United States Patent

[11] 3,620,441

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[54] **ENVELOPE**
2 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** ..... **229/85,** 229/51 TS, 229/81
[51] **Int. Cl.** **B65d 27/34,** B65d 27/38
[50] **Field of Search** ..... 229/85, 51 WB, 81, 51 IS, 51 RC, 51 SC, 51 D, 51

[56] **References Cited**

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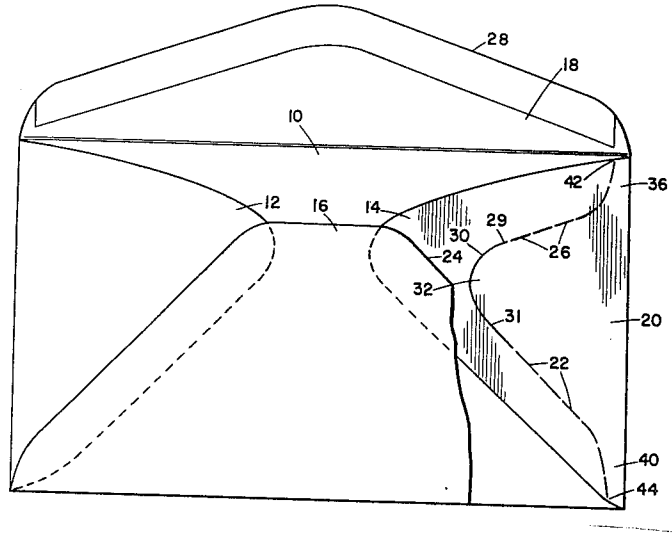
ABSTRACT: An envelope having a flap portion which is easily stripped to completely open one end, the flap having staggered perforations which tear alternately to reduce the force required to initiate as well as to continue the tear and so being particularly adaptable to high-speed opening by machine. A strippable flap is defined by specially staggered perforations for ease in opening, and a special positioning of the strippable flap makes it possible to open envelopes of different sizes on the same envelope-opening machine frequently without adjustment or only one-half of the adjustment otherwise required.



