May 23, 1944. W. H. NORSEEN 2,349,369

BAG CLOSURE

Filed Aug. 22, 1941 2 Sheets-Sheet 1

Fig. 1

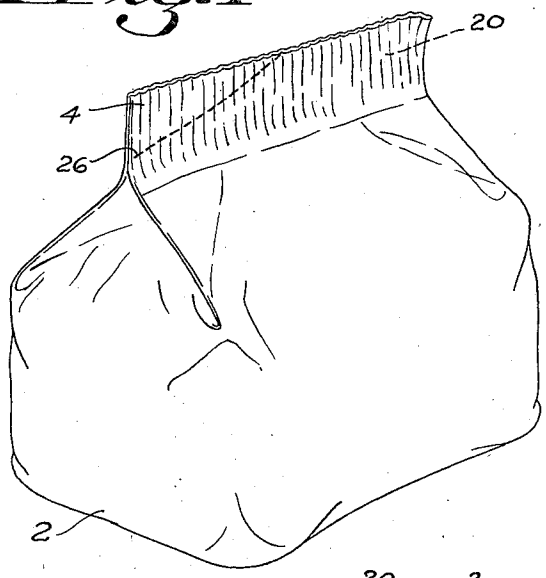
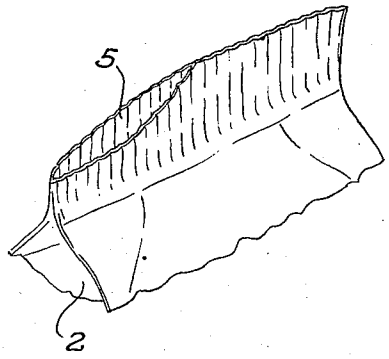


