

July 16, 1946.

R. J. WILLIAMS ET AL  
BAG CLOSURE MEANS AND METHOD

2,404,337

Filed April 13, 1944

2 Sheets-Sheet 1

FIG. 1.

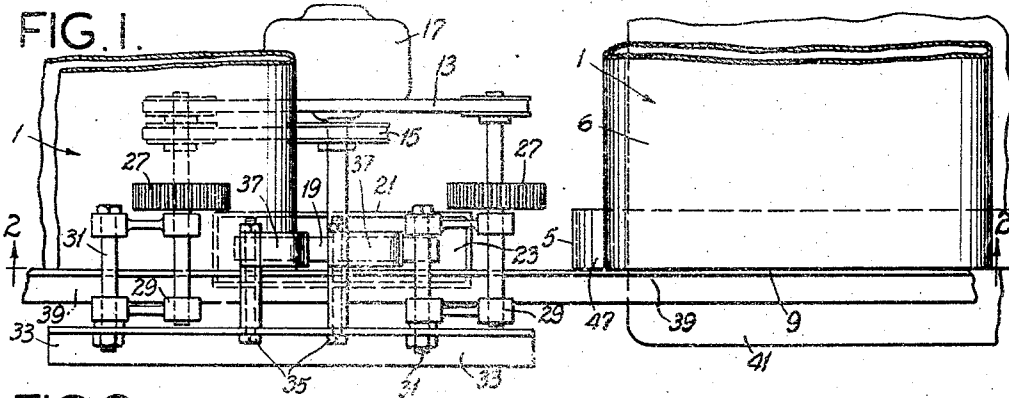


FIG. 2.

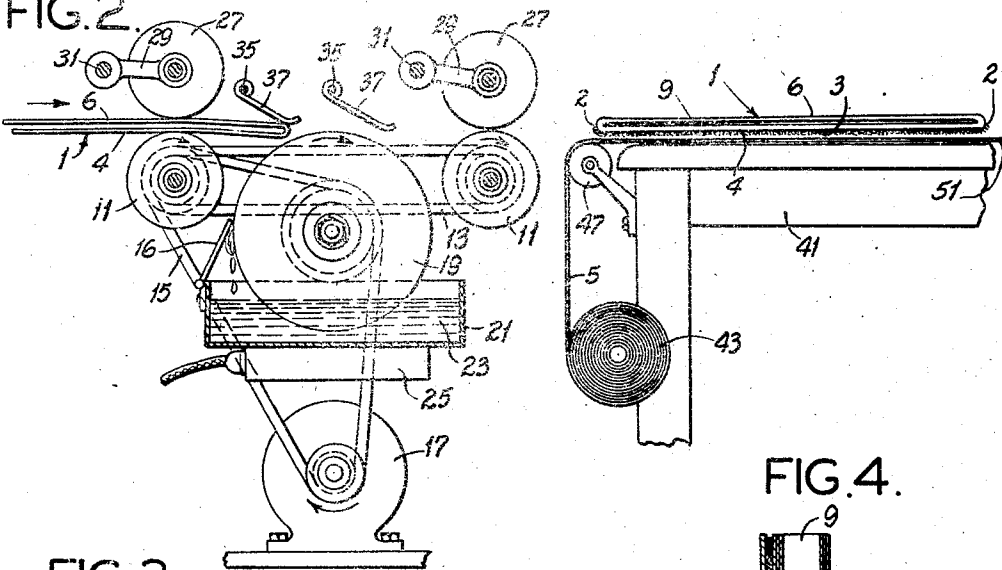


FIG. 3.

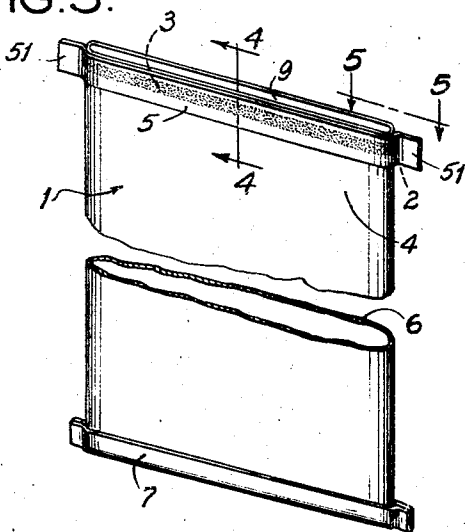


FIG. 4.

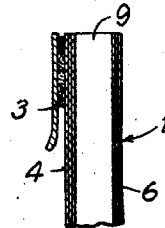
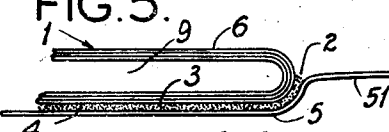


FIG. 5.



