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O. W. CLASPILL ET AL

2,312,281

BAG

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FIG. 1.

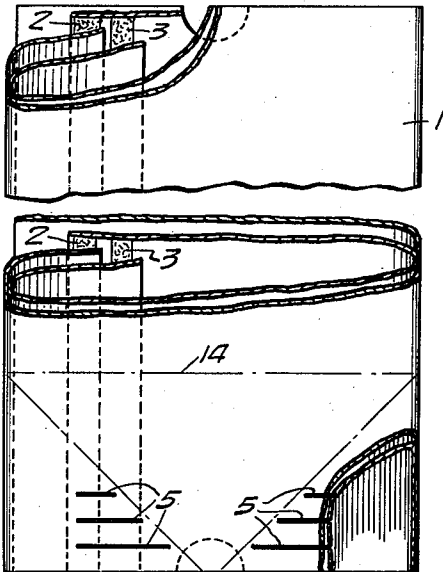


FIG. 2.

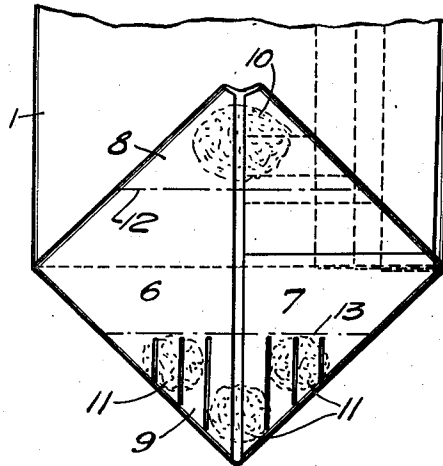


FIG. 3.

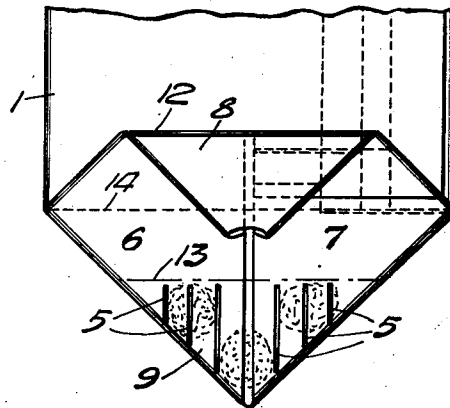
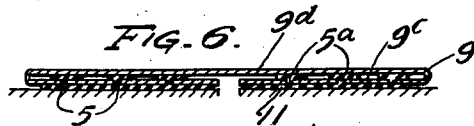
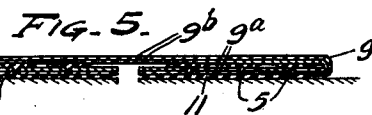
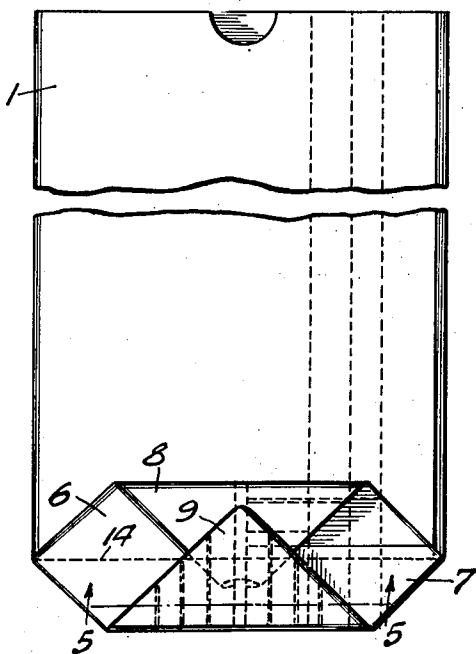


FIG. 4.



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BAG

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10 Claims. (Cl. 229—58)

The present invention relates to bags, and more particularly to bags the bottoms of which are closed by folded or overlapping flaps which are secured in closed position by an adhesive.

Heretofore, difficulties have been experienced by bag manufacturers in producing bags the bottom closing flaps of which are secured and sealed with sufficient strength and intimacy to render the same sift proof with respect to finely divided or powdery materials, especially when the bags are made of Cellophane or materials having characteristics similar thereto, since the adhesive employed to secure the bottom closing flaps is not so distributed as to seal all points in the bag bottom at which the contents might otherwise escape and to secure together the plies of the bottom flaps and especially those of the outermost flap to afford the strength requisite to maintain the bag bottom in an effectively closed and tightly sealed condition.

The primary object of the present invention is to overcome such difficulties, it providing a bottom closure the outermost flap of which is provided with slits which cause a sufficient amount of the adhesive to penetrate between the plies of this flap to strongly secure them together and prevent sifting out of the bag contents as well as to more effectively and intimately secure the outermost flap to the flaps beneath it and thereby reinforce the bag bottom and further seal it against sifting out of the bag contents.