Fig. 2



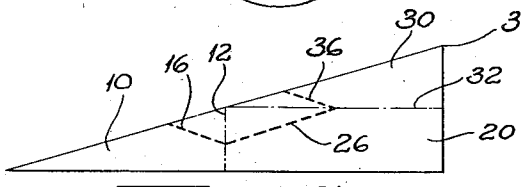


Fig. 3

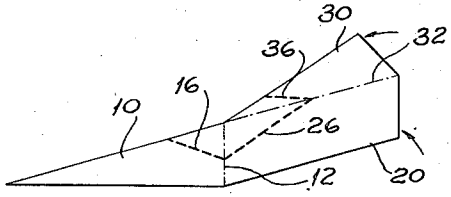


Fig. 4

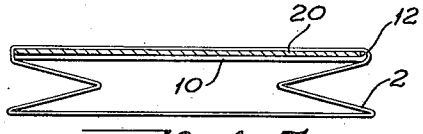


Fig. 5

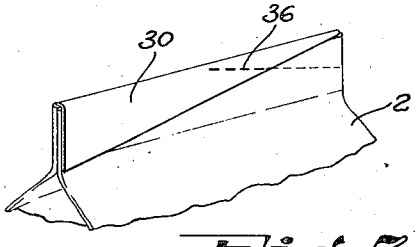


Fig. 7

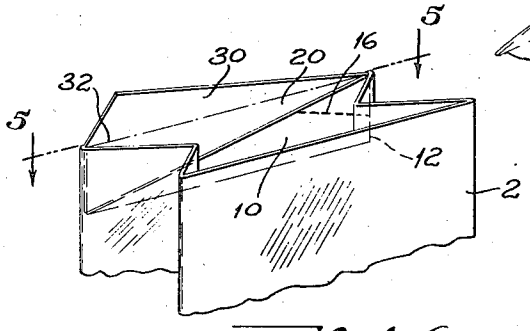


Fig. 6

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BAG CLOSURE

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Fig. 8

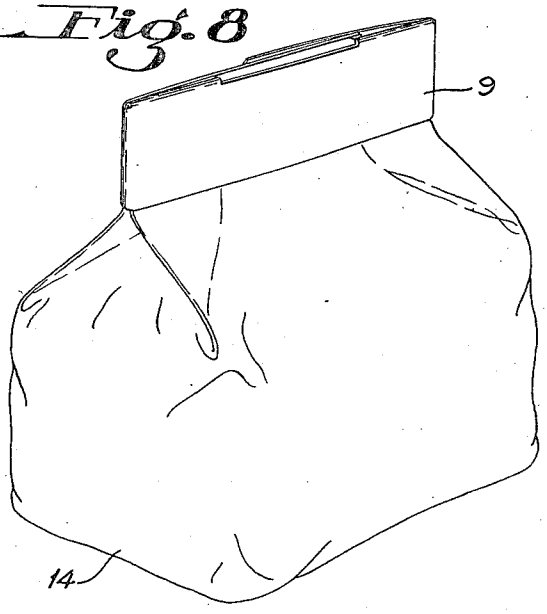


Fig. 11

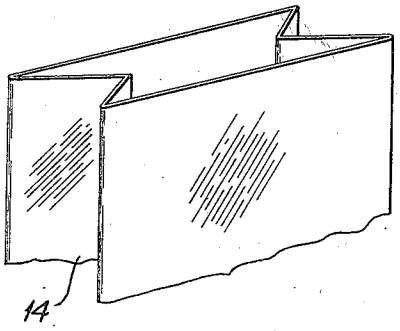


Fig. 12

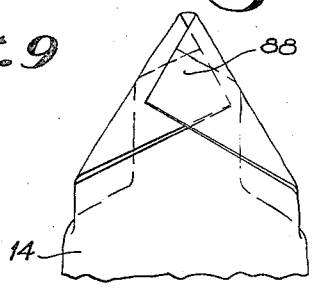


Fig. 9

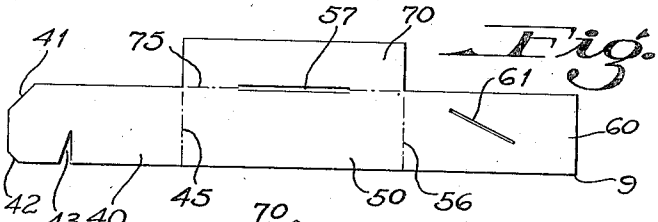


Fig. 13

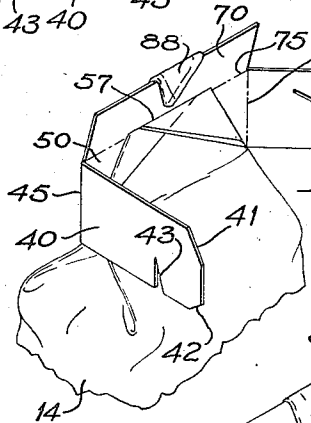
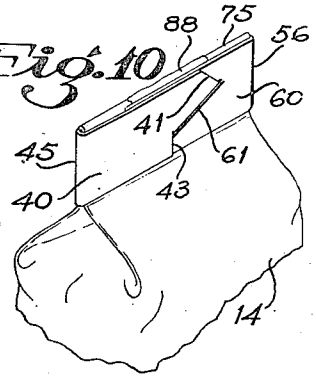


Fig. 10



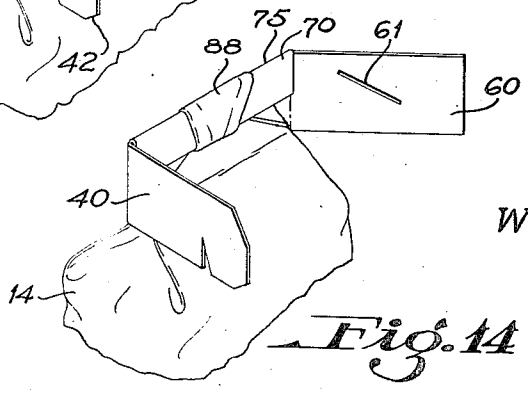


Fig. 14

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2,349,369

UNITED STATES PATENT OFFICE

2,349,369

BAG CLOSURE

Wilbur H. Norseen, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del., a corporation of Delaware

Application August 22, 1941, Serial No. 407,854

3 Claims. (Cl. 229—62)

This invention relates to containers, especially the closing and sealing of bags. More particularly it appertains to devices to be incorporated in, or associated with, the end sections or folds of bags made of regenerated cellulose and like sheet material to facilitate the opening of the bag and the dispensing of its contents.

