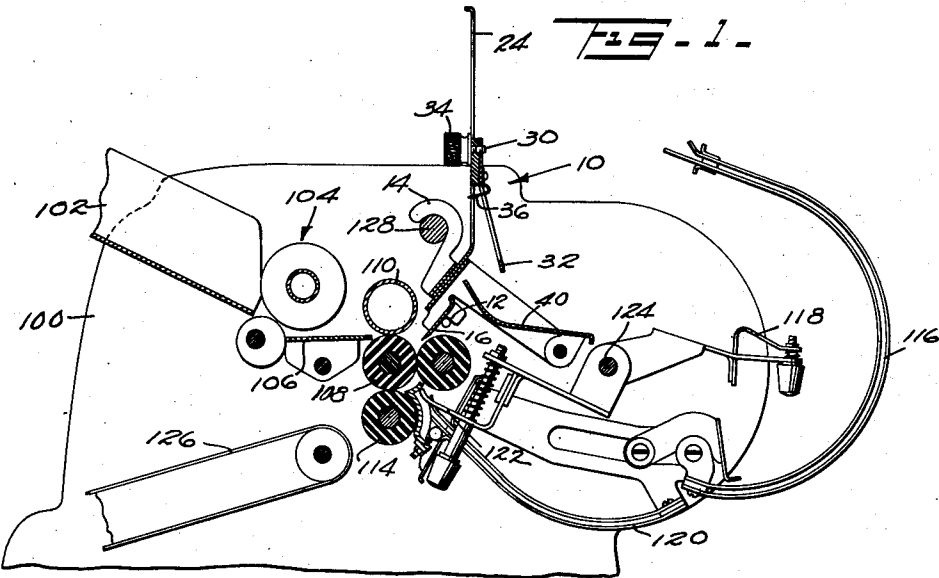
J. W. BACH

2,668,053

ENVELOPE FLAP OPENING DEVICE

Filed Dec. 7, 1950

2 Sheets-Sheet 1



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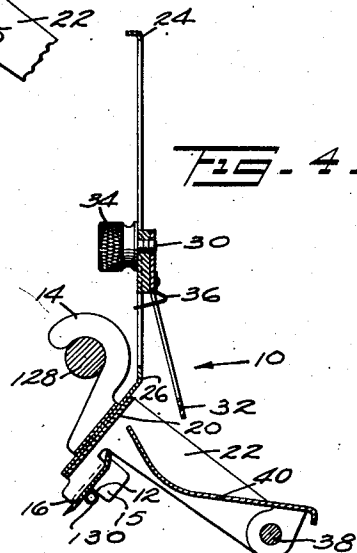
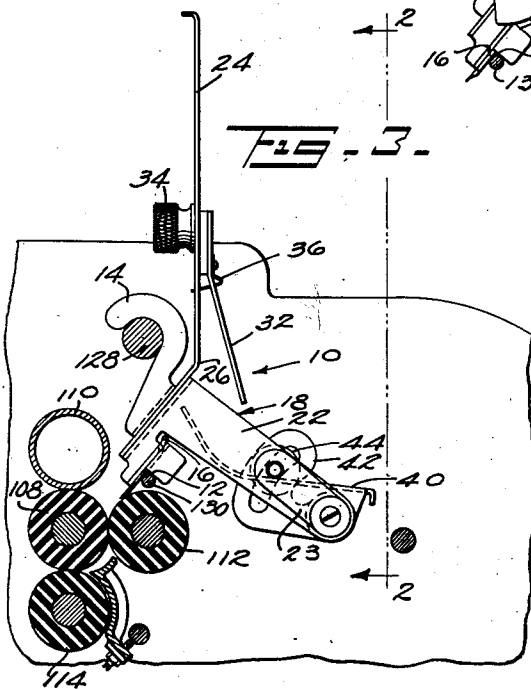
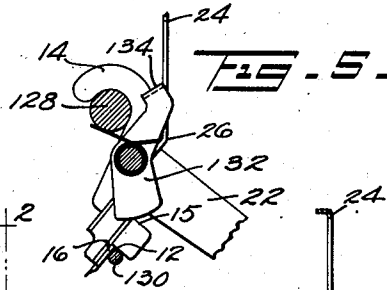
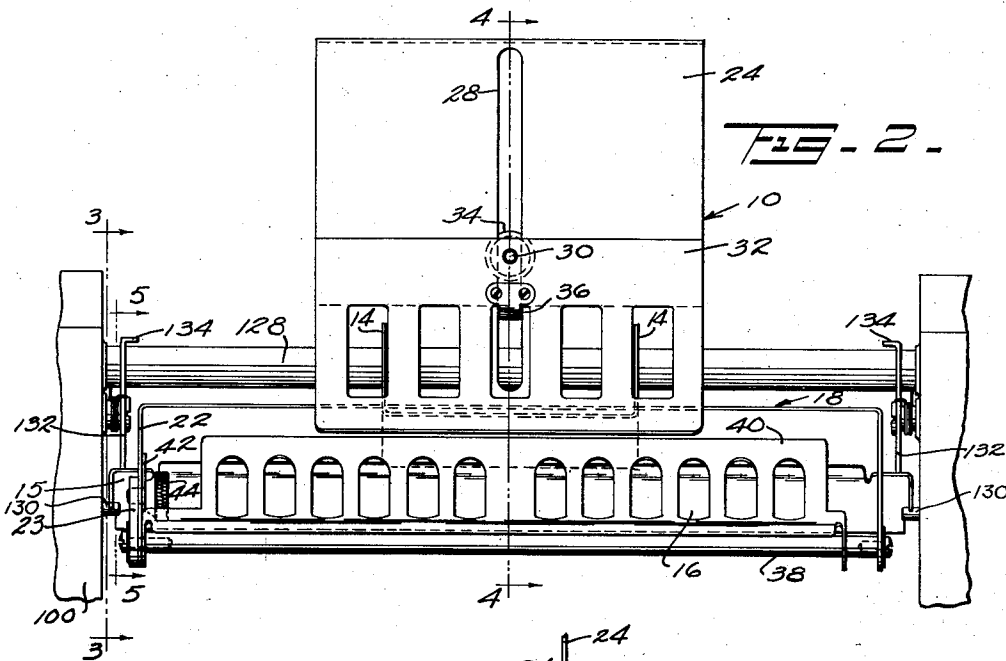
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ENVELOPE FLAP OPENING DEVICE

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2 Sheets-Sheet 2



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ENVELOPE FLAP OPENING DEVICE

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19 Claims. (Cl. 270—68)

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This invention relates to the art of handling envelopes.

In mailing rooms and in general procedure, where many identical pieces of mail matter are handled, the insertion of the mail matter is expedited when the envelopes are received with flaps opened.

Envelopes are furnished by manufacturers with the flap folded firmly against the body, and, when flap opening is performed by hand, it is obviously tedious and expensive.

The present invention provides a machine for performing the flap opening operation automatically and depositing the envelopes as so opened one upon another.

An important feature of the present invention is the provision of an envelope opening machine of extremely simple construction and operation, which is at the same time capable of adjustment for envelopes of various depths and which is thoroughly reliable and positive in its action.

Another object of the invention is the provision of a simple, direct method by which the flap opening is accomplished. It is a feature of the invention that this operation involves merely feeding of an envelope edgewise in one direction, flap edge foremost, along a curved path with the flap on the convex side until the flap escapes past a stripper member, then producing relative movement between the stripper and the envelope transversely of the flap crease so that the stripper catches beneath the flap and eventually folds the flap backward and lays it out flat.