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FIG. 6.

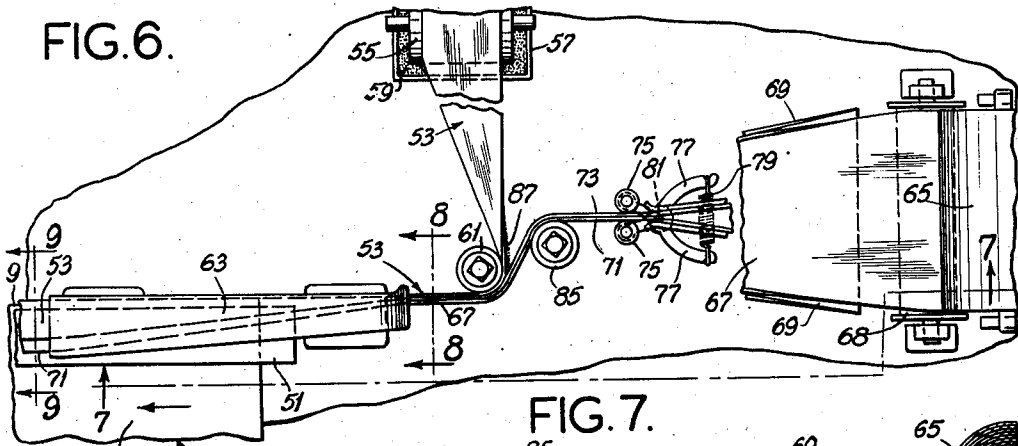


FIG. 7.

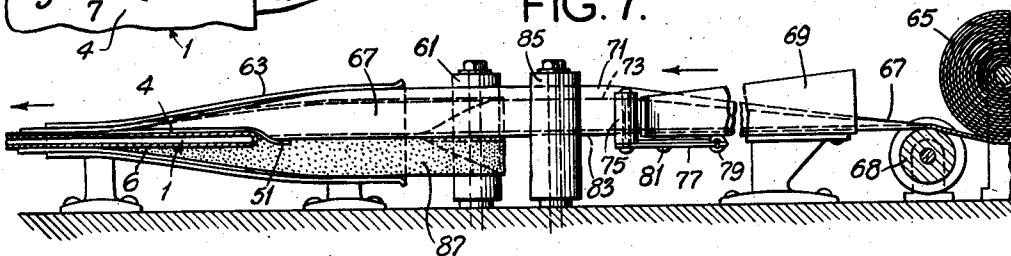


FIG. 8.

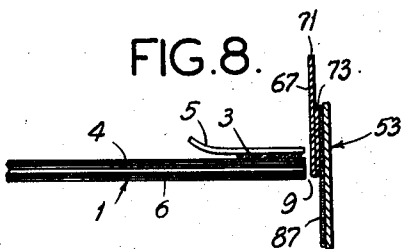


FIG. 9.

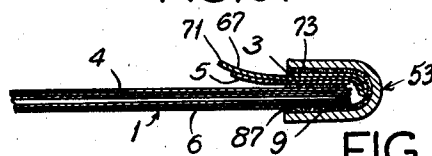
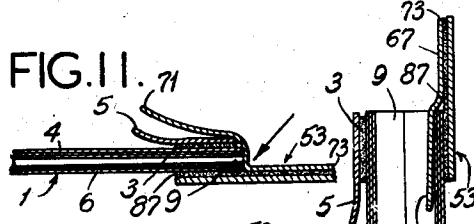


FIG. 13.

FIG. 11.



## UNITED STATES PATENT OFFICE

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## BAG CLOSURE MEANS AND METHOD

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9 Claims. (Cl. 229—62)

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This invention relates to a bag closure means and method, employing an adhesively attached cover strip.

Among the several objects of the invention may be noted the provision of a bag closure and a convenient method of manufacturing the same, in which a cover strip is pre-applied to a bag, which strip carries substantially permanently tacky adhesive for final closure but which adhesive is prevented from sticking prematurely to adjacent parts during shipment to the bag user; the provision of adhesive protective means which is thoroughly effective despite wide variations in manufacturing accuracy; and the provision of protective means of the class described which may conveniently be ripped out of position when a bag is ready for filling or has been filled, so that the bag may be closed thereafter. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, steps and sequence of steps, features of construction and manipulation, and arrangements of parts which will be exemplified in the structures and methods hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a diagrammatic plan view of one component of certain adhesive and first protective tape applying means;