The primary object of this invention was to improve bag closing and opening arrangements. Other objects were to provide for the easy opening, without destruction or weakening, of bags; to provide pouring spouts for free-flowing products; to close bags containing powdered and other free-flowing materials in a leak-proof manner by inexpensive and easily applied means; to provide for complete opening of bags containing bulk products of sizes too large to flow readily; and to provide for adequate reclosure of the opened bags. Still further objects were to provide a cut opening in bags, to prevent, by providing a reinforcement, the tearing or splitting of bags after a cut opening has been made, and to provide a device which reenforces a bag closure in such a way that the said closure can be cut to form a pouring opening without weakening the bag. A general advance in the art, and other objects which will appear hereinafter, are also contemplated.

It has now been found that interfolding the mouth of a bag of heat sealable material with a simple blank, described in detail hereinafter, overcomes the common objections heretofore encountered when flowable products such as flour, sugar, coffee, rice, crackers, etc., were packaged with transparent wraps. The present invention provides an improved opening arrangement which forestalls wrapper splitting and untimely spills and leakage of flowable products packed in clear sheeting.

How the foregoing objects and related ends are accomplished will be apparent from the following exposition, in which are disclosed the principle and divers embodiments of the invention, including the best mode contemplated for carrying out the same. The written description is amplified by the accompanying drawings, in which:

Figure 1 is a perspective view of a bag closed and sealed in accordance with this invention;

Figure 2 is a fragmentary perspective view showing the top of a bag embodying the present invention which has been opened in the intended manner to provide a pouring aperture;

Figure 3 is a plan view of the bag closure insert of this invention;

Figure 4 is a perspective view of the bag closure insert of Figure 3 in a partially folded condition;

Figure 5 is a sectional plan view of the mouth of a bag during the closing operation with the insert or closure piece sectioned on the line 5—5 of Figure 6;

Figure 6 is a fragmentary perspective view of a bag partially closed in accordance with this invention;

Figure 7 is a fragmentary perspective view of the bag closure of this invention, in place before sealing, looking in the opposite direction from Figure 1;

Figure 8 is a perspective view of a bag fastened with another closing device;

Figure 9 is a plan view of the bag closing device shown in Figure 8;

Figure 10 is a fragmentary perspective view of the bag closure of Figure 8 but looking in an opposite direction;

Figures 11 and 12 illustrate successive steps in the folding of the bag mouth preparatory to enclosing it in the device of Figure 9; and

Figures 13, 14 and 10 illustrate successive steps in the application of the closing device of Figure 9 and the closing of the bag therewith.

Referring now to page 1 of the drawings, there is illustrated at 3 in Figure 3 a paper (light stock) insert, or blank, having sections 10, 20 and 30 separated by scored folding lines 12 and 32. The sections 10, 20 and 30 have dotted lines 16, 26 and 36, respectively, for the purpose of guiding the cutting instrument, such as scissors, used in opening the bag. The direction of folding along the scored lines 12 and 32 is indicated by the partially folded insert shown in Figure 4. The manner of locating the blank in the mouth of the bag 2 for the closing operation is illustrated in Figures 5 and 6. The section 30 of the insert extends above the bag mouth and, when the bag is closed, is folded down over the outside thereof (see Figure 7). This assemblage is then subjected to a heat sealing to complete the closing operation. The sealed bag 2 with the section 20 of the insert nearest the observer is indicated in Figure 1.

To open the bag, the corner 4 is snipped off with scissors along the guide formed on one side of the bag by the line 26, and on the other side by lines 16 and 36. Slight pressure on the ends of the sealed section of the bag mouth causes the bulging of the sides thereof to form the opening 5 through which the contents of the bag may be dispensed.

Referring now to page 2 of the drawings, there is shown at 9 in Figure 9 a closure device constituting sections 40, 50, 60 and 70, separated by scored folding lines 45, 56 and 75. Part of the folding line 75 is made up of a slit 57. The section 60 has an inclined slit 61 and the section 40 has a notch 43 intended for cooperation therewith in a manner described later. The section 40 is pointed by having corners removed, as indicated at 41 and 42.

To apply this device, the mouth of the bag is pressed together with inwardly extending gussets, as indicated in Figure 11, and the corners folded over as shown in Figure 12, to form a tab 88. This tab is inserted in slot 57 and folded about the section 70, as shown in Figure 13. The section 70 is then folded along the line 75 and the slot 57, as shown in Figure 14. Thereafter the section 60 is folded against the tab 88 and the section 70, and the section 40 folded over the section 60. The pointed end of the section 40 is then pushed in the slot 61 until the notch 43 engages. This completes the closing of the bag 14, which presents a very neat appearance, as will be clear from Figures 8 and 10.

