United States Patent

[11] 3,633,816

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[54] **FANFOLD ENVELOPE ASSEMBLY**
5 Claims, 5 Drawing Figs.

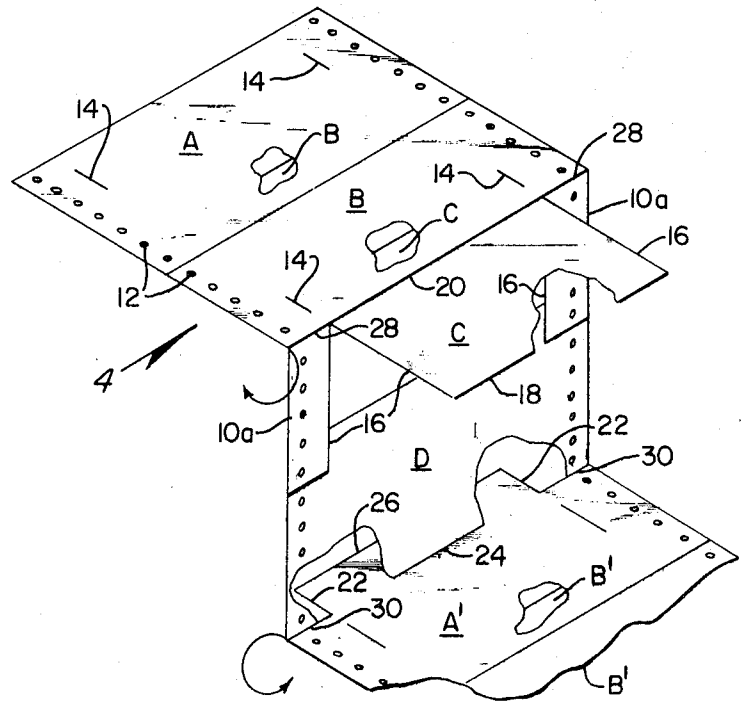
[52] **U.S. Cl.** ..... **229/69,** 93/61 R
[51] **Int. Cl.** **B65d 27/10**
[50] **Field of Search** ..... 229/69; 93/61 R

[56] **References Cited**
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2,824,685	2/1958	Patton	229/69
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ABSTRACT: Continuous web of shingle overlapped envelopes adhesively secured together adjacent side edges of same at the overlap areas, characterized by slits in certain of the envelopes which permit repetitive sets of envelopes to be articulated along hinge lines into a fanfold stack. The slits are in repetitive pairs, each pair being of different length and different orientation with respect to its envelope than the length and orientation of the other pair.