Fig. 2 is a front elevation of Fig. 1;

Fig. 3 is a perspective view showing the result of operations carried out upon the apparatus of Figs. 1 and 2;

Fig. 4 is an enlarged diagrammatic vertical section taken on line 4—4 of Fig. 3;

Fig. 5 is an enlarged diagrammatic horizontal section taken on line 5—5 of Fig. 3;

Fig. 6 is a diagrammatic plan view of a second component for applying a cover strip and a second protective tape, parts being broken away;

Fig. 7 is a front elevation of Fig. 6, being viewed from line 7—7 of Fig. 6, parts being broken away;

Fig. 8 is a diagrammatic, enlarged vertical section taken on line 8—8 of Fig. 6;

Fig. 9 is a diagrammatic enlarged vertical section taken on line 9—9 of Fig. 6;

Fig. 10 is a view similar to Fig. 9 showing certain parts folded outward, the dotted lines showing a transition operation toward the condition of Fig. 11;

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Fig. 11 is a view similar to Fig. 10 showing a final operation of positioning the second protective tape;

Fig. 12 is a view similar to Fig. 11 showing the protective strips removed and showing in dotted lines how the closure is manipulated for finally closing a bag;

Fig. 13 is a vertical section showing alternative possibilities in respect to the second protective strip in connection with bag filling operations; and,

Fig. 14 is a perspective view showing a completed closure on a bag, case liner or the like.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

In Figs. 1 and 2 is shown apparatus for applying to the mouth end of a bag 1 such as shown in Fig. 3 a band of adhesive such as permanently tacky asphalt 3, and a protective cover strip 5 over the asphalt such as "Cellophane." The bag may be of any suitable variety, such as multiply, waterproof paper, closed at the bottom as shown at 7. Its open mouth is shown at 9. It may also be any equivalent of a bag, such as a case liner or the like.

The apparatus of Figs. 1 and 2 consists in live rollers 11 connected by a belt drive 13 to rotate in the same direction indicated, one of the rollers being driven by a belt drive 15 from a motor 17. The belt drive 15 also drives an adhesive-applying disc 19, which dips into a sump 21 of hot asphalt 23. Heating is accomplished by an electric heater 25. Excess, but not all of the asphalt is wiped from the surface of disc 19 by a scraper 16.

Gravity idler pressure rolls 27 are supported upon swinging frames 29 which pivot on pins 31. Pins 31 extend from a frame 33. Extending from this frame 33 are other pins 35 carrying pressure guide springs 37. A straight-line guide 39 serves to direct the mouth edge of an entering bag 1 to pass under the springs 37 and into contact with the upper arc of roll 19. The combinations of rolls 11, 27 force the bag mouth forward, while the springs 37 depress it into engagement with the asphalt-faced edge of the disc 19. This applies the band of asphalt which appears in Figs. 3, 4 and 5. The purpose of the springs 37 is to assure that this band of asphalt will be carried entirely from edge to edge of the bag mouth, as detailed at 2 in Fig. 4.

To the right of the asphalt-applying apparatus is a table 41 with a support for a supply roll 43 of a suitable cover material such as, for example, a strip 5 of "Cellophane" which is wider

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than the asphalt band 3. This material is withdrawn from the roll 43 and is passed over an idler roller 47 to the top of the table 41. One edge of this strip 5 of protective material moves adjacent to the guide 39. Thus as the bag advances over the table from rollers 11, 27, one edge of the strip 5 becomes located next to one edge of the bag mouth 9, and also next to one edge of the asphalt band 3. Thus the strip 5 covers the asphalt band 5 and adheres to it throughout the width of the bag on one of its sides 4. Next, the cover strip 5 is cut so as to leave extensions 51, indicated in Fig. 3. The above marginally applies to one side 4 of the mouth of the bag a permanently tacky adhesive 3 covered by a removable protective strip 5. This is also indicated in the enlarged Figs. 4 and 5.

Figs. 6-9 show how a cover tape and an additional cover strip are applied to the other side of the open mouth 9 of the bag. The cover tape per se is shown at numeral 53 in Fig. 8, for example, and may be of waterproof, multi-ply or other paper, fabric or the like. In Fig. 6 a continuous length of this material 53 is shown as being withdrawn from a roll supply (not shown) and passed over an adhesive applicator roller 55 which dips into a pan 57 of heated asphalt 59. Thus this cover strip becomes covered on one side with asphalt. It is then twisted and passed over a vertical guide roller 61, the asphalt being outside with respect to this roller. From this point it passes to the left (Fig. 6) into an ordinary folder 63 for symmetrical V-shaped folding upon itself with the asphalt coat inside.