In the particular form of the invention illustrated, the relative movement between the envelope and stripper is brought about by reversing the direction of movement of the envelope after the flap has escaped past a stationary stripper, and withdrawing the envelope in a generally reverse direction while the stripper catches under the flap and lays it out flat. The flap crease may then be ironed flat, for example, between rollers which are used to do the withdrawal feeding.

The progressing of the envelope in a curved path may also be considered as a bowing or buckling of the envelope, combined with a deflecting action which predetermines the direction of buckle so that the convex flap face will be towards the stripper, thus insuring a sharp separation of the flap from the envelope body to permit the flap to be readily caught by the stripper.

The invention also provides as a feature thereof the method and arrangement whereby the above mentioned reversal in envelope feed is accomplished in a unique fashion by transferring

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the feed from one set of continuously rotating rollers to another. Consequently no movement reversals, other than of the work itself, are needed. This makes possible the high speed of operation achievable by the device since inertia effects are avoided.

Still another important feature of the invention resides in the direct solution provided for at least two distinct problems relating to the handling of the paper envelopes. Whereas the stopping of the envelope at high speeds would involve a tendency to mark the edge, and whereas the transfer of the envelope from the forward feed to the withdrawal feed would depend upon the resiliency of the envelope resulting from the material used in its manufacture or from the surrounding atmospheric conditions such as humidity, the adverse effects of both factors are obviated by the unique expedient of providing a resilient end stop for engaging and arresting the edge of the incoming envelope, and for giving it an impetus in withdrawal direction.

Since certain folding machines now in use provide power driven pinch rollers suited to the flap opening operation, and also include such devices as a feeder, a collector and stacker for finished work, a motor for power operation, etc., it is extremely economical and advantageous to provide an attachment for such machines which would readily convert them for envelope opening work.

Another object of the invention, therefore, is to provide an attachment of small weight and few parts which can be mounted upon a four roller buckle type folding machine, or upon any machine providing at least three parallel contacting feed rollers, for converting the same into an envelope opening device.

Additional features and advantages will hereinafter appear.

A preferred embodiment of the invention is shown in the following drawings, wherein:

Fig. 1 is a partial vertical, longitudinal section of an envelope opening machine according to the invention, the same being illustrated in the form of a folding machine employing an envelope opening attachment;

Fig. 2 is a fragmentary detail elevation to an enlarged scale and represents essentially the face view of the attachment which converts the folding machine into an envelope opening machine, together with the immediately adjacent portions of the folding machine as seen from the right and looking towards the left in Fig. 1. The view is taken substantially on line 2—2 of Fig. 3;

Fig. 3 is a section taken on line 3—3 of Fig. 2

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with the latches and their mountings omitted for purposes of clarity, and also including the roller mechanism of the folding machine;

Fig. 4 is a detail section of the attachment taken on line 4—4 of Fig. 2;

Fig. 5 is a detail section taken on line 5—5 of Fig. 2 and illustrating particularly the latch means for retaining the attachment in place on the folding machine;

Figs. 6, 7 and 8 are schematic views illustrating successive steps in the process of opening the flap of an envelope, and in the progress of an envelope through a machine made according to the invention;

Fig. 9 is a perspective view showing the rear face of the usual mailing envelope before opening the flap; and

Fig. 10 is a perspective view showing the rear face of the envelope of Fig. 9 after treatment by the flap opening machine.

Referring to the drawings in detail, the invention described herein relates to envelope handling and is described in detail with particular reference to an envelope flap opening machine which takes the form of a four roller buckle type sheet folding machine and an envelope flap opening attachment therefor.

