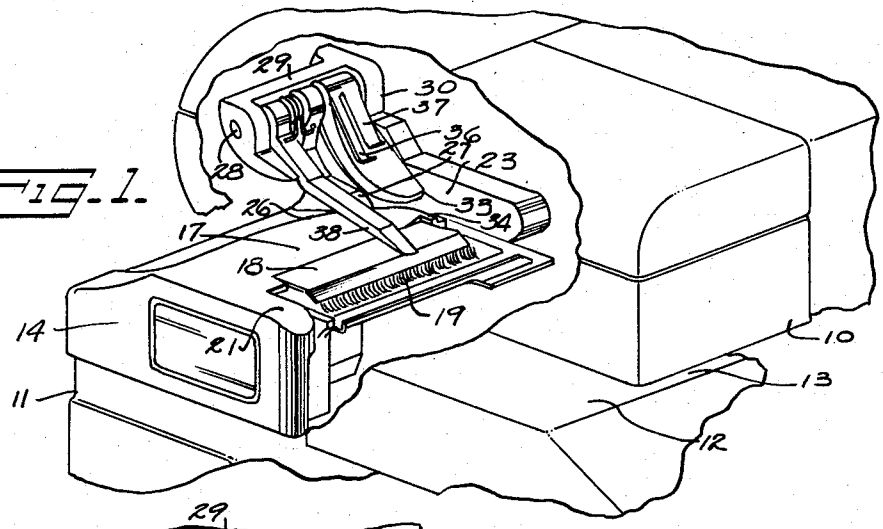
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LETTER FLAP MOISTENER

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Fig. 1.



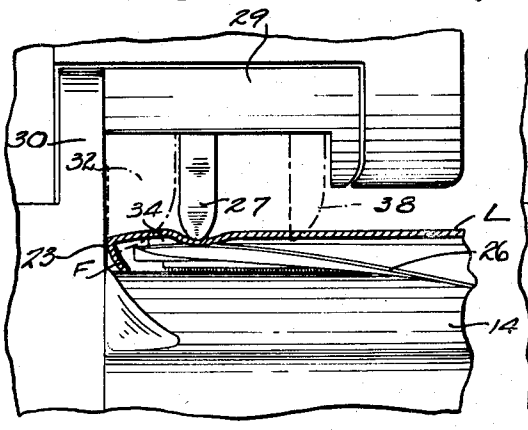


Fig. 2.

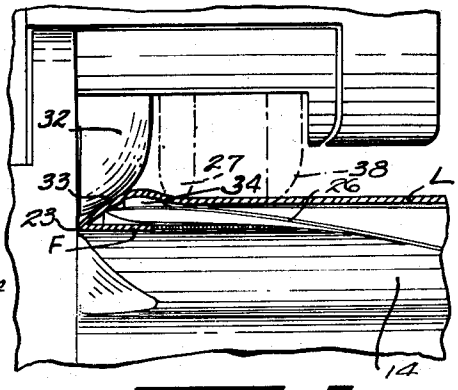


Fig. 3.

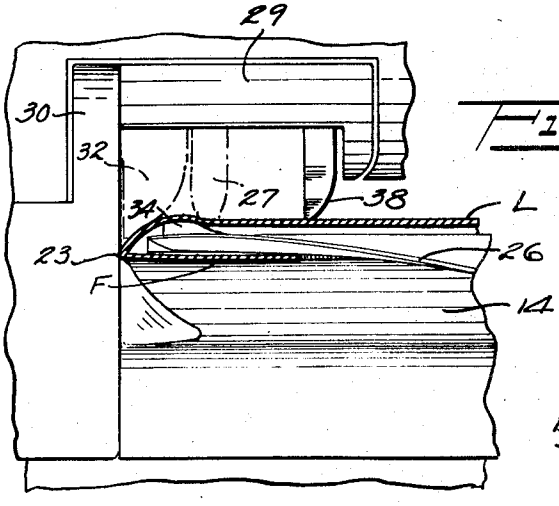


Fig. 4.

