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BAG AND CLOSURE MEANS
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3,462,068

FIG. 1.

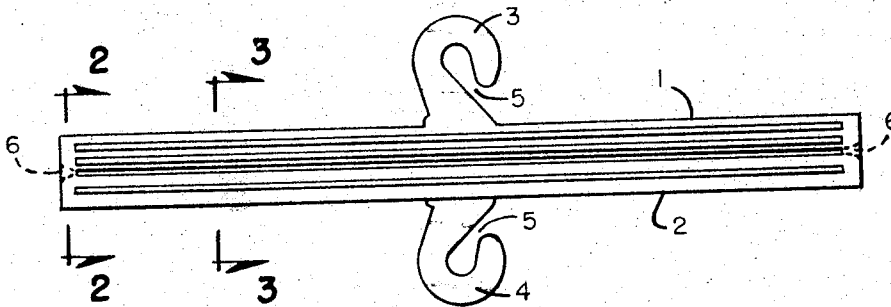


FIG. 2.

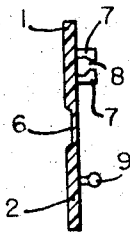


FIG. 3.

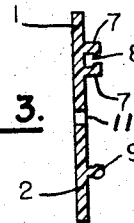


FIG. 4.

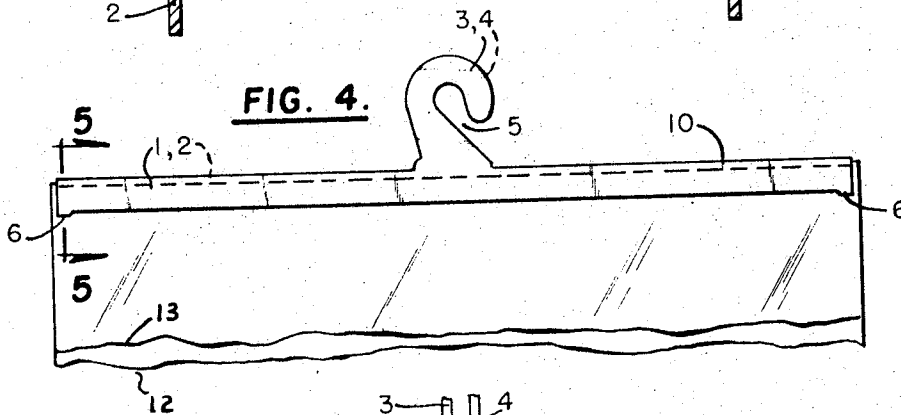
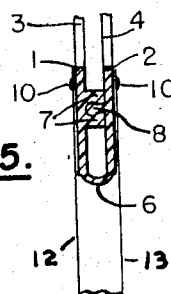


FIG. 5.



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BAG AND CLOSURE MEANS

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U.S. Cl. 229—54

6 Claims

ABSTRACT OF THE DISCLOSURE

The disclosure relates to a reusable plastic bag, and, in particular, a hook and closure means for such a bag. The hook and closure means is of the two-element type, having each element heat sealed to an opposing wall of the bag mouth and with fastening or locking means on the adjacent faces of the two elements to permit sealing of the mouth of the bag. The two element handle and closure means is formed as an integral unit with the two elements lying in the same plane, but the handle and closure means is so formed as to permit a folding over of the longitudinal strip so as to bring the two elements into a mating relationship and thereby forming a unitary handle for insertion into the bag mouth.

Background of the invention

Various types of bags are known in the art, including numerous kinds made of thermoplastic material. Many of the prior art bags include a combination handle and closure means for the bag which makes it possible to provide a tight closure thereof so that its contents cannot readily be lost nor can dirt or moisture readily enter the bag.

It is also well-known in the art to provide bags whose main body portion is formed of a thin film of thermoplastic material such as the more common vinyl or polyethylene plastics. The prior art further teaches the use of a combination handle and closure means for such a thin-film plastic bag which is sealed or cemented or otherwise fastened to the thin film. It is also common to fabricate the handle and closure means from thermoplastic material having a substantially heavier gage than that of the thin film used for the main portion of the bag since this provides greater strength and provides a desirable rigidity to the mouth of the bag, thereby making it more convenient to open the bag and to maintain it open for obtaining access to the bag's interior.

In addition to the foregoing, it is also known in the art to provide a combination handle and closure means which consists essentially of two generally congruent strips of a semi-rigid material such as a heavy gage plastic which are welded or heat sealed to the mouth of the bag. To open the bag, it is then only necessary to grasp the two handle portions with one's right and left hands, respectively, and separate the two handle portions.

Quite often, a securing or locking means is employed which tends to hold the two oppositely disposed handle portions together, thereby effectively maintaining a tight closure of the mouth of the bag. In its most practical form, such a fastening means may comprise a small protuberance on one member which frictionally engages an indentation or recess in the opposite member as, for

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example, shown in the patent to Harrah, No. 2,978,769. To open a bag which is provided with such a closure means, it is again only necessary to separate the two handle portions, but now somewhat more force is required to accomplish this because the fastener must first be unsnapped.

