Nov. 13, 1962 E. B. BERKOWITZ 3,063,618

EXPANDING ENVELOPE

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Fig. 1.

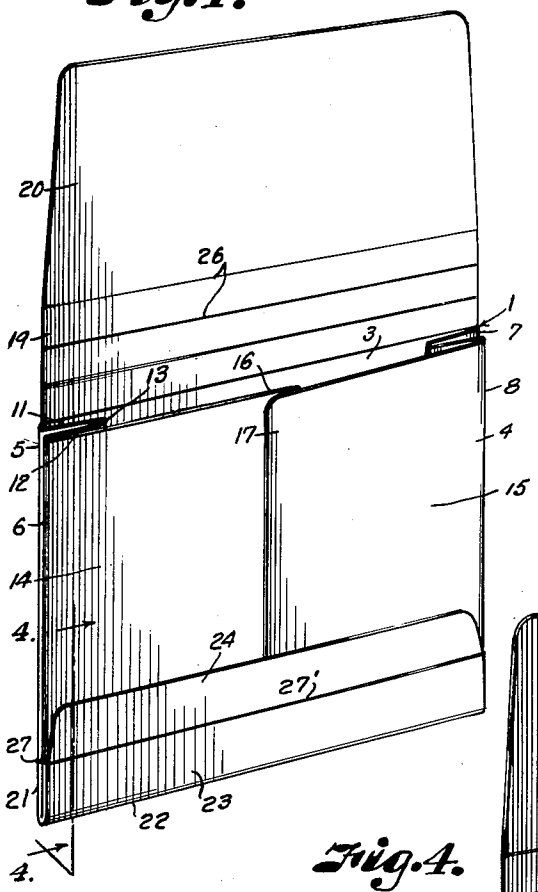

Fig. 3.

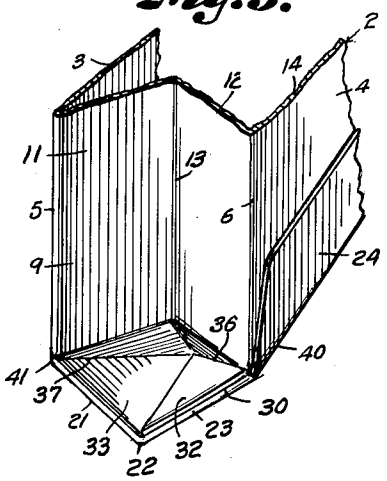

Fig. 2.

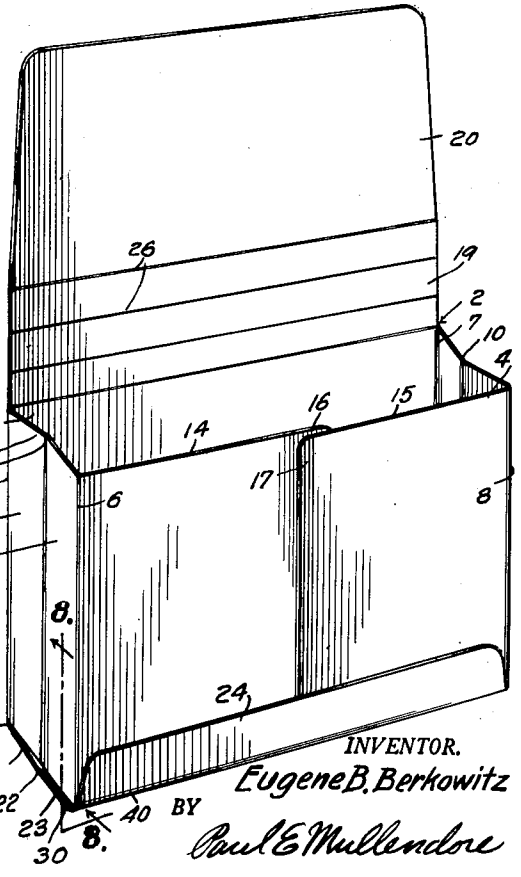

Fig. 4.

