Feb. 2, 1954 T. L. JONES 2,668,003

VALVE BAG

Filed June 3, 1950

Fig. 1

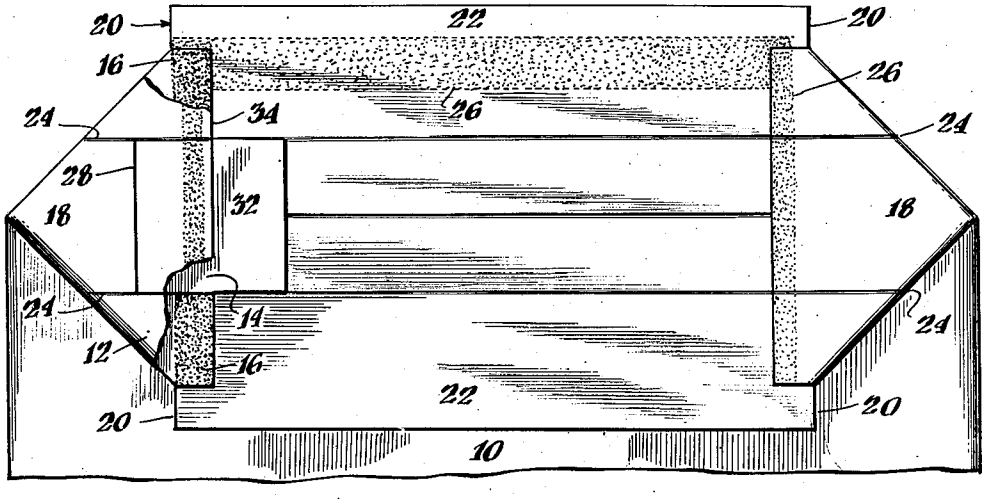


Fig. 2

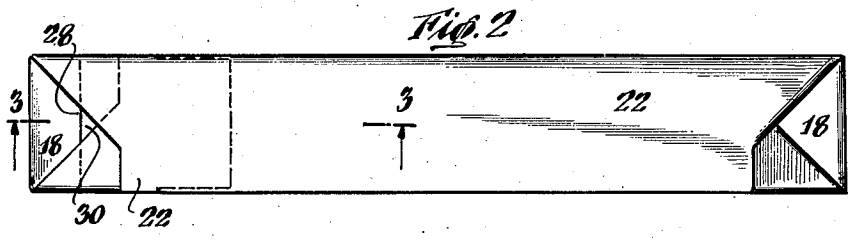


Fig. 3

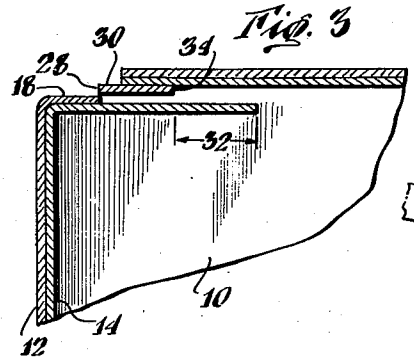
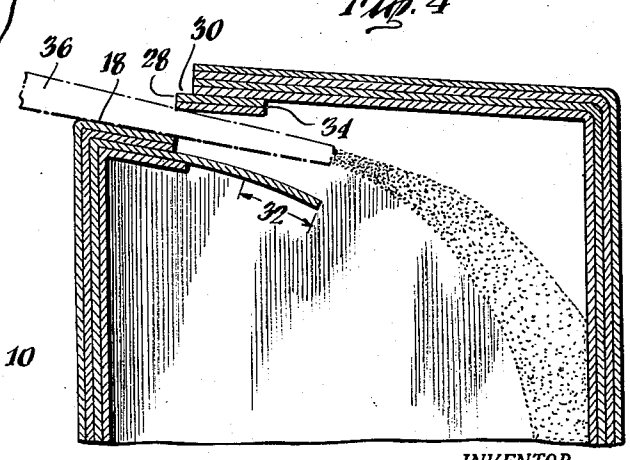


Fig. 4



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VALVE BAG

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4 Claims. (Cl. 229—62.5)

1

This invention relates to an improved valve construction for valve bags of the multiwall type having pasted ends. These bags have what is ordinarily termed a diamond end closure in which side flaps are folded over the inwardly folded corners or end flaps.

In carrying out my invention I provide a transverse slit through at least one ply of an inwardly folded corner so that a tapered filling nozzle can be inserted into the bag between the plies. Such filling slits have previously been suggested but I find that to make the use of such a slit practical, it is necessary that the slit be located far enough toward the center of the bag so that at least two-thirds of the slit is covered by the side flaps. When this is done the slit member acts as a guide to carry the filling nozzle under the side flaps and the side flaps provide the necessary strength to support the bag during filling. Otherwise the bag is supported only by the thickness of one or more plies which may have a tendency to tear and destroy valve action.