In Fig. 1 is illustrated a sheet folding machine 100 on which has been mounted the envelope flap opening attachment 10. The folding machine includes an envelope supply holder and guide 102, a feed mechanism 104 of known construction for removing one envelope at a time from the supply holder 102 and thrusting the same forward to be operated upon, and a short guide plate 106 bridging the gap between the feeder 104 and the folding rollers. In the four roller buckle type folder these rollers normally consist of a central roller 108, an upper roller 110, a rear roller 112, and a lower roller 114. The central roller 108 rotates clockwise as seen in Fig. 1 under the influence of a power source (not shown), and the other rollers are resiliently urged against roller 108 in a known manner. When used in a sheet folding operation, the rollers normally cooperate with upper buckle chute 116 having buckle stops 118, and lower buckle chute 120 which has buckle stops 122, to provide transverse folds in work sheets. The buckle stops 118 and 122 are normally adjustable about the axis of shaft 124 to lengthen or shorten the corresponding buckle chute, and thus to provide folds of different lengths. The lower buckle stop 122, furthermore, has a zero position, shown in Fig. 1 in which it engages a deflector plate 124 and moves the same into deflecting position such that any piece issuing from between rollers 108, 114 is directed to the nip of the rollers 108, 114 and fed therebetween to avoid a second fold. Pieces issuing from between rollers 108, 114 are stacked on and transported by the stacking belt 126.

As shown in Fig. 1, the folding machine is so arranged that the upper buckle stop 118 can be adjusted back out of the way, and the upper buckle chute can be swung rearwardly to open up the machine for the clearing of jams and the like. With the folding machine thus adjusted, it is ready for conversion to an envelope flap opening machine by the placing of the attachment 10 therein.

The machine 100 is shown as including transversely extending members 128 and 130. The upper member or bar 128 is a structural member which extends across the machine, while the lower members 130 are stop studs which normally po-

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sition the end of the upper buckle chute 116 when the same is moved to operative position. At either side of the machine is also provided a pivoted spring pressed latch 132 including manually engageable means 134 for releasing the same against the spring pressure. The latches 132 are intended normally for retention of the end of upper buckle chute 116 in operative position against the studs 130.

The envelope flap opening attachment 10 which is applied to the folding machine includes notched portions 12 at either end of the attachment, which notched portions are adapted to engage with the locating studs 130. Hooks 14—14 are also included for engaging the bar 128 and for supporting the attachment thereon. Laterally projecting ears 15—15 and engaged by latches 132 to retain the attachment in an operating position. As seen particularly in Figs. 2 and 4, the attachment 10 preferably consists of sheet metal stampings and includes a guide plate 16 for engaging the leading edge of an incoming envelope and directing the same upwardly. The guide plate is mounted on a frame member or bail 18 which includes a transverse member 20 extending across the machine and rearwardly, and downwardly sloping arms 22. The frame or bail 18 provides the locating notches 12 and is firmly attached to the support hooks 14. As clearly seen in Fig. 4, the transverse member 20 slopes upwardly and rearwardly and is connected at its upper edge to a plate 24 which is bent to form an angle 26 such that the upper end extends substantially vertically.

A vertical slot 28 in plate 24 receives a bolt 30 threadedly connected with a depending plate 32. The plate 32 together with plate 16 and the adjacent portions of the plate 24, form a blind, deviated chute whose length may be adjusted by sliding the bolt 30 up or down in the slot 28, and using the bolt 30 to clamp the plate 32 to the plate 24 at any desired location. For this purpose, an enlarged knurled head 34 is provided on the bolt 30 for ready manipulation. Mounted on the plate 32 and extending across the end of the chute formed by the plates 24 and 32 is a spring finger 36. The spring finger 36 preferably extends through opposed slots in the plates 24 and 32 as shown in Fig. 4, and more than one of such fingers 36 may be employed, if desired, positioned at various locations across the plate 32.

The outer ends of arms 22 provide mounting means for a shaft 38 on which is pivotally supported a stripper plate 40 with its free edge located near the member 20 and is movable to raised or lowered position by pivoting of the plate 40 about the axis of shaft 38. The slotted sector 42, Fig. 3, is integrally connected to the plate 40 for movement therewith. A clamping stud 44 threaded in a reinforcing pad 23 on arm 22 adjacent the sector 42, and passing through the slot therein, is provided for clamping the plate 40 in any desired pivotal position. By means of this adjustable mounting, the mechanism can be adjusted to accommodate envelopes of different depths as well as envelopes having different flap sizes.