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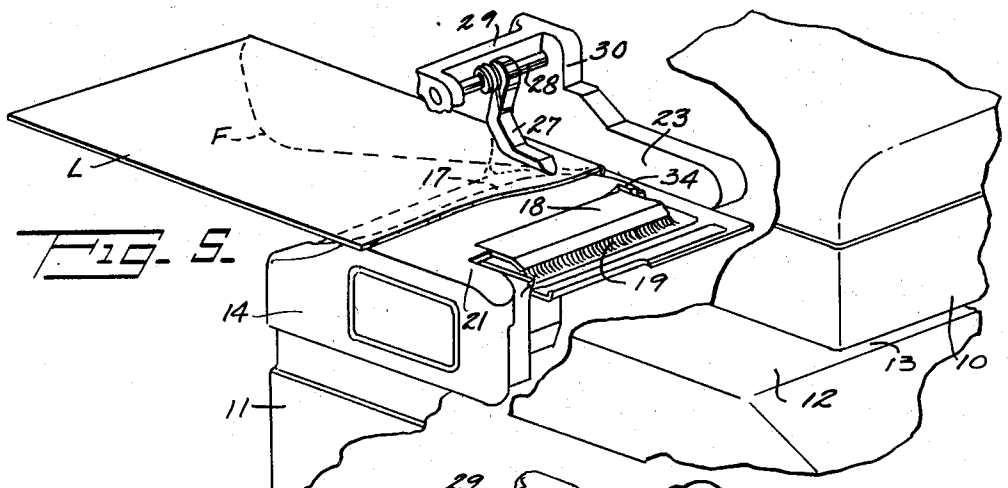


FIG. 5.

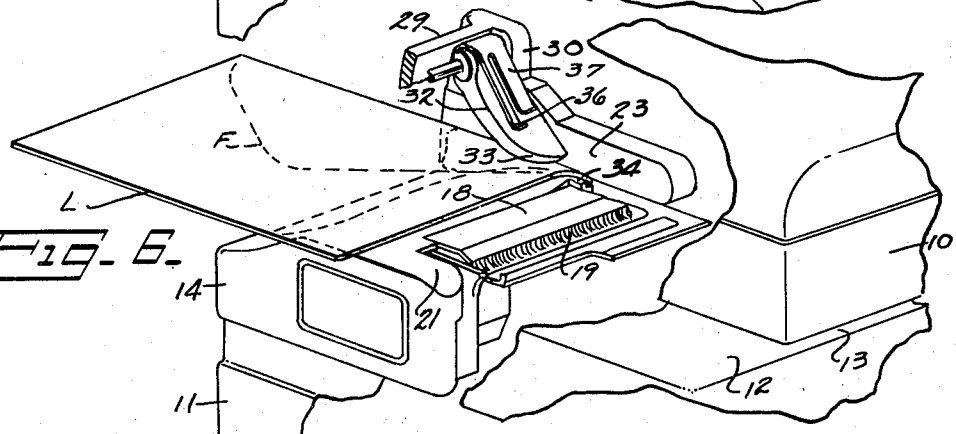


FIG. 6.

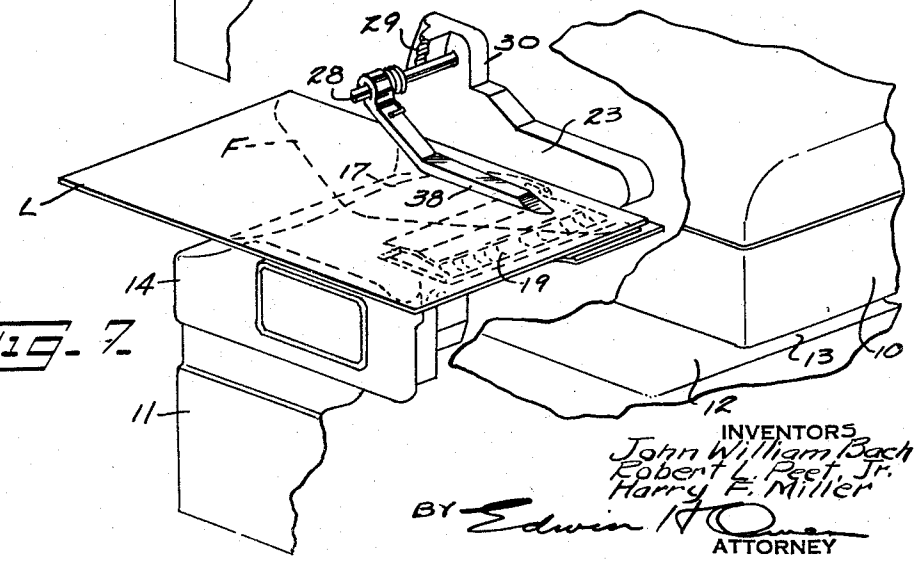


FIG. 7.