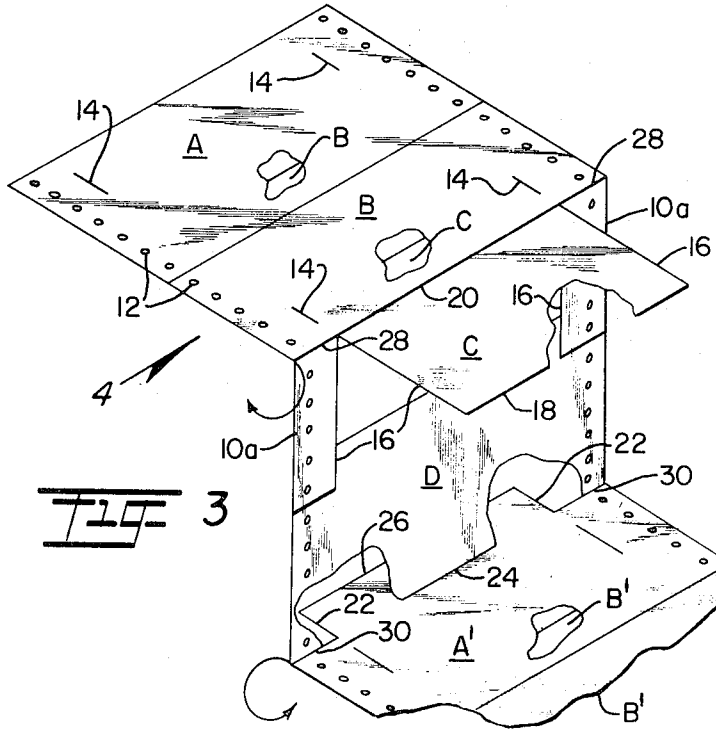


FIG. 3

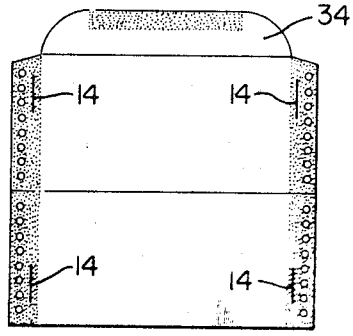


FIG. 5

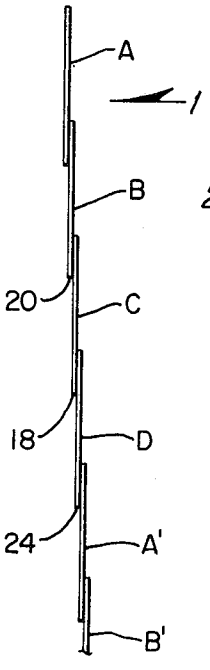


FIG. 2

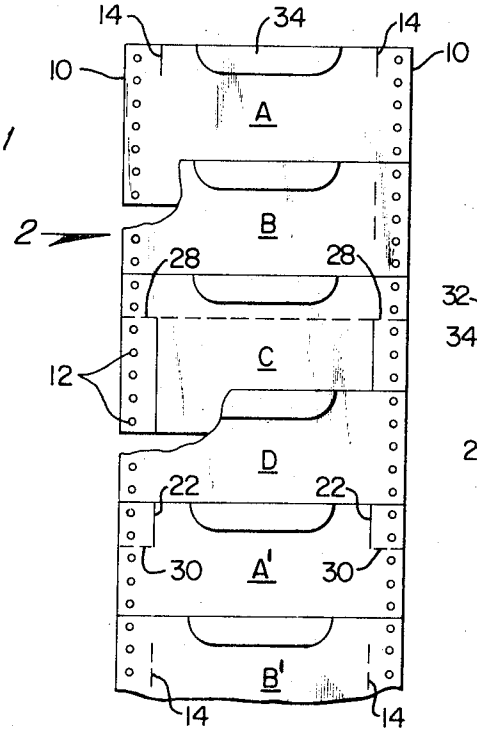


FIG. 1

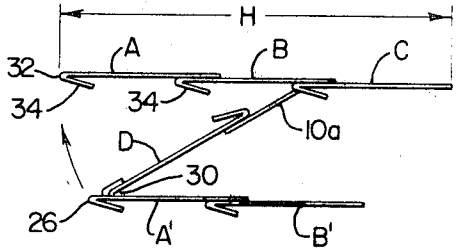


FIG. 4

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FANFOLD ENVELOPE ASSEMBLY

BACKGROUND OF THE INVENTION

In the patent application of Thomas W. Alton et al., Ser. No. 608,631, now U.S. Pat. No. 3,547,343 an envelope web is disclosed which may be packaged in roll form or in fanfold form, the latter form probably being the most closely related to the present invention and differing from same in that certain slits are provided in certain of the envelopes which facilitate fanfolding and without use of hinged patches between repetitive sets of envelopes. The use of slits, without employing hinge patches or the like, is broadly conventional, as disclosed by the patent to Eichorn, U.S. Pat. No. 3,450,419, the present invention differing from same in the particular slit structure employed.

SUMMARY OF THE INVENTION

The envelope construction is the same as that disclosed in the Alton application, previously referred to, differing in that each set of envelopes may be fanfolded with respect to an adjacent or super imposed set along certain repetitive hinge lines which permit the articulation due to slits in the envelopes, these being in the form of two different pairs, both in length and orientation with respect to certain of the envelopes.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a rear elevation of the subject of the invention, prior to orienting envelopes into fanfold form, as viewed in the direction of arrow **1**, FIG. **2**;

FIG. **2** is a side elevation of FIG. **1**, as viewed in the direction of arrow **2**, FIG. **1**;

FIG. **3** is an isometric view of FIGS. **1** and **2**, with the envelopes moved partially toward folded position;

FIG. **4** is a side elevation, as viewed in the direction of arrow **4**, FIG. **3**, after moving the envelopes further toward folded position; and