I have found that when the filling slit is placed under the side flaps as described, the location of the slit is so near the inner edge of the end flap that normally very little valving action is supplied. I solve this difficulty by extending at least one of the inner plies of the inturned end flap so as to give supplemental valving action. By thus locating the slit where the overlying side flaps give necessary strength and by supplementing the valve action with an extension on one of the end flaps the two cooperate to make a valve which is exceptionally easy to fill and at the same time which has been shown in operation to be free from leakage.

This invention can readily be understood by reference to the accompanying drawing in which: Fig. 1 is a side view of one end portion of the bag with the end partially closed and a portion of the outer ply cut away; Fig. 2 is a top view with the end completely closed; Fig. 3 is a sectional view taken on line 3—3 of Fig. 2 with certain of the side flap plies omitted; Fig. 4 is a similar view showing a modified form of the present invention with a filling tube shown in dotted lines.

Bag 10 illustrated in Figs. 1–3 of the drawing is made of two plies 12 and 14 of paper but the number of the plies may be varied (see Fig. 4). As shown in Fig. 1, plies 12 and 14 preferably are held together at the corners by paste 16. As also shown in Fig. 1 the end closure is formed in the usual manner for pasted end bags.

2

End flaps 18 are formed by infolding opposite portions of the bag wall between longitudinal cuts 20 and the remaining upright portions 22 constitute the side flaps. To complete the end closure, side flaps 22 are folded over on lines 24 and pasted to the end flaps and to each other by glue or paste 26 which has been previously applied.

In accordance with the present invention a transverse slit 28 corresponding in length to the width of the end closure is cut through the outer ply of one end flap 18. The slit is positioned with its end portions located under side flaps 22 (shown in open position) so that at least two-thirds of the slit lies under the protective covering of the side flaps when the end closure is completed. The middle portion of slit 28 left uncovered by the side flaps forms lip 30 (see Fig. 2). Lip 30 need only be large enough to aid in inserting the tapered filling nozzle and is actually of such small area that the entire weight of the bag during filling is supported by side flaps 22.

Inner ply 14 of end flap 18 is extended to form elongation 32. I find that by making its length equal to the distance between inner edge 34 of the end flap and slit 28, I achieve an effective increase in valving action which doubles the length of the valve sealing area. This elongation 32 of inner ply 14 is not attached at either side or outer edge and the corresponding area of inner ply 14 underlying outer ply 12 is left unglued so that the filling nozzle can be easily inserted into the valve sealing area.

In this construction filling is accomplished by inserting a tapered filling nozzle into the bag through slit 28 with lip 30 serving as a guide to carry the nozzle under the side flaps. The nozzle distorts slit 28 to capacity. However, side flaps 22 resist and withstand this distortive force to eliminate the hazard of tearing outer ply 12 and the added strength of the side flaps provides a strong support for the bag during filling. After the bag is filled and the nozzle removed the supplemental valve sealing area of elongation 32 forms an exceptionally long valve closure which prevents leakage of material through the valve. Absence of interply adhesive 16 in the valve sealing area lends a high degree of flexibility to inner ply 14 which allows easy passage for the tapered filling nozzle and facilitates automatic sealing of the bag. So constructed I find that the combination of a protected filling slit and a long valve sealing area provides a valve with effective sealing action which cannot be damaged during filling.

A modified form of this invention for a four ply bag is shown in Fig. 4. Here slit 28 is cut through two of the plies and one of the remaining plies is extended to form elongation 32. A tapered filling nozzle 36 is shown inserted into the bag illustrating the necessity for flexibility of inner ply 14 which is shown in depressed position for the filling operation. After filling the nozzle is removed, the valve sealing area flexes upwardly against the side flaps to seal the bag.

It will be understood that it is intended to cover all changes and modifications of the preferred embodiment of the invention herein chosen for the purpose of illustration which do not constitute departures from the spirit and scope of the invention.

What I claim is:

1. In a non-gusseted bag having walls comprising a plurality of plies of paper with an end closure of end flaps formed by infolding opposite portions of the bag wall and side flaps also formed by infolding opposite portions of the bag wall covering said end flaps, the combination which comprises a transverse slit in the outer ply of one of the end flaps which delineates a valve and valve action area extending inwardly between the plies of the end flap from said slit to the inner edge of the bag wall, said slit being positioned with a substantial portion of its length covered by the side flaps and said end flap having a rectangular elongation of at least one of its inner plies beyond the lateral edge of the bag wall in the valve to form a supplemental valve and valve action area and said elongation being of the same width as the said valve and valve action area.

2. A structure as specified in claim 1 in which the elongation is attached to the bag walls solely along its base so that it is free to flex upwardly against the end closure for sealing the bag.

3. A structure as specified in claim 1 in which the elongation is equal to the distance between the inner edge of said end flap and the transverse slit.

4. A structure as specified in claim 1 in which the slit is cut through a plurality of plies.

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