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LETTER FLAP MOISTENER

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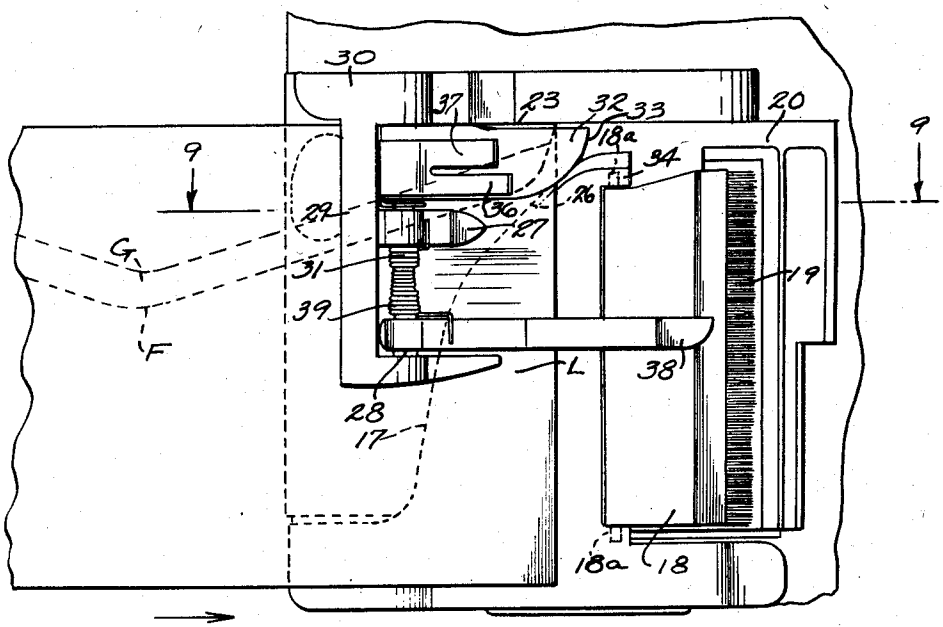


FIG. 8.

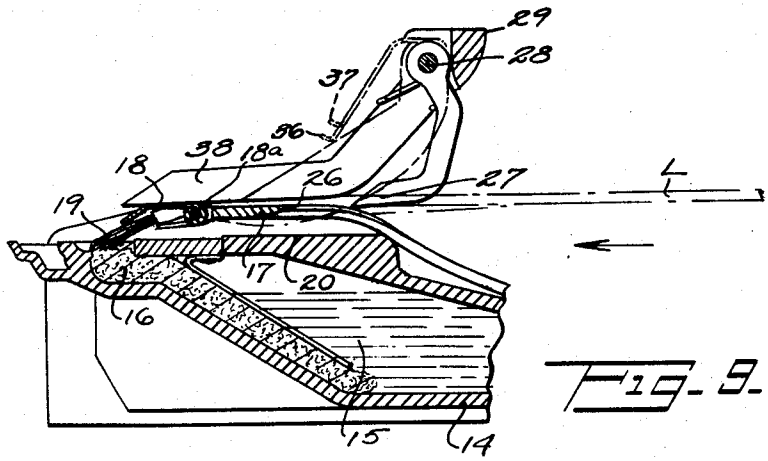


FIG. 9.

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LETTER FLAP MOISTENER

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Filed Apr. 21, 1958, Ser. No. 729,976

10 Claims. (Cl. 118—243)

This invention relates to devices for moistening the gummed closure flaps of envelopes, more generally referred to as letters, preparatory to sealing them for mailing.

An object of this invention is to provide a simple and efficient letter flap moistener which will operate on letters which vary in weight, length and width over a wide range.

Another object is to provide such a device which is easy to operate and which is substantially trouble-free.