Extensive experience has shown, however, that the type of bag construction described thus far has several disadvantages. If the just-described fastening means is to be effective to maintain the top of the bag tightly closed under normal conditions, it is then also necessary that a fairly considerable force must be asserted on the two members comprising the handle and closure means in order to unsnap the fasteners and open the mouth of the bag. It has been found that when this is done, the natural muscular action of the user results in an abrupt and sudden further spreading of the mouth of the bag when the fasteners release, with the resulting application of large forces at the extreme ends of the two closure strips. These forces are naturally applied to the side walls of the thin-film main bag portion and easily result in tearing this member. Previous attempts to solve this problem have comprised inserting a rivet or other fastening means through the two strips at their respective extreme ends so that such rivets, instead of the thin plastic film, will bear these forces. Of course, the use of such rivets or equivalent fastener means is not entirely satisfactory because of the increased cost of manufacture of each bag and the lessening of the bag's attractiveness.

Accordingly, it is a feature of this invention to provide a plastic bag or container whose main body or bag portion is formed of a thin film of thermoplastic material having front and rear bag walls, together with a combination closure and handle means which comprise a unitary element rather than the two piece element used heretofore. The unitary element is preferably formed of a thermoplastic material but is considerably heavier in gage than that used to form the main bag portions so that the unitary element has a very much higher tensile strength than the bag walls. The act of opening the bag's mouth causes the resulting forces to be borne fully by the unitary handle and closure means which can readily withstand the stress because of its high tensile strength, and no forces are applied to the thin-film main bag portion so that its tearing is prevented.

In the United States Patent No. 3,310,224, issued on Mar. 21, 1967, to Laguerre, there is disclosed a unitary handle and closure means formed so as to comprise two substantially congruent strips each having a length substantially equalling the width of the front and rear bag walls at the mouth of said bag. The two strips normally overlies each other and are joined at their extreme ends by means which is integral with both the strips, and holds the strips closely adjacent each other and parallel to each other at their ends. Because of the parallel relationship of the ends of the strips and because of the resilience of the material which forms the unitary closure means, any attempt to open the mouth of the bag by separating the two strips at their midportions results in curvature of the strips over substantially their entire length, but with substantially less curvature taking place near the ends. The effect is similar to that of a cantilever construction in which each strip is quite tightly held at its end portion and deflection forces are applied to it at a point remote from the end; with such construction, there is substantial deflec-

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tion over the length of the member but a minimal amount at the anchored end. This results in a substantially uniform distribution of forces over the length of each of the strips included in the actual closure means when the bag mouth is opened, and prevents a concentration of forces at the respective ends which, even though the material is flexible and not brittle, would otherwise result in substantial flexure taking place at such ends so that rupture would quickly occur there.

The type of construction of a handle and closure means shown in the aforesaid Patent No. 3,310,224, and just described above, although providing numerous advantages, requires the production of a quite intricate mold and thereby results in costs of production of a handle and closure means which is frequently not competitive in costs with other handle and closure means. It is thus a feature of this invention to provide a handle and closure means having substantially all the advantages of the shown in the aforesaid Patent No. 3,310,224, and just being substantially lower in cost. These desirable advantages come about as a result of the molding of the handle and closure means as a generally planar member, i.e., with both of the handle elements lying in the same plane, but adapted to be folded over so as to overlie each other prior to insertion of the handle and closure means into the mouth of the bag and the heat sealing of the two elements thereof to the opposing bag walls.

The foregoing advantages of the unitary closure means of the present invention are the result of a combination of features employed in its construction and in the selection of the material and its thinness as set forth above. It will be readily apparent that all these advantages could not possibly be obtained, for example, by the use of heavy cardboard, fabric, or the like, in the manufacture of the unitary closure means. For one thing, such materials cannot withstand the frequent flexure that is required without rupture.

Referring to the drawings:

FIGURE 1 is a side view of the handle and closure means of the present invention;

FIGURE 2 is a cross-sectional view of FIGURE 1 taken along the section line 2—2;

FIGURE 3 is a cross-sectional view of FIGURE 1 taken along the section line 3—3;

FIGURE 4 is a view illustrating the folded-over handle and closure means of FIGURE 1 inserted into and heat sealed to the mouth of a bag; and

FIGURE 5 is a cross-sectional view of FIGURE 4 taken along section 5—5.

