United States Patent

Bedore

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[54] **METHOD OF CLOSING BOTTOM FLAPS OF PAPER BAGS**

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[52] **U.S. Cl.** **156/69**, 93/35, 229/57

[51] **Int. Cl.** **B31b 49/04**, B65d 33/00

[58] **Field of Search** 156/69; 93/84, 85, 35; 229/57, 229/58, 60

[56] **References Cited**

UNITED STATES PATENTS

2,846,928	8/1958	Kardon et al.	93/35
3,261,267	7/1966	Becker	93/35
3,485,438	12/1969	McCall et al.	229/58

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[57] **ABSTRACT**

A method of securing the trailing bottom flaps of paper bags into place on the bag bottoms after the leading flaps have been secured, the method comprising thrusting the trailing flap flatwise against the body of the bag and then folding the bottom backwardly onto the trailing flap and pressing the same thereagainst until preapplied adhesive has set.

6 Claims, 6 Drawing Figures

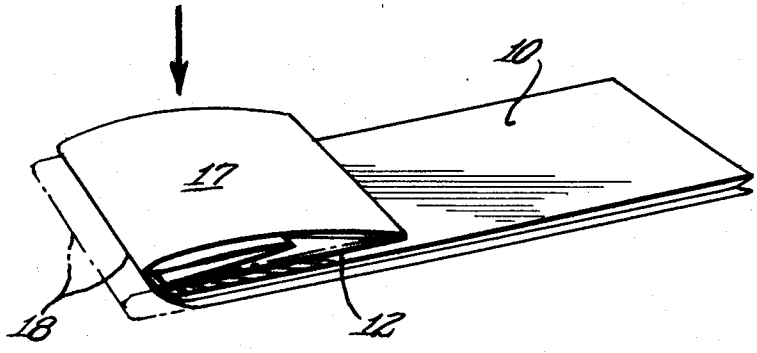


Fig. 1

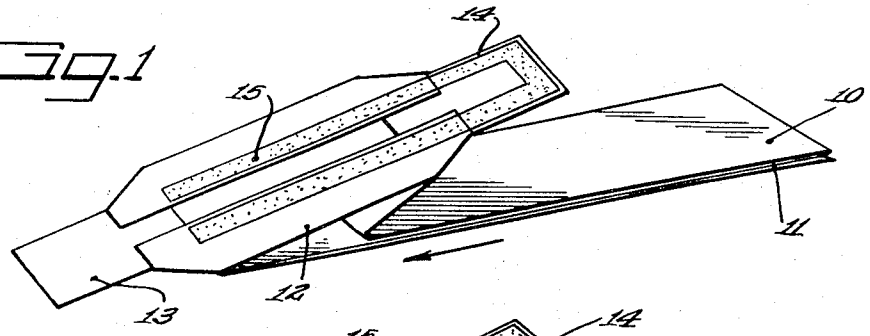


Fig. 2

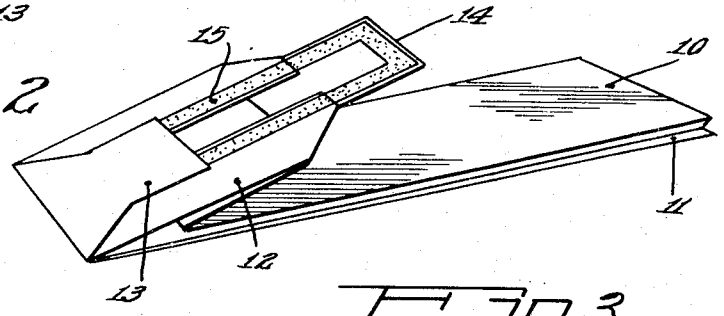


Fig. 3

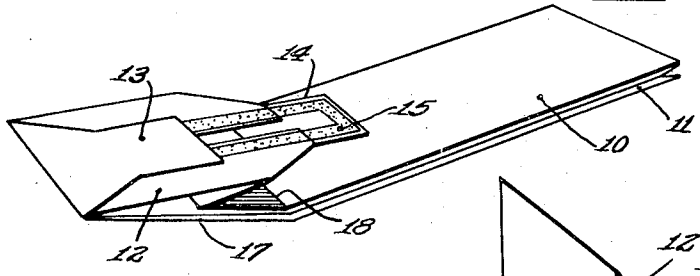


Fig. 4

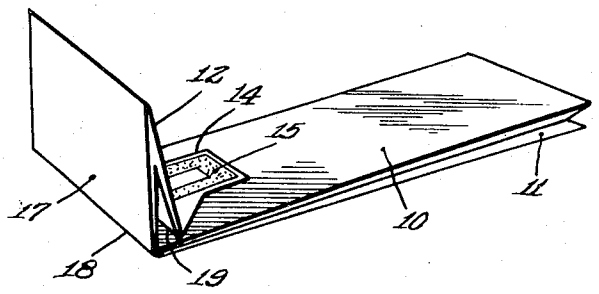
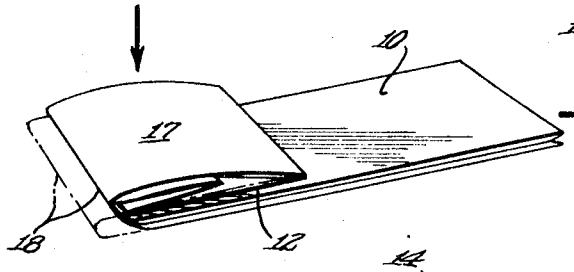


Fig. 5



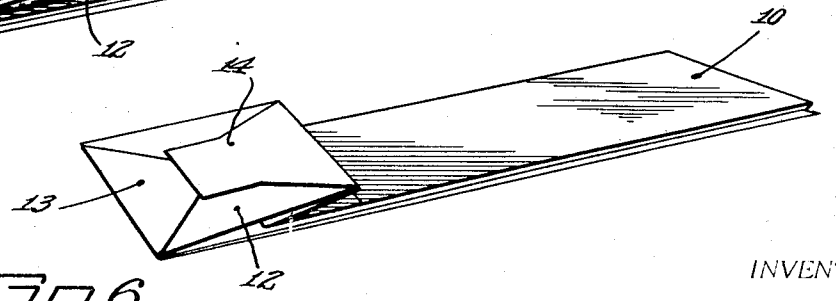


Fig. 6

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METHOD OF CLOSING BOTTOM FLAPS OF PAPER BAGS

This invention relates to the art of making paper bags, and is more particularly concerned with a method of closing bag bottoms.

Heretofore various and often complicated mechanisms have been deemed necessary to close the trailing bottom flaps in making paper bags of the type commonly used in retail stores for sacking purchased merchandise. Such bags are produced on high-speed forming machines in which paper sheet is tubularly shaped and a bottom structure provided including a leading flap and a trailing flap considered from the standpoint of the direction of travel of the bags in the production stream. Folding over the leading flap onto the bag bottom presents no great problem because it leads into the folding mechanism. However