Dec. 25, 1934. H. H. ORR 1,985,326

VALVE BAG AND PROCESS OF MAKING THE SAME

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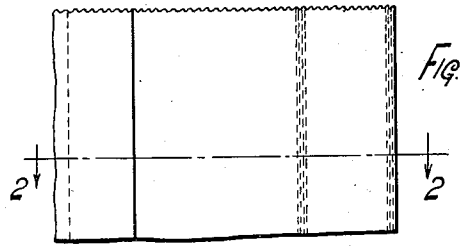


FIG.-1



FIG.-2

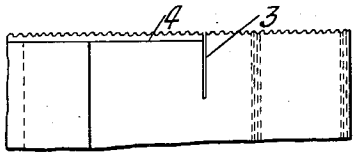


FIG.-3

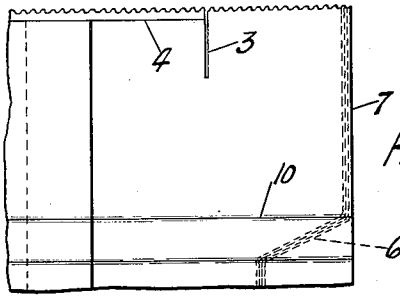


FIG.-4

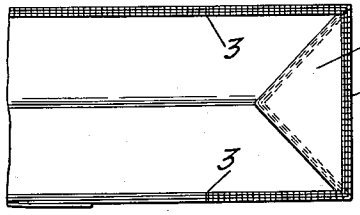


FIG.-5

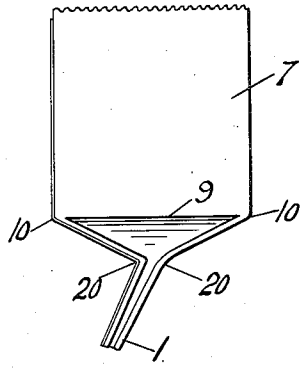


FIG.-6

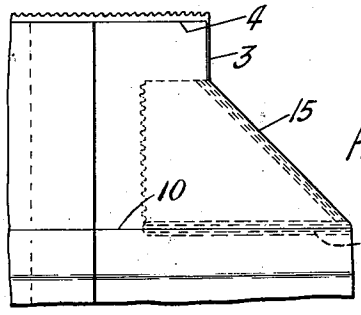


FIG.-7

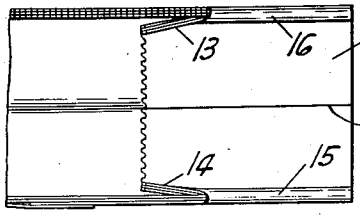


FIG.-8

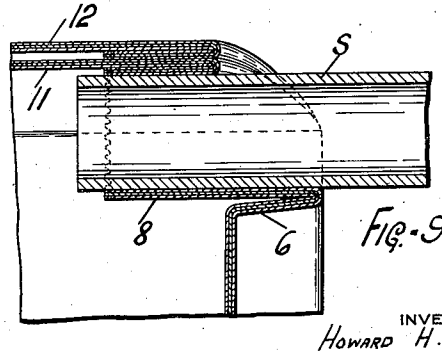


FIG.-9

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VALVE BAG AND PROCESS OF MAKING THE SAME

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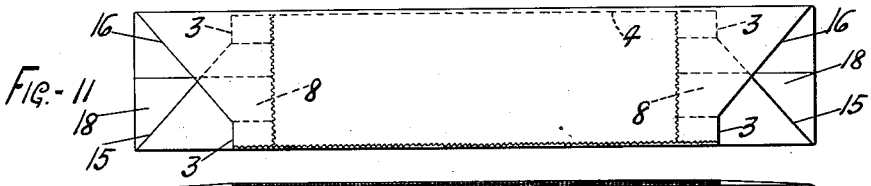