This and other objects referred to below have been obtained by a novel combination of means for separating the closure flap from the body of the letter by bowing the letter transversely and maintaining the separation by a stripper plate as the letter is advanced to a moistener, and insuring that notwithstanding the bowing of the letter the original flap-fold is preserved and no false crease at the flap-fold will be produced adjacent the junction of the flap with the body of the letter. Such a false crease would result in improper sealing of the letter and is undesirable for many reasons.

It is therefore an important feature of the present invention that the formation of a false crease which might result from the bowing of the letter is avoided. This is accomplished by providing on the device suitable surfaces on which the leading end of the letter rides and by which the body of the letter and its closure flap are guided and deflected.

Another feature of the present invention is the provision of simple and convenient means for applying pressure to the letter so that it properly follows the guide surfaces which it engages, whether the letter be of normal thickness or thicker or thinner than normal. Such means in the form of the invention illustrated and described herein as exemplary thereof includes a supporting structure overlying the path of the letter and having a shaft extending transversely of the direction of travel of the letter on which there is mounted a plurality of fingers which extend in the direction of travel of the letter and which are yieldingly urged against the body of the letter as it advances.

In the form of the invention herein illustrated, the flap of the letter is moistened by an applicator mounted on the delivering end of the flap stripper plate over which the body of the letter rides. Pressure is applied to the applicator (to press it against the flap) through the medium of the letter passing over the plate. To do this, an additional spring-operated finger is mounted on the transverse shaft carrying the other fingers and this additional finger is extended to engage the portion of the letter on the plate at a point substantially over the applicator.

Other features and advantages will hereinafter appear.

For the purposes of illustration and explanation, the invention is shown in detail in its preferred form in the accompanying drawings, wherein:

Fig. 1 is a perspective view of the letter flap moistening device of the present invention showing it applied to a postage meter machine with parts of the casing removed;

Fig. 2 is a fragmentary end view of the receiving end

of the device diagrammatically showing the letter in section with a portion being bowed and the leading edge of the flap having left engagement with the body of the letter;

Fig. 3 is a view similar to Fig. 2 showing the letter at an advanced stage in its travel through the machine at which time the flap-fold is depressed into engagement with a lateral or back guide;

Fig. 4 is a view similar to Figs. 2 and 3 showing the letter at its still further advanced position, and showing a pressure finger for applying pressure at a point over a moistener applicator;

Fig. 5 is a perspective view like Fig. 1, but showing the letter in the position illustrated in Fig. 2 in which the letter is bowed and showing only the finger for bowing the letter;

Fig. 6 is a view like Fig. 5, but showing the letter in the position shown in Fig. 3, with only the finger for restoring the flap-fold being shown;

Fig. 7 is a view like Figs. 5 and 6, but showing the letter in the position shown in Fig. 4, with only the finger for applying pressure to the applicator shown;

Fig. 8 is a top plan view of the moistening device of the present invention showing a letter being advanced through the device; and

Fig. 9 is a longitudinal sectional view taken on the line 9—9 of Fig. 8.

As shown in Fig. 1, the moistening device of the present invention is incorporated in a postage meter machine (shown fragmentarily) including a meter casing **10** containing mechanism which prints a postage stamp impression on the letter. It also includes a framework **11** and a guide table **12** for the support of the letter when postage is applied. A passageway **13**, open at the front and at both ends, is provided between the meter casing **10** and the table **12** through which the letters pass.

The moistening device of the present invention is located at the entry end of the passage **13** and comprises a housing **14** having a top surface substantially in the plane of the table **12**. The housing encloses a reservoir **15** for moistening fluid and has a wick **16** contained therein (Fig. 9), through which moisture is attracted to its exposed end by capillary attraction. Mounted on the upper portion of the housing **14** within the passageway **13** is a flap stripper plate **17**. A flap moistening brush **19** is supported by a plate **18** and is hinged at **18***a* to the delivery end of the stripper plate **17**, the brush resting on a portion of the wick **16**. In passing through the machine, the flap F of a letter L passes under the stripper plate **17**, in a manner described below, and between the brush **19** and the underlying supporting surface **20** forming part of the housing **14** so that moisture picked up by the brush **19** from the exposed moist end of the wick **16** will be transferred to the upwardly facing gummed inner surface G of the letter flap.

The stripper plate **17** is secured to the housing **14** along the front edge portion **21** thereof so that the working portion projects into the passageway **13** and is otherwise spaced from the upper surface **20** of the housing.