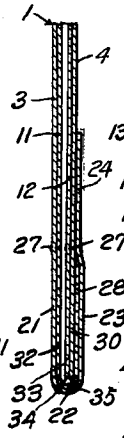

Fig. 5.

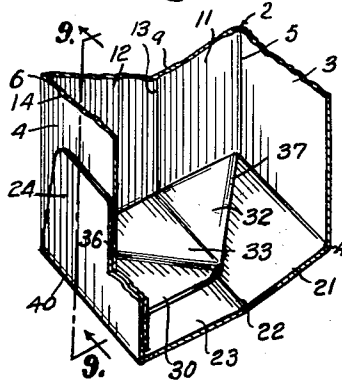

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Fig. 6.

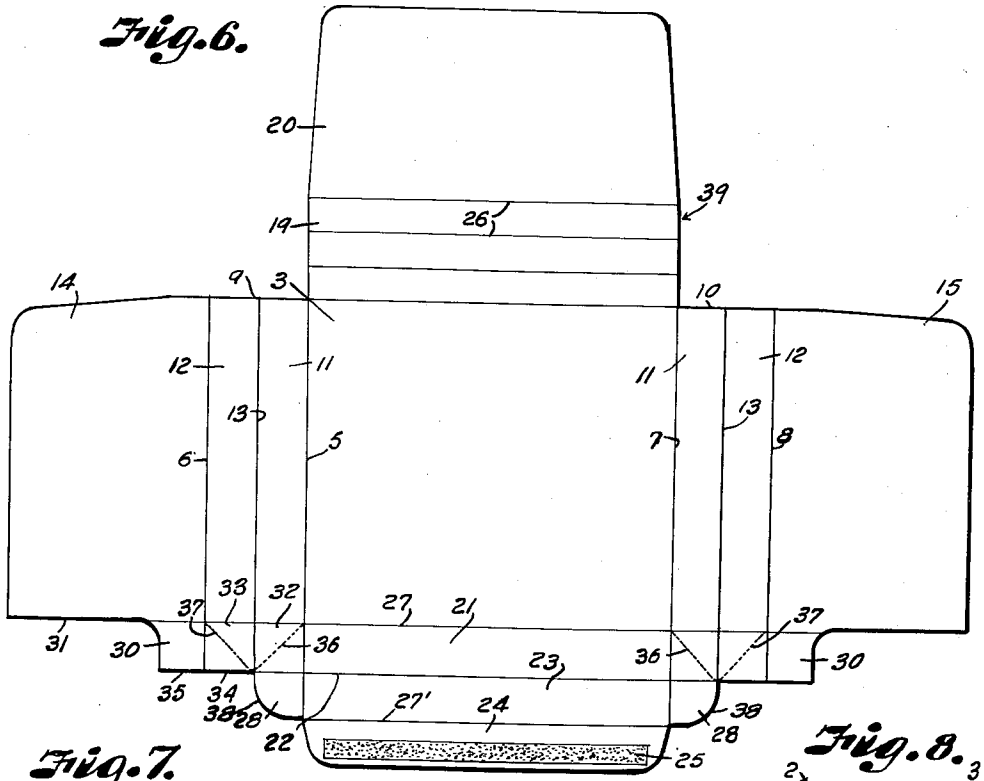

Fig. 7.