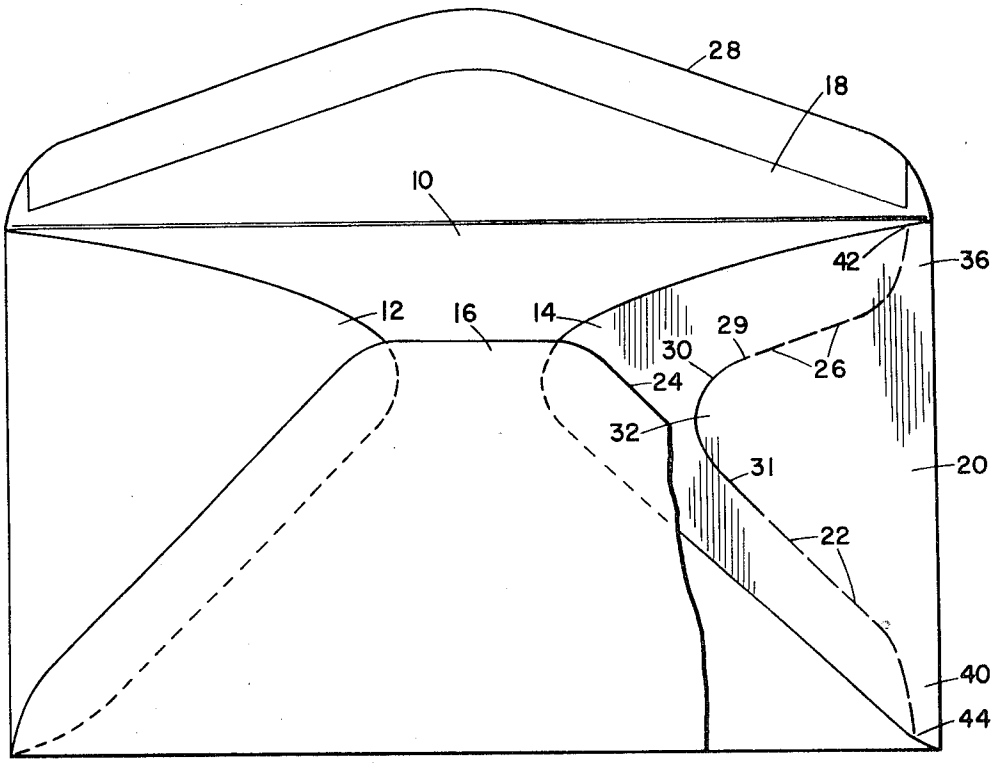


Fig. 1

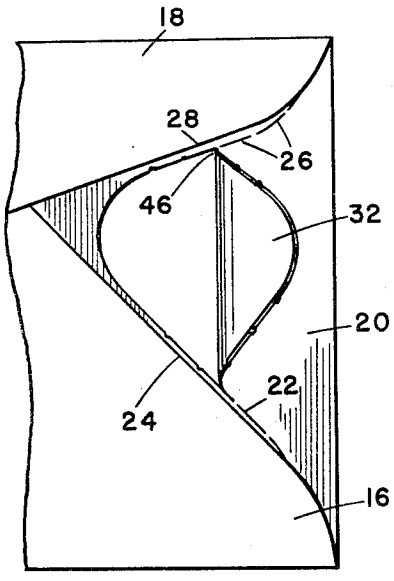


Fig. 2

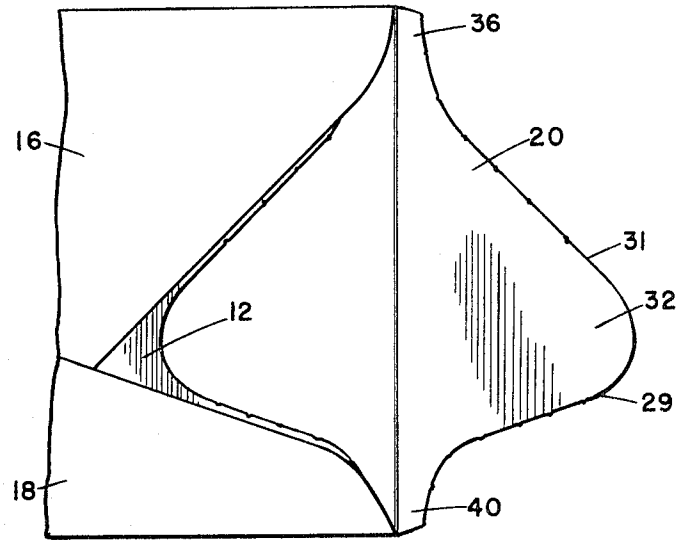


Fig. 3

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ENVELOPE

BACKGROUND OF THE INVENTION

The present invention relates to stationary and specifically to an envelope suitable for high-speed machine opening.

In the processing of incoming mass mail, such as utility bills and payments involving standardized envelopes and contents, it is desirable to use mechanical processing means as much as possible for economy. Various types of envelopes have been developed with flaps or other portions which are stripped open to expose the contents, but few are adaptable to high-speed machine handling. At rates on the order of thousands of envelopes a minute, any tendency toward inconsistent stripping will result in incomplete opening of envelopes, or even jamming of the machine. Some envelopes of the easy opening type have slit or otherwise weakened flap portions which can interfere with insertion and extraction of contents.

SUMMARY OF THE INVENTION

The envelope described herein is particularly adapted to very high-speed opening and has a flap which requires a minimum of tearing or stripping effort, yet is secure in normal use. A slit tab ensures positive starting of the stripping action and the perforations along the flap edges are staggered to tear alternately. A special arrangement and positioning of the strippable flap facilitates both hand and machine opening and usually obviates or reduces the necessary readjustment of the stops on the machine for different sized envelopes. The flap is adaptable to standard forms of envelopes and requires little change in production tooling.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a view of the back of a typical envelope, partially cut away to show the flap arrangement;

FIG. 2 is a fragmentary view showing tearing action of the strippable flap; and

FIG. 3 is a fragmentary view showing the special positioning of the strippable flap when it is desired to make the envelopes for both hand and machine opening.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The envelope shown in FIG. 1 is a conventional type having a front panel 10, inwardly folded side panels 12 and 14, an upwardly folded bottom panel 16 and a closure flap 18. Only the side panel 14 is a modified to incorporate the strippable flap. As shown, the folded panels are all of modified triangular shape, with the bottom panel 16 somewhat larger than closure flap 18. However, the strippable flap arrangement is adaptable to envelopes of other proportions and configurations in present use.