FIG. **5** illustrates an exemplary form of a blanked and gummed envelope before folding same into a pocketed envelope with a top closure flap.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to FIG. **1**, envelopes A, B, C, D, A′, B′ are constructed in the same manner disclosed in patent application Ser. No. 608,631, previously referred to. These are overlapped in shingle fashion as illustrated in FIG. **2**, and cemented along the overlap areas, adjacent each side edge, providing perforate margins **10**, the perforations **12** of which are engaged by pin feed wheels (not shown) to provide proper timing or registry as they are fed through high-speed printing apparatus. Also, as will be understood, the perforate margins may be severed after printing, with suitable cutters, along parallel reference loci or lanes **14**, **14**, or by bursting along parallel perforations (not shown), to provide separate envelopes suitable for mailing, all as also fully disclosed in the application referred to.

The improvements, as previously referred to, reside in the manner in which the envelopes are slit or cut to provide hinge lines along which repetitive sets or layers may be zigzag or fanfolded into stacks with adjacent sets in abutting relationship. The number of envelopes in each set or layer may be as desired, which is dictated by the desired overall dimensions of the generally rectangular fanfolded assembly. For simplicity of disclosure, however, the number chosen before the first fold occurs is three, these being A, B, and C. As will be understood, since A and B are not slitted to provide hinge lines, these three envelopes will remain planar. Envelope C is provided with a pair of parallel slits **16**, **16** in alignment with ultimate severing lines **14**, **14**, each extending from the lower edge **18** of envelope C to near the lower edge **20** of envelope B. Envelope D is without the slits but envelope A′ is provided with like slits **22**, **22**, these extending from near the lower edge **24** of envelope D to the upper edge **26** of envelope A′.

Referring now to FIG. **3**, margins **10***a* adjacent envelope C have been rotated clockwise about 90° along aligned fold lines **28**, **28** and envelope A′ has been rotated counterclockwise about 90° along fold lines **30**, **30**. This rotation or folding is continued until envelope D is disposed beneath envelopes A, B, C and envelope A′ and B′ are beneath envelope D, this being illustrated in FIG. **4** wherein the folds are nearing completion. The upper edge **26** of envelope A′ is now approaching a position directly beneath the upper edge **32** of envelope A. As will be apparent, there are now three envelopes A, B and C in the first or top set. The second set comprises only one envelope, D, and the third set will again comprise three envelopes, A′ and B′ being the first and second of the third set. Normally there will be more than three envelopes in the first set, such as say seven, in which event there will be five in the second set. It thus becomes apparent that if the first set contains N envelopes the second will contain $N-2$. (3−2=1, illustrated, or 7−2=5, just described). The top flaps **34** on the first set will face or abut the top flap (or flaps) of the second and third sets will, however, face or abut each other. Thus, the sets are flap-face to flap-face and address-face to address-face. As will be apparent from FIG. **4**, the heights H of all sets are the same and all are disposed beneath the same substantially rectangular area of the uppermost set.

Fold or hinge lines **28**, **29** and **30**, **30** should preferably be sufficiently flexible to permit the 180° folds thereat without manual or machine intervention. Thus, as one set is continuously fed and deposited upon or previous set on the top of the stack of sets, its own weight should produce the fold and deposit it. If the envelope material is sufficiently thin, the hinge lines will inherently have such flexibility. If, however, it is relatively thick and hence less flexible a plurality of spaced weakening slits may be employed along the hinge lines **28**, **30**. Such slits, as distinguished from perforations, sever the material but do not remove material. Perforations could be employed, if so desired, but in either case margins **10** are merely weakened to provide hinge flexibility as distinguished from a weakened line for ultimate severing by bursting. Severing lines **14** are actually imaginary lines along which margins **10** are ultimately sheared or cut from the envelopes, the envelopes then being separated and the margins **10**, now in the form of tapes, may be fed to reels or the like, if desired, for disposal of same as waste material, this being conventional in the prior art referred to.