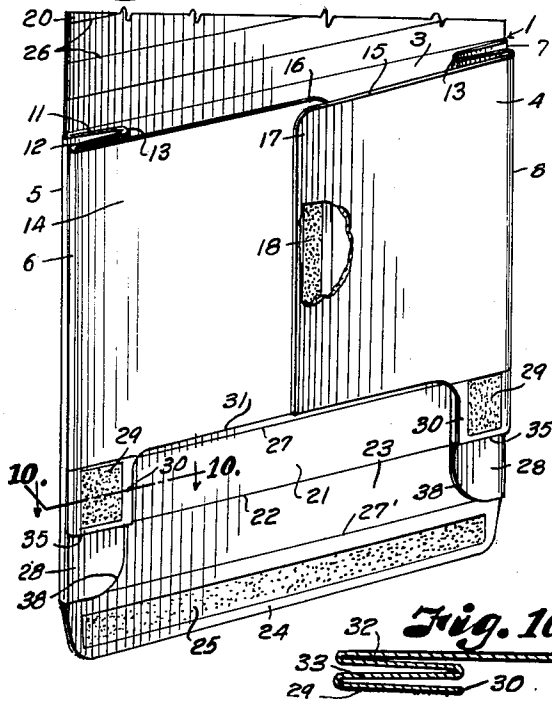

Fig. 8.

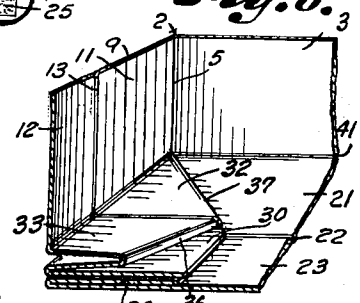

Fig. 9.

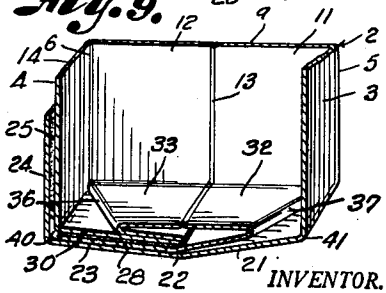

Fig. 10.

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EXPANDING ENVELOPE

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Filed July 17, 1959, Ser. No. 827,840

1 Claim. (Cl. 229—68)

This invention relates to a flatly folded envelope of the expansion type, adapted to be folded from a single blank and gummed in a continuous rotary envelope making machine, and which envelope is adapted to be erected in the form of a boxlike container.

Prior to the present invention, envelopes of this character, when produced by rotary envelope making machines, had the connections between the bottom and side walls open and unconnected at the corners, as disclosed in the Hiersteiner Patent No. 2,631,772, or if the bottom and side walls were provided with gussets, portions of the gussets had to be loose and unsealed, particularly when a flat bottom container was desired.

The principal object of the present invention is, therefore, to provide an envelope of the expansion type having construction capable of folding and gumming on a rotary envelope making machine, and wherein the gussets have sealing tabs arranged to cooperate with folds of the gussets for completely closing the corners thereof.

Other objects of the invention are to provide a flatly folded envelope of the gusseted type, wherein the folds of the gussets are more easily controlled and positioned to provide a flat bottom container; to provide a relatively simple sealing tab arrangement whereby the tabs are gummed and folded along with gumming and folding of the bottom sealing flap; to provide for strengthening the bottom and corners of the expanded container; and to provide a structure wherein all the folds of the gussets, including the gusset sealing tabs, are readily produced in accordance with envelope folding practices in a rotary envelope making machine.

In accomplishing these and other objects of the invention as hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

FIG. 1 is a perspective view of a flatly folded expansion envelope of the gusset type and constructed in accordance with the present invention, the closure flap being shown in extended position.

FIG. 2 is a perspective view of the envelope, expanded to provide a boxlike container, the closure flap being shown in open position.

FIG. 3 is an enlarged fragmentary perspective view of one of the corners of the envelope, partially expanded.

FIG. 4 is an enlarged section through a portion of the folded envelope taken on the line 4—4 of FIG. 1.

FIG. 5 is a fragmentary perspective view of the fully opened corner as viewed from the inner side thereof.

FIG. 6 is a plan view of the blank from which the envelope is formed.

FIG. 7 is a perspective view of the blank with the side walls folded between the front and rear walls or panels and showing the gusset sealing tabs prior to folding of the bottom and sealing of the bottom flap.

FIG. 8 is an enlarged fragmentary perspective section through a corner of the erected container, the section being taken on the line 8—8 of FIG. 2.