FIG.-11

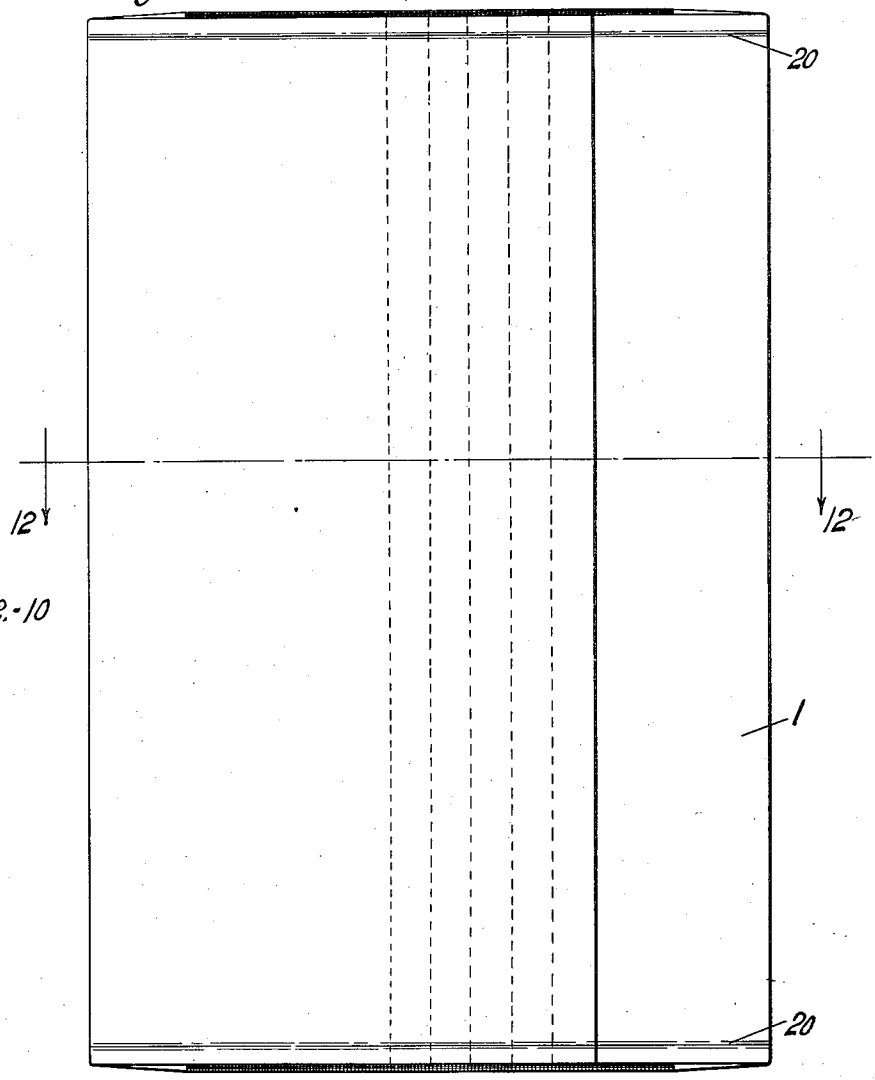


FIG.-10

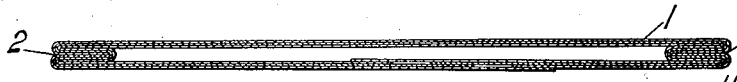


FIG.-12

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VALVE BAG AND PROCESS OF MAKING THE SAME

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Application June 1, 1931, Serial No. 541,302

5 Claims. (Cl. 150—9)

The present invention relates to the manufacture of self closing bags, such as known in the art under the general designation of valve bags. These bags are largely employed in the package of heavy materials such, for example, as cement, plaster, gypsum, or other substances which can be loaded from a filling machine, and are provided with an opening located at the corner of the bag which is designed to be placed over the spout of the filling machine. A flap formed from the bag material is located at the opening, which is designed and intended to be closed by the weight of the material within the bag to constitute the valve feature.

Valve bags have heretofore been limited to two types, the plain bag in which an opening has been provided in a corner with a flap to form the valve, and a bag with gussets or folds along the edges and with a strip sewed across the end. The former type of valve bag has been limited to the plain type and the latter type of bag is expensive to manufacture. No simple form of bag with plicated or gusseted walls has been made of the valve type.