For simplicity of disclosure and as illustrated, aligned pairs of fold or hinge lines **28**, **28** and **30**, **30** are disposed directly along the lower edges of a preceding envelope. In the preferred construction, however, the hinge lines are spaced slightly from the lower edges referred to. It thus becomes apparent that the lengths of slits **16**, **16** and **22**, **22** may be varied somewhat within the purview of the invention. In choosing the lengths of these slits, and hence the position of the fold or hinge lines, it will normally be desired that the sets all be stacked within substantially the same overall area and that odd sets be superimposed in uniform patterns within the same area and even sets be superimposed within another same area. Thus the peripheries of the odd sets will be superimposed and aligned above each other and the peripheries of the even sets will be superimposed in like manner.

What is claimed is:

1. In an assembly of envelopes of the type in which each envelope body has a front and rear panels connected to form a pocket and at least one of said panels has laterally extending, apertured side margin portions; said assembly comprising a plurality of said envelopes wherein the upper part of each successive envelope and the upper part of its laterally extending, apertured side margin portions underlie, respectively, the lower part of the preceding envelope and its corresponding laterally extending apertured side margin portions, and said corresponding apertured side margin portions of said successive and preceding envelopes are attached together by adhesive securing means located between said corresponding apertures side margin portions and outwardly of the corresponding

ends of the pockets of said successive and preceding envelopes, the apertures of said corresponding overlying portions being aligned, said margin portions, including said overlying portions, being removable from said assembly along a severing area between said adhesive securing means and the corresponding ends of the pockets of said successive and preceding envelopes, whereby upon removal of said overlapping margin portions said succeeding and preceding envelopes are completely separated, the improvements, in combination, comprising;

a. at least three envelopes forming a first set,

b. a first pair of parallel slits of equal length in the last envelope of the first set, each extending along a severing line from the bottom edge of said last envelope toward the bottom edge of the adjacent preceding envelope, forming first hinge lines in said side margin portions at the terminal ends of the first pair of slits, whereby a second successive set may be rotated about the first hinge lines into abutting relation with the first set and underlying same,

c. at least one envelope forming said second set,

d. the next adjacent envelope forming the first envelope of a third set,

e. said next adjacent envelope having a second pair of parallel slits of equal length each extending along a severing line from its top edge to at least the bottom edge of the preceding and last envelope of the second set, forming second hinge lines in said side margin portions at the terminal ends of the second pair of slits, whereby the third set may be rotated about the second hinge lines into abutting relation with the second set and underlying same,

f. the construction and arrangement of the hinge lines being such that when the various sets are fanfolded into juxtaposition, the sets are of the same overall length and width, providing a stack of sets of envelopes with the sets directly superimposed, one above the other, and within substantially the same overall area of the first set.

2. An assembly of envelopes in accordance with claim 1 wherein the number of envelopes in the first set is N and the number in the second set is $N-2$, the sets continuing alternately thereafter in the same sequence.

3. A fanfold assembly of rectangular sheet members of paper or the like of uniform height and width on which printed material may be applied,

a. said members being secured together along only their marginal portions, forming a continuous flat web with the upper portion of one member underlying the lower portion of its preceding adjacent member, the members adapted to be separated along parallel lines inwardly adjacent the marginal portions,

b. said members forming odd numbered first, third, etc., like sets each having at least three members therein, and even numbered second, fourth, etc., like sets, each having at least one member therein,

c. each last member in the odd numbered sets having a first pair of parallel slits of equal length, each extending along a severing line from its bottom edge toward the bottom edge of the adjacent preceding number, forming first hinge lines in said side margin portions at the terminal ends of the first pair of slits,

d. the first member in the next odd numbered set having a second pair of parallel slits of equal length, each extending along a severing line from its top edge to at least the bottom edge of the preceding and last member of the preceding set forming second hinge lines in said side margin portions at the terminal ends of the second pair of slits,

e. the sets adapted to be alternately and reversely rotated about the hinge lines in a manner such that the odd numbered sets are stacked above each other in a uniform pattern of members and the even numbered sets are stacked above each other in a uniform second pattern of members, the two patterns being disposed within substantially the same overall area.

4. An assembly in accordance with claim 3 wherein each member is an envelope, having front and rear panels connected to form a pocket and closeable by a hinged top flap engageable with the rear panel, all front panels being juxtaposed abutting relation and all rear panels being in juxtaposed abutting relation.

5. An assembly in accordance with claim 3 wherein the terminal ends of both pairs of slits and the hinge lines formed thereat are spaced substantially equal distances from he bottom edges of the preceding members.

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