Prior to entering the folder, a folded protective strip 67 is applied to about one-half of the cover strip 53. This strip 67 is of a material like that of the protective tape 49, for example "Cellophane." It is withdrawn from a supply such as indicated at 65 (Fig. 7), passed over a guide roller 68 and drawn through a folder 69, wherein it is folded upon itself but preferably not quite symmetrically. For example, one edge 71 (the one toward the reader, Fig. 7) is allowed to extend beyond the other edge 73. In passing out of the folder 69, this strip is passed between a pair of creasing rollers 75 which are carried on the ends of cross-pivoted scissor tongs 77, the latter being pulled together by means of a spring 79. This biases the rollers 75 toward one another. The pivot for the tongs is shown at 81, being on and near the end of the folder 69. Thus the folded "Cellophane" strip is definitely pinched as it leaves the folder and thus provided with a crease 83 which prevents it from springing open too readily. Unlike many other materials such as paper, "Cellophane" requires this extra creasing when leaving an ordinary folder.

Folders ordinarily cause enough break at the crease of some materials such as paper to cause them to maintain their folded form. Materials such as "Cellophane" do not obtain sufficient break in this manner to cause a crease to be maintained. By means of the spring bias rollers 75, the definite break or crease 83 is assured whereby this protective strip properly maintains its folded condition.

From the creasing rollers, the folded tape 67 passes over a vertical guide roller 85 and at roller 81 into engagement with the outside asphalt 87 on one-half of the cover tape 53. Alignment is such that the retracted edge 73 is about at the upper edge of the tape 53 and hence also at the upper edge of said asphalt coating 87 on tape 53. Edge 71 of 67 is clear. As the or-

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ganized asphalt-covered strip 53 and folded cover tape 67 pass through the folder 63, the mouth end of the bag (to which has been applied said asphalt strip 3 and cover 5; see Fig. 3) is fed into the jaws of the folder 63, along with 53 and 67 as indicated at the left of Fig. 7. This causes the exposed portion of the asphalt 87 to adhere one part of the cover tape to the side 6 of the bag mouth. This places it opposite to the previously applied strip 5. What occurs as the materials pass through the folder 63 is illustrated in Figs. 8 and 9. After the bag mouth leaves the folder 63, the ends of the combination of tape 67 and cover strip 53 are cut in line with the ends of the tabs 51.

From the above it will be noted that the single-ply "Cellophane" cover strip 5 and the folded double-ply cover strip 67 prevent any folding over of the cover strip as shown in Fig. 9 from effecting an adhesion on side 4 of the bag. Adhesion occurs only of tape 53 to side 6 of the bag. This is because "Cellophane" 5 contacts "Cellophane" 67. Thus the attached cover tape parts may freely be reopened to the position shown in Fig. 10. The operator then manually folds the free part 71 of the folded strip through the dotted line position and applies finger pressure at the arrow shown in Fig. 11, which completes the coverage and protective effect of the strip 67. This prevents the exposure of the asphalt adhesive shown at E in Fig. 10, exposure E being due to inaccuracies of alignment in the folder 69. The resulting completely protected condition is shown at the arrow in Fig. 11. It should be understood in connection with all the diagrammatic figures that thicknesses of the various materials have been exaggerated and that actually they are so thin that the exaggerated offsets do not actually exist.

Unclosed bags may be stacked for shipment, either in the condition shown in Fig. 11 or the cover strip may be turned back to the Fig. 10 condition but of course without reintroducing the exposure E. Thus, in either event, the asphalt adhesive is completely protected against sticking to adjacent parts.

When it comes time to fill a bag, two procedures are possible. One is to treat it as shown in Fig. 13 wherein the mouth is opened and the edge 71 allowed to position its central portions within the bag. Or 71 may be folded against 73 (as in Fig. 10). After or before filling, the protective strips 5 and 67 may be ripped away by grasping their free edges and pulling them from the tacky asphalt. It will be remembered that the adhesive is still tacky, being of the requisite type to produce this condition. It does not permanently harden during its useful life on the bag.

Stripping away these protective strips converts the bag from the condition shown in Fig. 11 to that shown in Fig. 12. As stated, this may be done either after the bag is filled or before. An advantage of the invention is that the loose edges of the strips 5 and 67 are directed toward the bottom of the bag (Fig. 11) so that an operator may have an effective purchase on the main body of the bag while pulling off the strips. This distinguishes from a condition where the strips might have free edges extending in the other direction which would make it more difficult to withdraw or separate them without a suitable purchase on the bag.