FIG. 9 is a similar section on the line 9—9 of FIG. 5.

FIG. 10 is an enlarged fragmentary cross section through the partly folded envelope on the line 10—10 of FIG. 7.

Referring more in detail to the drawings:

1 designates a flatly folded expansion envelope of the gusset type (FIGS. 1 and 7) adapted to be formed from

a single blank and gummed in a rotary envelope making machine, and which, when expanded, provides a boxlike container 2 having a flat bottom as illustrated in FIG. 2. The flatly folded envelope 1 includes generally rectangular front and back panels 3 and 4, positioned one upon the other and integrally connected at opposite side edges by folds 5—6 and 7—8 with side walls 9 and 10. The side walls 9 and 10 each comprise inturned sections 11—12 connected by reverse folds 13 whereby the sections 11 and 12 are contained between the front and back panels 3 and 4, as shown in FIGS. 1 and 7. The panel 4 is formed by wings or side flaps 14 and 15 having overlapping portions 16 and 17 secured together by adhesive 18 to provide a seam near the center of the panel. Extending from the upper transverse edge of the panel 3 in the plane thereof is a top cover 19 which carries a closure flap 20. Formed integrally with the lower portion of the panel 3 is a transverse bottom section 21 that connects by a transverse fold 22 with a complementary bottom section 23 that folds over the tabs 30 of the panel 4 (FIGS. 1 and 4) and which has a sealing flap 24 that is sealed to the panel 4 by adhesive 25 (FIG. 7). The top closure 19 may have a plurality of transverse scores 26, for a purpose later to be described. The bottom sections 21 and 23 at their juncture with the back panel 3 and sealing flap 24 have transverse scores 27 and 27' which provide lines of fold when forming the boxlike container 2, as later to be described.

The sections 11—12 of the side walls 9 and 10 extend across the ends of the bottom section 21 and the sections 11 are connected therewith by continuations of the folds 5 and 7. The sections 12 terminate in registry with the transverse fold 22, but the sections 11 continue to the score 27 and are joined at the ends of the bottom section 23 by continuations of the side folds 6 and 8 to provide complementary sealing tabs 28 which are sealed by gum 29 to sealing tabs 30. The sealing tabs 30 extend from bottom edges 31 of the wing portions 14 and 15 and they join with the sections 12 of the side walls by continuations of the folds 6 and 8. In the drawing, the sealing tabs 30 have a width so that they are spaced from the center seam and, in the illustrated instance, correspond substantially with the width of the sealing tabs 28. The bottom flap 24 is of sufficient depth to overlie the edges 31 and seal to the panel 4 by the adhesive 25.

The continuations of the sections 11 and 12 provide gusset forming portions 32 and 33. The portions 32 are defined between the score 27 and fold 22 and between the folds 13 and 5 at one side and 13 and 7 at the opposite side of the envelope. The portions 33 are between the score 27 and edges 34 registering with bottom edges 35 of the sealing tabs 30 and between the folds 6 and 13 at one side and the folds 8 and 13 at the other side of the envelope. The portions 32 and 33 are traversed diagonally thereof by lines of weakening 36 and 37, on which the gusset forming portions readily fold, as later to be described. The sealing tabs 28 previously referred to have curving outer edges 38 registering with the ends of the score 27 and the ends of the fold 13 (see FIG. 6).

In the folded envelope, the gusset forming portions 32 and 33 are in face to face contact and contained between the ends of the bottom section 21 and sealing tabs 30 with the lines of weakening diverging from the lower terminal ends of the folds 13 to the intersections of the folds 5—7 and 6—8 with the transverse score 27. The fold 22 also extends across the sealing tabs 28 so that the edges 34 and 35 engage therein (see FIG. 4).

The envelope just described is formed of the blank 39 illustrated in FIG. 1, wherein the portions of the blank that form the portions of the envelope are designated by the same numerals of reference.