Another object is to enable the bottom closing flaps of bags composed of Cellophane or materials having characteristics similar thereto to be secured together with greater strength than heretofore, thus overcoming the difficulty of effectively securing the flaps of bags composed of such materials due to the fact that adhesives such as those ordinarily used or available in the manufacture of bags are not as effective in securing such materials as when used in the manufacture of paper bags.

A further object of the invention is to provide a bottom closure for bags which provides for the penetration of adhesive between plies of the outermost closing flap which can be manufactured with the same facility as ordinary bags.

In the accompanying drawing:

Fig. 1 is a view, partly broken away, of a length of bag tube slit to form a bottom closure in accordance with the present invention;

Fig. 2 is a view of the lower portion of the opposite side of the bag tube, showing the same opened as part of the bottom forming operation;

Fig. 3 is a view similar to Fig. 2 but showing one of the side folds in folded position;

Fig. 4 shows the bag, partly broken away, with the bottom completed;

Fig. 5 is a detail section on an enlarged scale, taken through the outermost bottom closing flap on the line 5—5 in Fig. 4; and

Fig. 6 is a view similar to Fig. 5 but representing a section through the outermost bottom closing flap of a single wall bag.

Similar parts are designated by the same reference characters in the several figures.

The present invention is applicable generally to bags having bottom closures formed by folding flaps one upon the other, and it is applicable to bags composed of paper or other suitable flexible material, although it is applicable with particular advantages to bags composed of Cellophane or other materials having characteristics similar thereto.

In the embodiment of the invention shown in Figs. 1 to 5 inclusive, the bag is of the duplex or double wall type, it being made for example from a length of bag tube 1 which may be formed in the usual and well known manner from strips of paper, Cellophane or other suitable flexible material into a double wall tube the edges of which are united by lines of adhesive 2 and 3 to provide longitudinal seams, and the inner and outer walls of the bag may be secured together adjacent the top and bottom as usual by appropriately located spots of adhesive.

According to the present invention, those portions of one side of the bag tube which are to form the inner ply or plies of the outermost bottom fold are provided with slits 5, these slits extending through the wall or walls forming this side of the bag, but not extending through the other side of the bag. These slits may be cut in these portions of the bag by suitable cutter blades either before the strips are formed into a tube or the slits may be cut in the side of the tube after it has been formed, as for example with the aid of a mandrel located within the bag tube.

The bag tube, slit in the manner described, is opened at the end thereof on which the bottom closure is to be formed, by gripping and pulling apart the lower edges of the bag tube at points centrally of their width, in the usual manner, to form a "diamond fold," as in the forming of the well known satchel bottom type, the lower end of the bag being thus opened and producing folds 6 and 7 which extend inwardly from the

edges of the bag and folds 8 and 9 which extend inwardly from the respective sides of the bag, as shown in Fig. 2.

The bag bottom may be completed, in substantially the manner usual in the forming of a satchel bottom, by applying a spot of adhesive 10 to the flap 8 and spots of adhesive 11 to the flap 9 as shown in Fig. 2 after which the side fold 8 is folded down upon the edge flaps 6 along the fold line 12, and finally the side flap 9 is folded on the fold line 13 onto the edge flaps 6 and the previously folded side flap 8, the bag bottom being folded against one side of the bag along the fold line 14 and pressure being applied to the folded flaps to secure them in firmly adhering relation.

By providing the inner ply or plies of the outermost fold 8 with the slits 5, the adhesive applied to the innermost side of this flap, when this flap is folded against the bag bottom, will be squeezed through these slits and will penetrate between the innermost slit ply or plies and the next outer ply of this flap. For example, when the bag is of the duplex or double wall type, the two inner plies 8^a of the flap 8, through which the slits 5 extend, will permit the adhesive to penetrate between these plies and the outer unslit plies 8^b of this flap substantially as shown in Fig. 5. In applying the invention to a single wall bag as shown in Fig. 6, the slits 5^a will extend through the single inner ply 8^a of this flap and the adhesive will penetrate through these slits to the outermost unslit ply 8^d of this outermost flap.

In either case, the slits are preferably so graduated in length as to conform substantially with the triangular form of the outermost flap 4, and the slits extend substantially from the fold line 13 connecting this flap to one side of the bag substantially to the inner folded edge of this flap but are spaced inwardly from said edge to prevent spreading of the adhesive beyond it, and thus avoid squeezing of the adhesive onto the exterior of the bag bottom, so that sticking together of the bags when stacked in bundles for shipment or storage is avoided.

The invention is shown in the present instance as applied to a satchel bottom bag of either the single or multi-wall type but it will be apparent that it is also applicable to so-called automatic or square-bottom bags of the single or multi-wall type in which pleats or tucks are provided in the edges of the bag, the slits being provided in the same way in the inner ply or plies of the outermost triangular bottom flap in either type of bag and enabling the adhesive applied for securing this flap to penetrate while in a fluid state to the adjacent outer ply of this flap and thereby secure and seal together such inner and outer plies, thereby reinforcing the bag bottom to an extent that will enable it to effectively withstand stresses imposed upon it by the contents of the bag and preventing the sifting out of finely divided or powdery contents between the inner and outer plies of the outermost flap, and as this outermost flap is secured to the flap from the other side of the bag and to the other underlying flaps from the edges of the bag by a large film or area of adhesive, these other flaps are effectively secured and sifting out of material between these flaps is prevented. These results are attained in bags composed of paper or other flexible material, and they are particularly advantageous in bags made of "Cellophane" or other materials having characteristics similar

thereto in which, heretofore, difficulties have been experienced in strongly securing the bag bottom due to the fact that adhesives such as are available and have been used in the manufacture of paper bags are not as effective when used in the manufacture of "Cellophane" bags.