Referring to FIGURE 1, this shows the handle and closure means of the present invention in the form in which it is molded by the die members. The handle and closure means is shown as comprising two co-planar longitudinal strip portions 1 and 2 which are actually molded as a single sheet of thermoplastic material of suitable thickness to form handle members. Extending laterally from the upper strip portion 1 along its center portion is a hook member 3 which is integrally formed with strip 1 and defines a central aperture 5 for securing the strip portion 1 to a rod or the like for display purposes. A similar hook member 5 is disposed laterally of the longitudinal strip to and similarly defines a central aperture 5. As is common with such hook members, the entry portion of the aperture 5 is somewhat narrower than the interior portion of the aperture to provide a frictional restraint when the hook is applied to or moved from a display rod.

As shown in the cross-sectional view of FIGURE 2, the integrally molded handle and closure means of the present invention is provided on the upper longitudinal strip portion 1 with longitudinal protruding members 7 which define therebetween a longitudinal recess 8. This recess is adapted to receive a longitudinally extending protuberance 9 which extends outwardly from the longitudinal strip portion 2. The end portion of the handle and

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closure means is provided with a thinner portion at its center as shown at 6 in both FIGURES 1 and 2, and this is done to more readily permit the folding together of the two strip portions 1 and 2 to form a handle and closure means which is suitable for insertion and heat welding to the edges of the bag walls at the open mouth thereof.

The cross-sectional view of FIGURE 3 illustrates the slot 11 which is formed along the center section of the member comprising steps 1 and 2 and over substantially the entire length thereof except for the immediate thinner end portion 6 as is best illustrated in the cross-sectional view of FIGURE 2. The longitudinal slot 11 incorporates with the thinner section of material at 6 (FIGURE 2) to permit ready folding of the two strip portions 1 and 2 toward each other to form the integral handle and closure means.

FIGURE 4 illustrates the handle and closure means of FIGURES 1, 2 and 3 but with the two elements thereof folded together and inserted and heat sealed to the mouth of a bag having opposing bag walls as indicated by 12 and 13 in FIGURES 4 and 5. The heat sealing of the bag walls to each of the longitudinal strips 1 and 2 is indicated at 10 in FIGURES 4 and 5. FIGURE 5 also shows the locking together of the two strip portions 1 and 2 by means of engagement of the longitudinal protuberances 9 within the recess 8. FIGURE 5 additionally shows the two hook portions 3 and 4 which extended upwardly and overlie each other to form, in effect, a single hook adapted for securing the bag to rod or the like.

As can be seen from FIGURE 4, the mouth of the bag can readily be opened by prizing apart the two hook portions 3 and 4. Even though considerable force may be applied to separate the hook portions 3 and 4 and thus also the longitudinal strips 1 and 2, substantially no forces will be applied to the thin-film bag walls, instead, such forces will instead be applied to the portions 6 which interconnect strips 1 and 2 at each end.

It will be understood that various modifications and alterations can be made to the specific form shown without departing from the spirit or scope of this invention. Particularly, although the illustrated embodiment discloses a hook on each of the strip portions 1 and 2, it will be apparent to one skilled in the art that handle members instead of hooks may be provided on each of the longitudinal strips 1 and 2 and that such handle portions can also be adapted to overlie each other in much the same manner as disclosed in the aforesaid Laguerre Patent No. 3,310,224.

What I claim is:

1. In a bag having front and back walls formed of a thin-film thermoplastic material the improvement which comprises: unitary closure means attached to the walls of the bag in the plane of said walls at the mouth of said bag; said closure means being formed of a resilient, elastic, non-brittle material having a tensile strength substantially greater than that of the walls of said bag; said closure means being formed from a generally plane sheet of thermoplastic material and comprising an elongate strip portion having a length substantially equalling the width of the mouth of the bag, means extending laterally of each side of said elongate strip and generally symmetrically disposed relative to the mid-point of said side to form a carrying means, an elongate through-slot running longitudinally of said elongate strip portion along the mid-section thereof but terminating inwardly of each end of said elongate portion, said elongate portion being adapted to be folded over on itself along said through slot to provide thereby two overlying elongate strips for heat sealing to a respective bag wall at its mouth, said two carrying means also overlying each other upon the folding over of said elongate portion, said two overlying elongate strips being joined together only at their respective end portions.

2. The bag of claim 1 in which said elongate strip por-

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tion is formed with a portion thereof at each end aligned with said through slot which is of a thinner material than the rest of said elongate strip portion to facilitate the folding over of said elongate strip portion.

3. The bag of claim 1 in which each said laterally extending carrying means is in the form of a hook.

4. The bag of claim 1 in which both said overlying elongate strip portions have on their respective mating faces a releasable fastening means for securing together said elongate strip portions to selectively close the mouth of said bag.

5. The bag of claim 4 in which said fastening comprises a protruding means on one strip which frictionally engages with a corresponding recess on the other strip.

6. The bag of claim 5 in which said protruding means

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and the mating recess extend longitudinally over substantially the entire length of said strip.

References Cited

UNITED STATES PATENTS

3,140,038	7/1964	Laguerre	229—54
3,348,761	10/1967	Vetter	229—54
2,873,905	2/1959	Denton	229—55

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U.S. Cl. X.R.

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