The blank is folded and gummed in a rotary type envelope making machine. The first folding operations may be the folds 5 and 7, followed by the reverse folds 13 and then the folds 6 and 8, to bring the sections 11 and 12 into overlying relation and the wings 14 and 15 over the panel portion 3 of the blank to bring the marginal portions 16 and 17 thereof in overlapping relation for interconnection by the adhesive 18. These folds may be effected simultaneously by providing the envelope machine with a relatively simple attachment, which is known to those skilled in the making of envelopes. The folds bring the gusset forming portions 32 and 33 into facing contact and the sealing tabs 30 in alignment with the sealing tabs 28.

The adhesives 25 and 29 may be applied to the bottom flap 24 and tabs 30. The next fold is the fold 22, to bring the sealing tabs 28 into sealing contact with the tabs 30 and the bottom flap 24 into sealing contact with the panel 4. When the blank is thus folded, the portions to form the triangular gussets are overlying each other and the fold 22 extends across the edges 35 and 36, which, with the lower portions of the side folds 5—6 and 7—8, completely connect the gussets with the bottom and walls of the envelope. The envelope thus formed is packaged and supplied to the trade in flatly folded condition.

When the envelope is to be expanded to form the boxlike container of FIG. 2, the panel 4 is moved outwardly from the panel 3 with the side sections 11—12 hinging outwardly on the side folds 5, 6, 7, 8 and 13. Simultaneously with outward movement of the side sections, the bottom sections 21 and 23 are brought into substantial plane with each other by opening of the fold 22 and by breaking of folds along the scores 27 and 27′ to provide transverse bottom edges 40 and 41 of the boxlike container of FIG. 2. Simultaneously, the gusset forming portions 33 and 34 and sealing tabs 30 bend along the score 27, and the sealing tabs 28 hinge upon opening of the fold 22. Also, the gussets break into folds along the lines of weakening 36 and 37 to form the container having flat bottom and side walls 9 and 10, as shown in FIG. 2.

The sealing tabs 28 and 30 are important features of the invention and provide closures for the portions of the gussets which ordinarily are loose. The sealing tabs, together with the bottom sealing, provide stiffening of the bottom.

What I claim and desire to secure by Letters Patent is:

An initially flat envelope for forming a boxlike container, said envelope comprising a single blank providing generally rectangular front and back panels, side walls

interconnecting the respective opposite side edges of the panels by folds and said side walls each having an intermediate fold parallel with and reverse to the side folds to divide the side walls into inwardly folded sections lying flatly between said panels when the envelope is in said flat condition, a bottom connected on one side with the lower edge of one of said panels by a transverse fold and having a width corresponding to the width of the side walls and having an intermediate fold to divide the bottom into sections projecting from the panels in overlying relation with each other, the said other panel being provided by side flaps having overlapping marginal portions, adhesive between said overlapping marginal portions to provide a seam on the panel and terminating short of the bottom, a seal flap connected with the opposite edge of the bottom by a transverse fold and overlapping said other panel above said bottom, an adhesive securing the seal flap across the entire width of said other panel, said sections of the side walls having extensions providing gusset portions overlying each other and contained between ends of the sections of said bottom when the envelope is in said flat condition, sealing tabs extending from bottom edges of said side flaps and overlying the gusset portions, said sealing tabs and gusset portions terminating in registry with the intermediate fold of said bottom, single complementary tabs respectively connected with the ends of the bottom section nearest the seal flap and with the gusset portions that are nearest the other bottom section, said single complementary tabs having transverse folds at said connections with the gusset portions to overlie said sealing tabs, and an adhesive connecting the complementary tabs in face to face contact with the sealing tabs, said gusset portions having weakened lines of fold starting from said folds which connect the side walls to the panels and extending diagonally across said gusset portions to inner ends of the transverse folds of the complementary tabs to facilitate bending of the gusset portions when the envelope is squared out into a boxlike container incidental to inserting articles thereinto.

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