The relationship of the parts described above is such that an envelope feeding straight out from the nip of rollers 108, 110 will be deflected upwardly slightly by the stripper member 40 in cooperation with the guide plate 16. Since the most effective arrangement for the stripper surface 40 is nearly perpendicular to the path of the envelope, there is some danger that the leading

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edge of the envelope might be caught by the lower surface of the same and fail to slide off, thereby causing a jam. In this respect therefore, the guide plate 16 may be considered essentially a fender portion of the stripper designed for deflecting contact with the incoming envelope. The plate 32 is so arranged that, after leaving the stripper, the leading edge of an incoming envelope will be further deflected thereby in the same direction. This action, possibly in cooperation with some restraint by angle 26 against the opposite surface of the envelope will cause a bowing action which tends to spread the free edge of the flap sharply away from the envelope body, and put the flap in position for ready stripping during the withdrawal pass. Preferably the parts will be arranged as shown in the drawing so that deflecting contact of the leading edge of the envelope with plate 32 occurs substantially before the trailing edge of the incoming flap is clear of the stripper 40. This will insure that the flap will escape forcibly from the stripper and that on the return or withdrawal pass of the envelope there will still be a certain amount of bowing thereof with consequent projection of the flap, at the time the flap edge first comes to a position where its engagement with the stripper 40 is imminent.

The operation of the device of this invention is best illustrated in Figs. 6, 7 and 8 from which it will be clear that a plurality of envelopes 46 having flaps 48, folded in the normal way as shown in Fig. 9, are stacked in the supply holder or guide 102 with flap creases at the bottom and with the flaps facing away from the machine. When the machine is started the feed mechanism 104 separates the first envelope 46 and projects the same, flap crease first, across the guide plate 106 and into the nip of the rollers 108, 110 which continue to feed the envelope onward and against the guide plate 16 which directs the leading edge upwardly and into the chute formed by itself and the plates 24 and 32, and then around the angle 26 to the position shown in Fig. 6. This concaving of the front face of the envelope results in an accentuation of the separation of the flap 48 from the rear surface of the envelope and causes the same to project sharply so as to be conveniently stripped. In Fig. 6 the flap has just escaped forcibly over the edge of stripper 40. The envelope then proceeds to strike up against the spring finger 36, deflect the same, and then to buckle a little further as the rollers 108, 110 complete the feeding operation and the trailing edge of the envelope leaves their discharge. At this instant friction of the roller 108 with the trailing edge of the envelope carries the same across towards the nip of the rollers 108, 112 at which time the envelope 46, due to its inherent resiliency, tends to straighten out so as to thrust its bottom edge into the nip of the latter roller pair. As soon as rollers 108, 112 make driving contact with the envelope they withdraw the same downwardly causing the stripper 40 to catch under the flap 48 and commence the straightening of the flap as shown in Fig. 7. Continued feeding by the roller pair 108, 112 causes the bottom edge of the envelope to strike the deflector 124 and to be directed thereby into the nip of roller pair 108, 114, also as shown in Fig. 7. Thereafter the envelope 46 is fed continuously out from between the rollers, the crease 50 which defines the inner edge of the flap 48 being first straightened by stripper 40 and thereafter, as shown in Fig. 8, ironed out both by roller pair

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108, 112 and roller pair 108, 114. The envelope 46 is then thrust out onto the stacking belt 126 in the open flap condition illustrated in Fig. 10, and carried to a storage location for completed work.

The ironing process to which the crease 50 is subjected largely removes the set which the envelope flap 48 normally has and causes the flap to assume a relatively permanent outwardly projecting position as illustrated in Fig. 10, so that the same is in condition for ready insertion of the contents either by hand or by machine.