By arranging the slits so that they extend longitudinally of the outermost bottom flap, these slits do not appreciably weaken this flap while it is being formed by opening the end of the bag tube, and as the slits do not extend to the end of the bag, they do not create any tendency of the bag material to tear from its edge, especially during the end opening operation. Bags embodying the present invention may therefore be manufactured on ordinary bag machines with the same speed and facility as ordinary bags of these types are manufactured.

In applying the invention to single wall bags, in which the outermost bottom flap, as shown, comprises a single inner slit ply and an outer unslit ply, the adhesive squeezes through the slits in the inner ply and penetrates between it and the outer ply securing together these plies of this flap directly so that the outer ply of this flap is strongly held in intimate relation to the bag bottom and will not become caught on objects which would tend to pull this flap open.

We claim:

1. A bag having its bottom closed by triangular flaps folded one upon another, the outer flap comprising inner and outer plies and having the inner ply slits graduated in lengths in conformity with the triangular shape of said flap for the penetration of adhesive between the plies of the outer flap.
2. A bag having a bottom closure comprising triangular flaps folded one upon another, the outer flap having inner and outer plies and the inner ply having slits therein graduated in lengths in conformity with the triangular shape of said flap and terminating at points spaced inwardly from the marginal edges thereof for the penetration of adhesive between said plies of the outer flap.
3. A bag having a diamond-folded bottom closure comprising flaps folded inwardly from its edges and flaps folded inwardly from its sides onto the first-mentioned flaps and folded one upon the other, the outermost flap comprising a plurality of plies, and the innermost ply having slits therein located opposite to the flaps folded inwardly from the edges and extending from points adjacent to its line of fold toward but terminating short of the marginal edges of said innermost ply for the penetration of adhesive between it and the adjacent ply of the outer flap.
4. A bag having a bottom closure comprising flaps folded inwardly from the respective sides of the bag and one upon the other, the outer flap comprising inner and outer plies and the inner ply having a row of slits therein extending longitudinally between the line of fold from the respective side of the bag and the marginal edge of the respective flap but terminating at points spaced inwardly from said edge for the penetration of adhesive between the plies of the outer flap.
5. A bag having a diamond-folded bottom closure comprising flaps folded inwardly from its edges and triangular flaps folded inwardly from the sides of the bag and onto the first-mentioned flaps and one upon the other, the outer triangular flap comprising inner and outer plies and having sets of elongated slits formed in an inner

ply thereof located opposite to the flaps folded inwardly from the edges and extending longitudinally between the respective side of the bag and the marginal edges of the respective triangular flap but terminating at points spaced inwardly from its marginal edges for the penetration of adhesive between plies of said outer flap.

6. A multi-ply bag having a bottom closure comprising flaps folded inwardly from its sides and one upon the other, the outer flap comprising two inner and two outer plies, the inner plies having registering slits extending therethrough from points spaced inwardly from their marginal edges through which adhesive penetrates to the adjacent outer ply of the outer flap.

7. A bag having a satchel bottom comprising flaps folded inwardly from its edges and triangular flaps folded inwardly from its sides onto the first-mentioned flaps and one upon the other, the outer triangular flap comprising inner and outer plies and its inner ply having slits therein located opposite to the flaps folded inwardly from the edges and the underlying triangular flap and extending longitudinally from points adjacent to but spaced inwardly from the respective side of the bag to points adjacent to but spaced inwardly from the marginal edge of the outer flap through which adhesive penetrates and secures the plies of said outer flap together and to the flaps folded inwardly from the edges and the underlying triangular flap.

8. A bag having a closure comprising triangular flaps folded one upon the other, the outer flap comprising at least one inner ply and at least one outer ply and being secured to the other flap by adhesive, said inner ply being provided with slits which are graduated in length in conformity with the triangular shape of said outer flap and through which said adhesive penetrates to said outer ply of the outer flap.

9. A single ply bag having a closure comprising flaps folded inwardly from its sides and one upon the other, the outer flap being triangular and composed of inner and outer plies, the inner ply having slits formed therein and graduated in lengths in conformity with the triangular shape of said flap and through which adhesive penetrates to the outer ply of the outer flap.

10. A multi-wall bag having a closure comprising flaps folded one upon the other, the outer flap being triangular and comprising a plurality of inner plies and a plurality of outer plies and secured to the other flap by adhesive, the inner plies of said outer flap being provided with registering slits graduated in lengths in conformity with the triangular shape of said flap and through which said adhesive penetrates to an outer ply of the outer flap.

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