the trailing flap does present a substantial problem because it has been necessary for the folding mechanism to overtake this flap as the bag travels along at fairly high speed and to then overrun the speed of the bag with sufficient velocity to flip the trailing flap into closed position before the bag bottom reaches a pressing device such as a belt travelling in the same direction at possibly a slight overrun speed to effect an ironing or smoothing of the trailing flap as the bag advances.

According to the present invention the foregoing and other disadvantages, shortcomings, inefficiencies and problems are overcome by the present method according to which overrunning or catchup or forwardly flipping mechanisms are eliminated and the bag structure itself employed to effect closing of the trailing flap.

An important object of the invention is to provide a new and improved simplified and more efficient method for closing the bottom flaps of paper bags.

Another object of the invention is to substantially simplify the closing of paper bag bottom flap structure.

A further object of the invention is to provide a new and improved method for closing the trailing flap of a bag bottom utilizing the bottom and body of the bag for the purpose.

Still another object of the invention is to provide a new and improved method of making paper bags which eliminates need for overrunning mechanisms to close the trailing bottom flap onto the bag bottom.

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure, and in which:

FIG. 1 illustrates a representative paper bag substantially as it appears while moving in stream in a bag making machine, and shows the leading and trailing flaps as they appear before folding thereof into closing position on the bag bottom;

FIG. 2 is a similar view showing the leading flap folded into bottom closing position;

FIG. 3 illustrates an initial step in the foldable closing of the trailing flap;

FIG. 4 illustrates another step in the method;

FIG. 5 illustrates completion of the trailing flap folding and bottom closing sequence; and

FIG. 6 shows the bottom flap in fully closed position.