In the embodiment of the invention herein illustrated as exemplary thereof, the letters L are hand fed endwise through the moistening device with the face of the letter upward and with the edge **24** of the flap-fold in engagement with a back guide surface **23** of a bracket **30**. The leading lower surface of the letter is initially supported on the surface of the stripper plate **17**. The entering or stripping edge **26** of the stripper plate **17** is beveled to a dull knife edge and slopes off as it extends inwardly and forwardly so that initially while the body of the letter is being supported by the surface of the stripper plate, the flap of the letter is unsupported but nevertheless remains flat against the body of the letter.

Since it is desired to moisten the gummed inner surface

G of the letter flap by the brush 19, the leading edge of the flap must be separated from the body of the letter so that it can pass under the stripper plate 17 while the body of the letter passes over it.

To accomplish the stripping of the leading edge of the flap from the body, the present invention applies downward pressure to the letter in the vicinity of the flap-fold when the leading edge of the letter reaches a predetermined point in its advancement. For this purpose, a pivoted pressure finger 27 is provided in the path of the leading edge of the letter. The pressure finger 27 is carried on a shaft 28, mounted in an overhanging arm 29 of the bracket 30. One end of a spring 31 on the shaft 28 engages the finger 27 and yieldingly urges its end downwardly.

As the leading edge of the letter engages and moves beyond the finger 27, as in Fig. 8, the finger pressure, which occurs short of the knife edge, causes the letter to be bowed sufficiently to cause the flap to move away from the body of the letter so that the knife edge portion 26 of the stripper plate may pass under the flap. The flap is thus maintained separated from the body of the letter so as to pass under the brush 19. The tension of the spring 31 is so adjusted as to produce the required amount of bowing of the letter.

As a result of this bowing of the letter, the angle between the body of the letter and the flap at the flap-fold is such that restoration of the flap-fold portion to its normal position could result in the formation of a false crease at the fold. That is, a new crease could result between the flap and the body of the letter which would converge outward from the leading to the trailing end of the letter leaving an undesirable gap between the body of the letter and the flap edge at the trailing end.

To avoid such false creasing possibility, the present invention provides for a spring urged finger 32 on the shaft 28 which is positioned to engage the letter at a point between the finger 27 and the back guide surface 23. The finger 32 is arranged so as to yieldingly engage the longitudinal marginal portion of the letter. As the letter advances, its leading edge is engaged by a curved surface 33 of the finger 32 which tends to depress the longitudinal margin and move the flap-fold downwardly to substantially its normal position, as shown in Fig. 3. To facilitate this bending down of the longitudinal flap-fold margin of the letter, the stripper plate 17 is provided with an upwardly projecting curved lug 34 in line with and ahead of the finger 32, as best seen in Fig. 2. The combined pressure of the finger 32 and the curvature of the lug 34 causes the body of the letter to be drawn around the lug while the flap edge assumes a somewhat normal position against the back guide 23. The flap takes a position under the free inner edge 22 of the stripper plate in a substantially horizontal position.

These operations on the letter continue while the letter is advanced manually and during the printing part of the operation thus maintaining the flap edge of the envelope in its normal fold relation throughout a flap moistening operation. While printing, the letter is advanced under power by a printing drum and impression roller in a known manner.

To accommodate letters of varying thickness the finger 32 is provided with a flat spring having two spring elements a longer spring element 36 and a shorter spring element 37 which successively come into operation. A letter of normal thickness will cause the finger 32 to be engaged by the longer or weaker spring element 36, whereas, a letter of greater than normal thickness will cause the finger 32 to be raised higher than normally and be engaged by both the spring element 36 and the spring element 37. The advancement of the letter past the moistening brush 19 causes the gummed portion G of the flap to be engaged and moistened by the brush 19 while the body of the letter rides over the stripper plate 17.

In order to conveniently apply pressure on the brush so that the flap is properly moistened, the present invention further provides a finger 38 carried on the transverse shaft 28 to engage the body of the letter thus applying pressure therethrough to the brush supporting plate 18 and to the brush 19. The opposite side of the flap is backed up by the surface 20 of the housing 14, as above explained. The finger 38 is yieldingly urged toward the letter by a spring 39.