Finally, the bag may be closed by moving the free end of the cover tape 67 from the solid-line position shown in Fig. 12 through the dotted-line

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position and over the opposite side of the bag. Since this brings together exposed areas of now exposed tacky asphalt, the closure becomes completed as shown in Fig. 14.

It will be clear that a great degree of accuracy in applying the adhesive and protective strip is not essential. If the cover strip 67 falls short of the bag mouth by the distance shown at E (Fig. 10), due, for example, to errors in automatic application, this error may easily be corrected by the operation illustrated in Fig. 11, wherein the extension 71 is sent through the dotted-line position (Fig. 10) and the strip 67 pressed down to close the gap E. The invention allows bags with pre-applied tacky adhesive and a cover tape to be shipped without danger of sticking to one another or adjacent articles. The method of manufacture is easy by the simplest of apparatus and may be carried out at high production rates.

Although the term bag has been used herein to identify the package form, it is to be understood that the invention applies to all similar articles such as case liners and the like.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band, a cover tape covered on one side with adhesive and attached thereby to the other margin of said mouth and extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other side freely movable.

2. A closure for the mouth of a bag or the like comprising a band of permanently tacky adhesive along one margin of the mouth, a removable protective strip covering said band and being wider than the same in a direction away from said mouth, a bendable cover tape covered on one side with tacky adhesive and attached thereby to the other margin of said mouth and when flat extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other side freely movable for laying over said first-mentioned protective strip either when the cover strip is flat or when bent over said mouth.

3. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band and being wider than the same in a direction away from said mouth, a bendable cover tape covered on one side with adhesive and attached thereby to the other margin of said mouth and when flat extending beyond the same, and a removable V-shaped protective strip having one short side and one long side, said short side being attached to the extending portion of said cover strip by the adhesive on the cover tape and said long side being movable beyond the unattached edge of said tape or over said first-mentioned protective strip.

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4. A closure for the mouth of a bag or the like comprising a band of permanently tacky adhesive on one margin of the mouth, a protective strip covering said band and being wider than the same in a direction away from said mouth, a bendable cover tape covered on one side with permanently tacky adhesive and attached thereby to the other margin of said mouth and extending beyond the same, and a V-shaped protective strip having one side attached to the extending portion of said cover strip by the adhesive on the tape and having the other side freely movable for laying over said first-mentioned protective strip, the length of said second side being greater than that of the other, both of said protective strips being removable from the adhesive by a pull, whereupon the cover tape may be bent to cause exposed tacky adhesive thereon to adhere to said first-named band of tacky adhesive to close the bag.

5. A bag mouth construction comprising a bendable tape covered with tacky adhesive and attached to one margin of said mouth and extending therefrom, a band of tacky adhesive on the other margin of said mouth and covered by a protective strip flush with the bag mouth but wider than said band, and a protective strip covering the adhesive which is exposed on said cover tape and having a free marginal portion extending over the mouth of the bag and over said first-named protective strip, both of said protective strips being adapted to be removed from their supporting adhesive by stripping, whereby the cover tape may be folded to adhere said adhesives for closure purposes.

6. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band, a cover tape covered on one side with adhesive and attached thereby to the other margin of said mouth and extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other side freely movable, the juncture between the sides of the V-shaped protective strip being positioned closely adjacent to the mouth of the bag.

7. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band, said strip being wider than said band and extending in a direction away from the bag mouth, a cover tape covered on one side with adhesive and attached thereby to the other margin of said mouth and extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other side freely movable, the juncture between the sides of the V-shaped protective strip being positioned closely adjacent to the mouth of the bag.

8. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band, said strip being wider than said band and extending in a direction away from the bag mouth, a cover tape covered on one side with adhesive and attached thereby to the other margin of said mouth and extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other

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side freely movable, the juncture between the sides of the V-shaped protective strip being positioned closely adjacent to the mouth of the bag, the length of the freely movable side of said V-shaped protective strip being greater than its attached side.

9. A closure for the mouth of a bag or the like comprising a band of adhesive along one margin of the mouth, a removable protective strip covering said band, said strip being wider than said band and extending at one edge in a direction away from the bag mouth and at the other edge being substantially flush with said mouth, a cover tape covered on one side with adhesive and attached thereby to the other mar-

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gin of said mouth and extending beyond the same, and a removable V-shaped protective strip having one side attached to the extending portion of said cover tape by the adhesive on the cover tape and having its other side freely movable, the edge of the attached side and that of the cover tape being flush, the juncture between the sides of the V-shaped protective strip being positioned closely adjacent to the mouth of the bag, the length of the freely movable side of said V-shaped protective strip being greater than its attached side.

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