It is an object of the present invention to design a simple valve bag of the plicated or gusseted type which can be made by ordinary and inexpensive folding and gluing operations, thereby eliminating the necessity of the expensive sewing.

In the drawings accompanying this application is shown one form of the plicated or gusseted valve bag in which

Fig. 1 is a plan view illustrating the first step in the formation of the new type of bag showing the plicated or gusseted tube;

Fig. 2 is an enlarged cross section on the line 2—2 of Fig 1;

Fig. 3 is a view showing the notching of the end or mouth of the tube;

Fig. 4 shows the next step which has to do with the formation of the mouth of the bag;

Fig. 5 is a plan view of the parts shown in Fig. 4;

Fig. 6 is a side view thereof;

Fig. 7 is a view showing the formation of the flap;

Fig. 8 is a plan view of the mouth of the bag;

Fig. 9 shows the corner of the bag as it is received over the spout;

It will be understood that the views illustrated above show one side of the bag only, it being understood that the construction is duplicated upon the opposite side of the bag.

Fig. 10 is a view of the completed bag;

Fig. 11 is a top plan view thereof; and

Fig. 12 is a section on the line 12—12 of Fig. 10.

The usual or ordinary form of valve bag is made for the shipment of very heavy powdered material, particularly cement, and this type of bag is usually made of several plies of heavy manila or kraft paper. In the form of bag illustrated here, the body of the bag is made of three plies which are joined or fastened together in any manner well known in the art. In the manufacture of the bag the laminated stock is first formed into a tube 1 by any well known type of bag forming machine with longitudinal reentrant folds or gussets 2 in each side panel.

The tube is struck off in the usual manner in the requisite bag lengths.

The upper side walls of the tube, or mouth, are then provided with notches or cuts 3 on each side of the tube spaced inwardly slightly beyond the innermost fold of the gusset, and one side of the tube may, if desired, be cut away as at 4 between the notches to facilitate the folding in of the two sides of the tube.

The corner of the tube is then opened up as shown in Fig. 4 to expand the gusset, which operation reverses the fold of the gusset and forms the wall 6 at the upper end of the gusset, and the gussets are flattened out at the mouth to form the upright panel 7, the base of which is the transverse fold 9.

The next operation consists in moving or folding the wall 7 inwardly so that it forms a horizontal flap 8, the mouth of the bag being folded at the corners along the diagonal lines 15 and 16 which extend from the bases of the cuts 3 to the corners of the bag body forming the triangular connecting webs 13 and 14. The upper sides of the bag mouth are then folded over along the transverse lines 10 to make the closure, the two sides 11 and 12 being pasted together to make the permanent closure. No glue is applied to the flap or valve 8, and the bag may be placed over the spout S of a filling machine which enters the bag through the opening provided above the flap 8. When the bag is filled and removed from the spout, the flap will lie against the underside of the closure. It will be observed that when the bag is filled the gussets 2 will open up, which will tend to move the flap 8 outwardly, and this action will assist in making a perfect valved opening.

It will also be observed that the crease or fold 21 at the base of the gusset is an inwardly extending fold, that is to say that its apex is directed toward the interior of the bag, rather than outwardly of the bag. In the improved valve bag this fold continues over the horizontal flap 8 as

shown in Figures 8 and 11, so that the apex of the fold at the valve extends inwardly of the bag. The valve is thereby improved, as the pressure of the material in the filled bag will tend to flatten the crease and make a secure and non-sifting valve. In valve bags of the type in which the bottom is formed with a diamond fold, the apex of the crease will be outwardly of the bag and will make an objectionable pile-up of paper at the fold in the finished bag which will permit sifting of the contents. This objectionable feature is exaggerated where a multiple-walled bag is to be made as the accumulation of paper at the crease will make a large opening or passage through which the contents will sift out of the filled bag. The pressure of the contents will not tend, as in my bag, to close the passage.