After the flap has been moistened and the letter has passed beyond the brush, pressure to seal the flap of the letter may be provided by any suitable means. When the device is used with a postage meter machine as shown, sealing pressure is provided during the normal rotary printing operation. The stacking of the letters one upon the other further adds to the effective sealing of the flaps.

What is claimed is:

1. A device for moistening the gummed closure flaps of letters comprising a back guide for the flap-fold edge of a letter being advanced through the device; a flap stripper plate in the path of travel of the letter to be interposed between the flap and the body of the letter, said stripper plate having an entering end and a delivering end; a moistener at the delivering end of the stripper plate to apply moisture to the gummed inner surface of the flap as the letter advances; means at the receiving end of the device for bowing the letter transversely whereby a space is opened between the leading edge portion of the flap and the adjacent portion of the letter body, the stripper plate being positioned to enter said space; and means subsequently engaging the body of the letter adjacent the flap-fold edge for deflecting the flap-fold of the bowed portion of the letter to a position engaging the back guide so as to avoid the formation of a false flap-fold when the flap is moistened and pressed against the body of the letter.

2. A device for moistening the gummed closure flaps of letters comprising a frame; a stripper plate for supporting letters as they are advanced through the device, said plate being supported on the frame solely at its exterior edge portion and spaced elsewhere from the frame to provide a clear passage beneath it for the letter flap; a back guide on the frame adjacent but spaced from the interior edge of the plate and positioned for engagement with the flap-fold edge of a letter to guide the letter in passing through the device; a moistener supported on the delivering end of the stripper plate, the moistener including an applicator positioned to engage the gummed surface of the flap of a letter, the stripper plate having an entering edge to separate the flap from the body of the letter so that the flap passes under the stripper plate and the moistener applicator; means for bowing transversely the flap-fold edge portion of the letter to raise the flap-fold and space the flap from the body of the letter as the letter approaches the entering edge of the stripper plate; a projection on said plate about which the flap edge body portion of the letter will flex; and means for depressing the flap-fold edge of the letter around said projection to restore it to engagement with the back guide and avoid a false crease being formed at the flap-fold.

3. A device for moistening the gummed closure flaps of letters comprising a frame; a stripper plate for supporting letters as they are advanced through the device, said plate being supported on the frame solely at its exterior edge portion and spaced elsewhere from the frame to provide a clear passage beneath it for the letter flap; a back guide on the frame adjacent but spaced from the interior edge of the plate and positioned for engagement with the flap-fold edge of a letter to guide the letter in passing through the device; a moistener supported on the delivering end of the stripper plate, the moistener including an applicator positioned to engage the gummed surface of the flap of a letter, the stripper plate having an entering edge to separate the flap from the body of the letter so that the flap passes under the stripper plate and

the moistener plate to the applicator; means for bowing transversely the flap-fold edge portion of the letter to raise the flap-fold and space the flap from the body of the letter as the letter approaches the entering edge of the stripper plate; means for depressing the flap-fold edge of the letter to restore it to engagement with the back guide to avoid a false crease being formed at the flap-fold; means for applying pressure to the body of the letter as it passes over the moistener plate to apply pressure to the latter through the letter and hence to cause the applicator to press against the gummed surface of the flap; each of said means being pivotally and yieldably supported on an axis perpendicular to the back guide.

4. In a device for moistening the gummed envelope closure flaps of letters as the envelope portion thereof with its flap down is moved endwise across a moistener applicator, a supporting surface for the envelope comprising a flap stripper plate having a stripping edge shaped to enter behind the flap, a back guide engageable by the flap fold edge of the envelope, means to bow the envelope to cause the flap to separate from the back thereof sufficiently for the stripping edge to effectively enter thereunder, an upwardly projecting lug on the stripper plate to raise the fold edge portion of the envelope as it passes thereover, and pressure means engaging the raised fold edge to effectively force the fold around the projecting lug and against the back guide to thereby maintain the edge of the flap fold in engagement with the back guide and avoid a false crease at the flap fold.