The strippable flap 20 is generally triangular and is defined by a line of perforations 22 in closely spaced parallel relation to the inclined edge 24 of bottom panel 16, and a line of perforations 26 in close parallel relation to the inclined edge 28 of closure flap 18, when the latter is closed. The perforations are elongated rather than being of round hole type, for a particular reason hereinafter described. At the apex the two lines of perforations are joined by a continuous substantially arcuate slit 30 with extensions 29 and 31 defining a tab 32, by which the opening action is started. A narrow arm portion 36 of flap 20 extends to the upper corner of the envelope. The lower edge portion of side panel 14 has a similar narrow arm portion 40 extending to the lower corner. Arm portions 36 and 40 extend the flap to the full width of the envelope and ensure complete opening.

Perforations 26 curve outwardly toward the end of the envelope but stop short of the edge to leave a small unbroken terminal tear portion 42, so that there is no cut or broken edge. Perforations 22 similarly curve outwardly toward the end of the envelope but leave an unbroken terminal tear portion 44 at the end. To reduce the force needed to tear open the flap, which is desirable for high-speed operation, perforations 22 and 26 are staggered longitudinally of the envelope in the direction of stripping of the flap. This can be seen in FIG. 2, in which the tab 32 is separated and the flap 20 partially peeled back. A tear connection 46 between perforations 26 is just about to separate, while the lower edge of the flap is still about halfway along a perforation 22. The upper and lower perforations thus tear open alternately as the flap is peeled back, so reducing the total pull required. Due to the difference in inclination of the lines of perforations and the staggered arrangement, perforations 22 are somewhat longer individually than perforations 26. This is advantageous, since the perforations 22 extend more obliquely to the direction of stripping than the perforations 26 and would normally be more difficult to separate. The extensions 29 and 31 on either side of the curved central part of the slit 30 are unequal so that the slit extends further on the more oblique side, leading into perforations 22, ensuring that the tearing action is first started in the less inclined or oblique line of perforations 26 where the tearing is easier to initiate and thus more surely repetitively initiated in the envelope opening machine.

A typical machine for opening this type of envelope is disclosed in copending application Ser. No. 793,107, filed Jan. 22, 1969, now U.S. Pat. No. 3,549,067 and entitled Envelope Opening Machine. In this machine the tab 32 is gripped by a vacuum element and pulled out as the envelope is driven through the machine, resulting in a peeling action, and at very high rates of feed it is essential to reduce the stripping force as much as possible. After the perforations are separated, continued motion causes the flap 20 to be snapped out to the fully open position shown in FIG. 3.

The positioning of the strippable flap may be in either side panel 12 as illustrated in FIG. 3 or in side panel 14 as illustrated in FIGS. 1 and 2. The greater amount of detail in this disclosure has been shown in FIGS. 1 and 2 for ease in description and understanding but there are extra advantages in locating the strippable flap in the side panel 12, that is, on the right-hand side panel when the envelope is viewed from the back thereof and with the closure flap 18 downward as shown in FIG. 3. When thus positioned and arranged, hand opening is convenient to those persons who naturally invert the envelope, after glancing at the address side, to initiate the opening process. In this position a right-handed person naturally holds the envelope, inverted and with the back of the envelope toward him, and he pulls open the strippable flap with his right hand. In addition, this positioning, that shown in FIG. 3, makes it often unnecessary to adjust no more than one of the stacking stops in an automatic envelope opening machine, since the positioning of the strippable flap is fixed in relation to the closure flap and the latter is more or less standard size in different envelopes.

It will be evident from the foregoing that the advantages of the disclosed features have been incorporated into an otherwise substantially standard envelope and this has obvious economic benefits.

I claim:

1. In an envelope having a front panel, inwardly turned side panels, an upwardly turned bottom panel secured to said side panels and an upper closure panel, the improvement comprising:

a substantially triangular strippable flap in one of said side panels defined by lines of perforations converging from the adjacent end of the envelope to an apex, the apex having a continuous substantially arcuate slit defining a tab;

said perforations being elongated, and the perforations in one line being staggered relative to those in the other line in the direction of opening of the flap for ease in initiating tearing;

said slit having unequal extensions on either side of a curved central portions and thereby further insuring that the tearing action is started in one line of perforations before it is started in the other line of perforations.

2. The structure of claim 1 wherein one line of perforations is less oblique than the other and the extension of said slit

leading to the less oblique line of perforations is shorter than the extension leading to the more oblique line of perforations.

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