An adjustment of the machine for any given depth of envelope within its capacity can be made by slowly feeding a sample envelope just past the position of Fig. 6 so that the trailing edge has barely left the roller pair 108, 110. The bolt 30 is then loosened and slid in the slot 28 until the envelope is engaged and slightly buckled by the spring finger 36 which is also deflected. The parts are then clamped in this position. The stripper 40 is set low enough to provide clearance between itself and the bottom edge of flap 48, and is clamped in this position by means of clamping stud 44.

Spring finger 36 is an important feature of the invention and provides a gradual arresting action against the leading edge of the envelope which avoids marking of this edge when the envelopes are being projected upwardly with substantial force during high speed operation of the machine. This, however, is not the sole function of the spring 36 which contributes a very desirable, uniform ejecting action tending to insure a firm and early grasping of the lower envelope edge upon its transfer to the withdrawal rollers 108, 112, and thus to provide a sure and reliable action of the machine regardless of variations in the resiliency of the envelope itself, whether such variations are due to changes of atmospheric conditions such as humidity, or to differences in the materials of which the envelopes are made.

The invention also embodies a novel process for opening envelope flaps which appears from the showing in Figs. 6 to 8 and the description pertaining thereto. This process includes bowing the envelope with face inward so that the flap is caused to project, and then drawing the projecting flap over a stripping edge to open the flap fully. The step of ironing the crease is also preferably added for rendering the opening action more permanent. The process of this invention also includes the steps of moving an envelope 46 in one direction with its flap surface towards a stripper member 40, until the flap has escaped past the stripper, and then producing relative movement, generally transversely of the envelope crease between the envelope 46 and stripper 40 so as to lay the flap out straight against the stripper.

In a more specific aspect the method of the invention also includes feeding the envelope 46 in one direction across a stripper 40 by a roller pair, e. g. rollers 108, 110, arresting the leading edge of the envelope as by the end of the chute, or by finger 36 which constitutes the effective end of the chute, deflecting the envelope, for example by plate 32 and angle 26 so that the envelope buckles towards the stripper as it leaves the nip of rollers 108, 110, and thus causes its lower edge to transfer to and to thrust itself into the nip of a pair of adjacent withdrawal rollers, e. g. rollers 108, 112.

Still another aspect of the method of the in-

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vention involves certain of the steps above outlined as applied to the operation of a four roller buckle-type folder for envelope flap opening purposes.

While the invention has been particularly described in the form of an attachment for use in connection with a folding machine, it will be readily appreciated that the elements and principles of operation disclosed are adapted to the construction of an envelope flap opening machine by merely omitting those parts of the folding machine which are required for folding, and which do not necessarily enter into the envelope flap opening operation, e. g. the buckle chutes 116 and 120, the buckle stops 118 and 122, deflector 124 and lower roller 114. The invention accordingly includes machines of this character as well as the specifically described attachment for a folding machine.

While in order to comply with the statute the invention is described in language which is rather specific as to structural features and arrangements, it is to be understood that the invention is not limited to the specific details shown, but that the means herein disclosed comprises the preferred of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the scope of the language employed in the appended claims.

Having described the invention, what is claimed is:

1. An envelope flap opening machine comprising a deviated guide chute; means for thrusting an envelope, flap edge foremost, in one direction into said chute whereby the envelope is bent to space the free end of the flap from the body of the envelope; a flap stripping member located at the convex side of the chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; means arresting the envelope in the chute after the stripping member has been passed by the edge of the flap and means for withdrawing the envelope from the chute in the opposite direction, whereby the stripper lays the flap back away from the envelope body.

2. An envelope flap opening machine comprising a deviated guide chute; means for thrusting an envelope, flap edge foremost, in one direction into said chute whereby the envelope is bent to space the flap from the body of the envelope; a flap stripping member located at the convex side of the chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; means arresting the envelope in the chute after the stripping member has been passed by the edge of the flap; means for withdrawing the envelope from the chute in the opposite direction whereby the stripper lays the flap back away from the envelope body; and rollers for feeding the envelope out in opened condition in a direction perpendicular to the flap crease and for simultaneously ironing the flap crease to reduce the closing tendency thereof.