This invention is especially suitable for use in the manufacture of the common type of paper bag as represented in the drawings, including a tubular body **10** having longitudinally extending side gussets **11** so that the bag can be packed collapsed and flat to be readily expanded for use. On one end the bag body is formed and folded to provide a bottom structure **12** having a leading bottom closure flap **13** and a trailing bottom closure flap **14**. While it is understood that the bag may be made manually, high-speed machines are conventionally employed to produce bags by mass production methods, and the present invention falls in the same category, namely, that it may be practiced manually or by means of apparatus for low cost high production, and, in fact, enhances the economical production of paper bags by simplifying the bag bottom closing method.

In a bag making machine product flow stream, indicated in FIG. 1 by the directional arrow, the flap **13** leads while the flap **14** trails in generally overlying relation to the bag body **10**, and flap-retaining adhesive **15** is applied to at least the area of the bottom **12** to be engaged by the closed leading flap **13**. At the same time, or subsequently the trailing flap **14** and/or the portion of the bag bottom to be engaged thereby may be supplied with securing adhesive. Then as the bag advances, the leading flap **13** is folded over onto the bag bottom **12** and adhesively secured in closing relation thereon by means of the adhesive **15**.

After the leading flap **13** has been folded into closing relation to the bag bottom **12**, according to the present invention the bag bottom **12** and a coextensive underlying area **17** of the bag body are turned up along a transverse fold line **18** across the bag body, and which fold line may be prescored to facilitate the folding or may be effected simultaneously with folding of the trailing flap, as preferred. For illustrative purposes, the bag bottom and the underlying area of the bag have been shown in FIGS. **3** and **4** as slightly spaced, but it will be understood that as a practical matter they will ordinarily by pressed together in the practice of the method.

As shown in FIGS. **4** and **5**, the bag bottom with the lea;ing flap already secured in closing position is progressively turned over with the underlying contiguous bag body area **17** toward the bag body, with juncture **19** of the trailing flap **14** with the bag bottom **12** tucked into the fold **18** until the bag bottom **12** overlies or confronts the trailing flap **14**. Thereupon, squeezing pressure is applied as indicated by directional arrow in FIG. **5** to press the bag bottom and the bag body together and firmly clamp the trailing flap **14** therebetween to assure a secure adhesive bond by means of the adhesive **15** between the bag bottom and the flap **14**. Thereafter, the bag may be stacked with other bags while retaining the bag bottom in its folded over and flattened condition as shown in FIG. **5**, or the now closed bag bottom and the bag area **17** may be turned out as shown in FIG. **6**, thereby reducing the thickness in the collapsed bottom area of the bag for stacking purposes.

It will be appreciated from the foregoing that the present method greatly simplifies the bottom closing procedure by utilizing the bag bottom and the bag body as the means for applying sealing pressure and holding the trailing flap in closing position until the adhesive has completed its bonding of the trailing flap to the bag bottom. By this method closing of the trailing flap of the bag is adapted to be effected during continuous on stream movement of the bag in a bag making machine and with only the simplest kind of folding and pressing means.

I claim as my invention:

1. A method of closing the bottom of a paper bag, especially suitable for production of bags on high speed forming machines in which paper sheet is tubularly shaped and an open bottom structure provided including a leading flap and a trailing flap considered from the standpoint of the direction of travel of the bags in the production stream of the machine, comprising:

applying adhesive to surface areas of the open bottom which are to be secured together in the closing of the bottom by said flaps;

bending over the leading flap and securing it by means of said adhesive to the open bag bottom; and

thereafter folding the still partially open bag bottom and the bag body together and clamping said trailing flap therebetween and thereby effecting adhesive bonding of the trailing flap into closing relation to said bottom and in overlapping relation to the folded-over leading flap.

2. A method according to claim **1**, including scoring the body along a transverse line coincident with juncture of the trailing flap with the bag bottom, and effecting folding of the bag bottom along said transverse score line.

3. A method according to claim 1, wherein said adhesive is applied along an end portion of the trailing flap and the trailing flap is thereby adhesively bonded to the already-attached leading flap.

4. A method according to claim 1, comprising applying said adhesive only to said trailing flap and to the portions of the open bag bottom against which said leading flap and said trailing flap are to be secured while the leading flap remains free of the adhesive.

5. A method according to claim 1, wherein said bag bottom is folded over onto the trailing flap lying on top of the bag body, and downward pressure is applied against the folded-over bottom to effect said clamping.

6. A method according to claim 1, comprising turning out the fully closed bag bottom to reduce the thickness in the collapsed bottom area of the bag to facilitate stacking of one bag upon another.

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