The folds and interlocking tabs prevent the unfolding of the closure 9 and its removal from the bag mouth. The bag is opened by unfolding and removing the closure device 9.

The blank 9 is preferably made of light (for example, 16, or between 16 and 20 point) cardboard or the like. In one form of the invention the cardboard surface is finished to render it suitable for printing or advertising, opening directions, etc.

The insert or blank 3 is preferably a good grade of 50 to 60 pound smooth clay coated paper. This type of material does not seal to itself when the mouth of the bag and insert are clamped in the jaws of the heat sealing apparatus, but it does seal through the moisture-resistant coating to the regenerated cellulosic bag material. As a result, the bag is satisfactorily closed until the corner of the seal is snipped off along the printed line of severance 26. Since the adjacent sections of this blank do not adhere, the formation of the opening 5 (Figure 2) is carried out without difficulty. Any other sheet material having the property of heat sealing to moistureproofed regenerated cellulose sheet (or similar heat sealing material) but not to itself, for example, the common commercial and thermoplastic sealing papers, can be used in the manufacture of the blank 3, when desired.

The bag 14 is preferably made of plain regenerated cellulosic film, but it is believed obvious that the closure 9 may be used on bags made of any thin, flexible sheet material, for example, moistureproofed regenerated cellulose film, rubber hydrochloride film and polyvinyl compound film, paper and metal foil.

The bag 2 is preferably made of moisture-resistant heat sealing regenerated cellulosic film, for example, that of U. S. A. Patents Nos. 1,997,583 (Hitt), 2,046,492 (Snyder), 2,060,906 (Snyder), 2,064,292 (Charch), 2,077,396 (Charch and Hershberger), 2,077,399 (Collins and Larson), 2,077,400 (Collins), 2,079,379 (Mitchell), 2,123,883 (Ellsworth), 2,147,180 (Ubben), 2,159,152 (Hershberger), and 2,209,965 (Finzel), but like the bag 14, it may be made of other materials, in this case sheet products having the property of heat sealing, examples of which are rubber hydrochloride and polyvinyl derivative sheeting.

Crimp heat sealing has been found to be somewhat more satisfactory in sealing the bag 2.

For convenience, gusset type bags have been illustrated in the drawings and described in the preceding portion of the specification. The present invention is suitable for closing other containers, for example, the bags of the flat, mandrel, satchel, square and automatic types, and to overwraps used in a manner similar to these types of bags.

The general principle involved in sealing the bag 2 with the blank 3 is that of preventing the internal sealing of the heat sealable bag top in the desired area (specifically, the triangular panel enclosed by the section 10 and the corresponding portion of the section 20 after the bag mouth has been flattened and sealed) while simultaneously sealing either inside or outside of the other portions of the bag mouth through which the packaged material might escape. In the specific construction illustrated, this permits pouring at a satisfactory rate but checks or retards spilling if the bags are upset.

The present invention makes bag packages more attractive and useful to consumers, since it avoids the disadvantages heretofore encountered. In the past, the opening of a completely sealed bag meant destroying the top thereof, with the result that the bag was so weakened that it usually split, spilling the contents immediately or in a very short time after opening. The blank 9, in addition, confers the advantage that a bag sealed therewith can be fully opened without being mutilated.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that this invention is not limited to the specific embodiments thereof except as defined in the appended claims.

I claim:

1. A package comprising a heat sealed bag closure device, said device comprising a triangular blank, the said blank having edges meeting at right angles and being folded about lines perpendicular to said edges at their mid-points, one of said folds being inside the bag and the other being conterminous with the mouth of the bag.

2. A package comprising a heat sealed bag closure device, said device comprising a triangular blank, the said blank having edges meeting at right angles and being folded about lines perpendicular to said edges at their mid-points, one of said folds being inside the bag and the other being conterminous with the mouth of the bag, and the triangular flag resulting from said last mentioned fold being outside the bag.

3. The package of claim 2 when the blank is not sealed to itself but is sealed to the bag wherever they contact.

WILBUR H. NORSEEN.