3. An envelope flap opening machine comprising feed rollers a pair of which insert an envelope, flap edge foremost, in one direction and a pair of which withdraw the same in generally the opposite direction; a deviated guide chute into which an envelope is thrust by said insertion rollers and bent to space the free end of the flap from the body of the envelope; a flap stripping member located at the convex side of said chute

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positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; and means for transferring the trailing edge of an envelope in said chute from the discharge of the insertion rollers to the nip of the withdrawal rollers so that the flap of the envelope is laid back by engagement with the stripper member.

4. An envelope flap opening machine comprising feed rollers a pair of which insert an envelope, flap edge foremost, in one direction and a pair of which withdraw the same in generally the opposite direction; a deviated guide chute into which an envelope is thrust by said insertion rollers and bent to space the free end of the flap from the body of the envelope; a flap stripping member located at the convex side of said chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; and means for transferring the trailing edge of an envelope in said chute from the discharge of the insertion rollers to the nip of the withdrawal rollers so that the flap of the envelope is laid back by engagement with the stripper member; said last named means being adjustable to accommodate envelopes of different depths.

5. An envelope flap opening machine comprising feed rollers a pair of which insert an envelope, flap edge foremost, in one direction and a pair of which withdraw the same in generally the opposite direction; a deviated guide chute into which an envelope is thrust by said insertion rollers and bent to space the free end of the flap from the body of the envelope; a flap stripping member located at the convex side of said chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; and means for transferring the trailing edge of an envelope in said chute from the discharge of the insertion rollers to the nip of the withdrawal rollers so that the flap of the envelope is laid back by engagement with the stripper member, including resilient means located adjacent the end of said chute for engagement with the leading edge of an envelope thrust into the chute.

6. An envelope flap opening machine comprising three feed rollers the first of which cooperates with one of the others to provide an insertion roller pair for feeding an envelope, flap edge foremost, in one direction, and with the third roller to provide a withdrawal roller pair for feeding the envelope in generally the opposite direction; a deviated guide chute into which an envelope is thrust by said insertion rollers and bent to space the free edge of the flap from the body of the envelope; a flap stripping member located at the convex side of said chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; and means for transferring the trailing edge of an envelope in said chute from the discharge of the insertion rollers to the nip of the withdrawal rollers.

7. An envelope flap opening machine comprising three feed rollers the first of which cooperates with one of the others to provide an insertion roller pair for feeding an envelope, flap edge foremost, in one direction, and with the third roller to provide a withdrawal roller pair for feeding the envelope in generally the opposite direction; a deviated guide chute into which an envelope is thrust by said insertion rollers and bent to space the free edge of the flap from

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the body of the envelope; a flap stripping member located at the convex side of said chute positioned to come between the convex face of an envelope in the chute and the spaced free end of the flap; and means for transferring the trailing edge of an envelope in said chute from the discharge of the insertion rollers to the nip of the withdrawal rollers including resilient means located adjacent the end of said chute for engagement with the leading edge of an envelope thrust into the chute; said last named means being adjustable to accommodate envelopes of different depths.

8. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a deviated chute having an entrance, and having an opening at its convex side; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

9. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a blind deviated chute having an entrance, and having an opening at its convex side; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; means for adjusting the effective length of said chute in the direction of envelope travel; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

10. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a blind deviated chute having an entrance, and having an opening at its convex side; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; means for adjusting the effective length of said chute in the direction of envelope travel; means for adjusting the position of the stripper means along the chute in the direction of envelope travel, and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

11. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the

frame providing a deviated chute having an entrance, and having an opening at its convex side; a flap stripper plate pivoted on the frame and having an edge adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; means for adjusting the effective length of said chute in the direction of envelope travel; means for releasably holding the stripper plate in adjusted position about its pivot for thus positioning said edge at any desired location along the chute in the direction of envelope travel; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

12. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a blind deviated chute having an entrance, and having an opening at its convex side, said means including a bent plate forming one side of said chute and a second plate adjustably mounted on said first plate and forming a portion of the other side of the chute, and means defining the blind end of the chute and carried by said second plate; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

13. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a deviated chute having an entrance and having an opening at its convex side; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair; and resilient envelope edge contacting means mounted at the opposite end of said chute from said entrance.

14. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a deviated chute having an entrance, and having an opening at its convex side, said means including a bent plate forming one side of said chute and a second plate adjustably mounted on said bent plate and forming a portion of the other side of said chute, and spring fingers carried by said second plate and extending across said chute to provide a resilient envelope edge contacting means substantially defining the end of the chute; flap stripper means on the frame entering said opening and so re-

lated to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

15. For use with a buckle type folder having a plurality of rollers constituting a projection pair and a withdrawal pair, an attachment for converting the folder to an envelope flap opening machine, comprising a frame; means on the frame providing a blind deviated chute having an entrance, and having an opening at its convex side; flap stripper means on the frame adjacent said opening and so related to the chute as to come between the convex face of an envelope in the chute and the free end of the flap of such envelope which has become spaced from the envelope face due to its buckled position in the chute; resilient envelope edge contacting means for determining substantially the end of said chute; means for adjusting the position of said resilient means for determining the effective length of said chute in the direction of envelope travel; and means for mounting the frame on the folder with the chute entrance adjacent the discharge of said projection pair and the nip of said withdrawal pair.

16. The method of opening an envelope flap which comprises the steps of moving the envelope, flap edge foremost in one direction; deflecting the envelope somewhat from its normal path by a relatively stationary stripper member pressed against the flap surface thereof; during continued movement of the envelope, further deflecting the leading edge of the same from the stripper-determined path; stopping said motion when the flap has cleared the stripper; and then moving the envelope in a generally reverse direction such that the surface of the envelope is maintained in proximity to the stripper and the flap is caught and straightened by the stripper as the envelope passes.

17. The method of continuously opening envelope flaps which comprises feeding each envelope, flap edge foremost, in one direction by means of a pair of continuously rotating rollers; arresting the leading edge of said envelope at a location such that the envelope is slightly buckled when fully fed from between said rollers; simultaneously deflecting the travel of said envelope so that the latter is compelled to buckle in a predetermined direction with the flap on the con-

18. The method of continuously opening envelope flaps using a four roller buckle folder having a center roller and three outer rollers, which comprises placing a deflector between one pair of outer rollers; feeding each envelope, flap surface towards the center roll and flap edge foremost, between the center roll and the remaining outer roll other than said pair; arresting the leading edge of said envelope at a location such that the envelope is slightly buckled when fully fed from between said center roller and said remaining roller; simultaneously deflecting the travel of said envelope so that the latter is compelled to buckle towards the adjacent roller of said pair of outer rollers and with its flap surface convexed, whereby when the trailing edge of the envelope is free of said remaining roller, it will be carried along by said center roller, will snap into the nip formed between said central roller and said adjacent roller and will be fed in a withdrawal direction thereby; and stripping the flap to open position as the envelope is withdrawn from said location by said second pair of rollers.

19. The method of opening an envelope flap which comprises moving an envelope, flap edge foremost, in a substantially predetermined curved path in one direction, and guiding and confining the envelope closely to said path so as to curve the same, with the flap disposed at the convex side of the path so as to be partly extended; while thus moving the envelope, causing it to pass a relatively stationary stripper disposed closely adjacent the path and positioned to encounter the partly extended flap, press it towards the envelope and then allow it to snap free of the stripper; and then moving the envelope in a reverse direction in said curved path so that the flap is caught and laid back by the stripper.

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