5. In a device for moistening the gummed envelope closure flaps of letters as the envelope portion thereof with its flaps down is moved endwise across a moistened applicator, a supporting surface for the envelope comprising a flap stripper plate having a stripping edge shaped to enter behind the flap, a back guide engageable by the flap fold edge of the envelope, means to bow the envelope to cause the flap to separate from the back thereof sufficiently for the stripping edge to effectively enter thereunder, an upwardly projecting lug on the stripper plate to raise the fold edge portion of the envelope as it passes thereover, and a spring urged finger having a cam shaped end engaging the raised fold edge to effectively force same around the projecting lug and against the back guide to thereby maintain the edge of the flap fold in engagement with the back guide and avoid a false crease at the flap fold.

6. In a device for moistening the gummed envelope closure flaps of letters as the envelope portion thereof with its flap down is moved endwise across a moistener applicator, a supporting surface for the envelope comprising a flap stripper plate having a stripping edge shaped to enter behind the flap, a back guide engageable by the flap fold edge of the envelope, means to bow the envelope to cause the flap to separate from the back thereof sufficiently for the stripping edge to effectively enter thereunder, an upwardly projecting lug on the stripper plate to raise the fold edge portion of the envelope as it passes thereover, a yieldable finger having a cam shaped end engaging the raised fold edge to effectively force same around the projecting lug and against the back guide to thereby maintain the edge of the flap fold in engagement with the back guide and including a variable pressure spring associated with said finger to effect light pressure when envelopes with lighter weight contents are moved through the moistening position and heavier pressure when envelopes with heavier weight contents are moved through the moistening position, whereby a false crease at the flap fold is avoided.

7. In a device for moistening the gummed closure flaps of letters passed endwise therethrough, the combination with a frame having a back guide engageable by the flap edge of the letter, a flap stripper plate in the path of the flap, and a moistener brush in the path of the gummed surface of the flap, of a plurality of pressure applying elements mounted above and engageable with the upper surface of the letter as it moves therepast, one element to effect bowing of the letter whereby the flap opens sufficiently to assure stripping engagement of the stripper plate therewith, one element to depress and force the flap fold edge against the back guide to avoid a false crease, and one element to apply pressure through the body of the letter and against the moistener brush to effect adequate moistening of the gummed portion of the flap.

8. In a device for moistening the gummed closure flaps of letters passed endwise therethrough, the combination with a frame having a back guide engageable by the flap edge of the letter, a flap stripper plate in the path of the flap, and a moistener brush in the path of the gummed surface of the flap; of three spring urged pressure applying fingers engageable with the upper surface of the letter as it moves therepast, a shaft transversely positioned relative to the direction of letter movement, a supporting arm for said shaft extending from the back guide, a projection on said stripper plate engageable by the flap fold, one finger to effect bowing of the letter whereby the flap opens sufficiently to assure stripping engagement of the stripper plate therewith, one finger to depress the flap fold edge around the projection and against the back guide to avoid a false crease, and one finger to apply pressure through the body of the letter and against the moistener brush to effect adequate moistening of the gummed portion of the flap.

9. In a device for moistening the gummed closure flaps of letters passed endwise therethrough, the combination with a frame having a back guide engageable by the flap edge of the letter, a flap stripper plate in the path of the flap, and a moistener brush in the path of the gummed surface of the flap; of a shaft projecting from the back guide above and across the path of letter movement, a spring pressed finger having one end pivoted on said shaft and its free end engaging the letter to effect bowing at the flap area thereof, whereby the flap opens sufficiently to assure stripping engagement of the stripper plate therewith, and another spring pressed finger having one end pivoted on the shaft and having its free end engaging the letter near the fold edge thereof to depress same and force the flap fold edge against the back guide, whereby a false crease is avoided.

10. In a device for moistening the gummed closure flaps of letters passed endwise therethrough, the combination with a frame having a back guide engageable by the flap edge of the letter, a flap stripper plate in the path of the flap and a moistener brush in the path of the gummed surface of the flap; of a shaft projecting from the back guide above and across the path of letter movement, a spring pressed finger having one end pivoted on said shaft and its free end engaging the letter to effect bowing at the flap area thereof, whereby the flap opens sufficiently to assure stripping engagement of the stripper plate therewith, a raised portion on the stripper plate in the path of the fold end portion of the letter, and another spring pressed finger having one end pivoted on the shaft and having its free end engaging an area of the letter near the fold edge thereof to depress said area around the raised portion and force the flap fold edge against the back guide, whereby a false crease is avoided.

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