It will also be observed from an inspection of the end of the bag as shown in Fig. 11, that the closure is provided by the two overlapping flaps, each of which is bounded at the ends thereof by the diagonal lines 15 and 16 which cross each other at midway points to provide the triangular area 18 which is closed by the outer exposed portion of the flap 8, this flap extending beyond the opening to a sufficient extent to make an operative valve. The formation of the bag mouth gives a flattened top to the bag, and forms transverse folds 20 at the points where the closure forms from the body of the bag.

It will thus be seen that a new, novel, simple and economical valve bag of the gusseted or plicated type has been made with simple folding and gluing operations, and without expensive sewing.

The invention relates both to the bag and to its method of manufacture, and is not to be limited except by the fair scope of the claims and the prior art.

What is claimed is:

1. A valve bag, comprising a tube of bag stock having side walls and gusseted panels with inwardly extending folds therein, and an end of the bag consisting of two sides of the bag folded upon each other and secured in overlapping relation to form a closure, the corner of the bag being formed with a triangular area bounded by the two edges of the closure and the upper edge of the panel, and a flap constituted by an extension of the panel lying beneath the closures and extending within the mouth of the bag, said flap having an inwardly directed crease which is a continuation of the fold in a gusseted panel, the flap being unattached and adapted to form a valve and valved opening extending across the top of the bag and of a width equal to the width of a gusseted panel.

2. A valve bag, comprising a tube of bag stock having side walls and panels with inwardly extending folds forming gussets, a corner of the bag having a valved opening triangular in form, of a width in flattened condition equal to the width of one of said panels and bounded by diagonal folds formed in the upper side walls and extending to the bases of notches extending inwardly from the ends of the tube, and by a transverse fold across the panel, the opening being closed by the upper portion of the side panel flattened out and extending beneath the overlapping ends of the tube and unattached at any point thereto to form a flap having an inwardly directed crease which is a continuation of the fold in a gusseted panel.

3. A valve bag having a body portion composed of a plurality of plies of bag stock with sides and gusseted panels and a closure formed from overlapping sides of the body, and a valved opening in the corner of the bag, said opening being triangular in form of a width in flattened condition equal to the width of one of said panels and bounded by diagonal folds in the sides of the bag, and a transverse fold formed across the gusseted panel whereby the inward gusset fold is removed and the outer portion of the panel is flattened except for a residual inwardly extending crease which is a continuation of the fold in the gusseted panel and extends within the mouth of the bag to form an unattached flap, of a length substantially equal to the width of the gusseted panel, each overlapping side portion extending substantially across the top of the bag and adhesively secured to the other overlapping side portion.

4. The process of manufacturing multiple wall valve bags, comprising forming a tube of a plurality of layers of bag stock with reentrant gussets in the side panels of the bag so that the several layers reinforce and support one another and bear their equal share of the load, spreading an end of the tube so that the gusset at that point is flattened except for a residual inwardly extending crease which is a continuation of the fold in the gusseted panel, bending the flattened gusset inwardly of the tube on a transverse line and upon diagonal lines extending from the corners of the tube to form a loose flap, folding the front and rear side walls of the bag over the flap so that the diagonal lines intersect to form a triangular open space over the flap and adhesively securing the overlying portions of the front and rear walls leaving the flap free to form a valved opening in a corner of the bag and extending across the top of the bag.

5. The process of manufacturing multiple wall valve bags, comprising forming a tube of a plurality of layers of bag stock with reentrant gussets in the side panels of the bag so that the several layers reinforce and support one another and bear their equal share of the load, spreading an end of the tube so that the gusset at that point is flattened except for a residual inwardly extending crease which is a continuation of the fold in the gusseted panel, bending the flattened gusset inwardly of the tube on a transverse line at a distance from the end of the tube substantially equal to the width of the gusset and upon diagonal lines extending from the corners of the tube to form a loose flap, folding the front and rear side walls of the bag over the flap so that the diagonal lines intersect to form a triangular open space over the flap and adhesively securing the overlying portions of the front and rear walls leaving the flap free to form a valved opening in a corner of the bag and extending across the top of the bag.

HOWARD H. ORR.