Jan. 5, 1943. D. R. ANGUS 2,307,559

CONTAINER

Filed Oct. 1, 1938 2 Sheets-Sheet 1

Fig. 1.

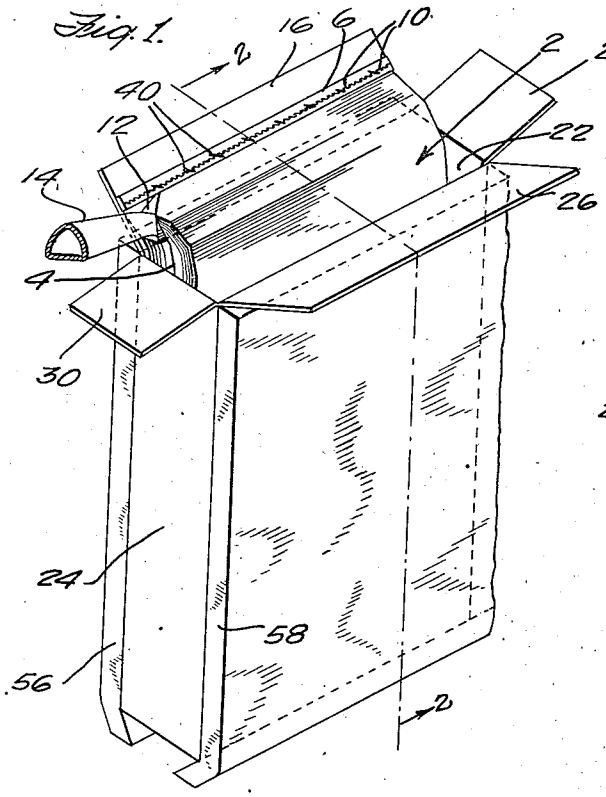
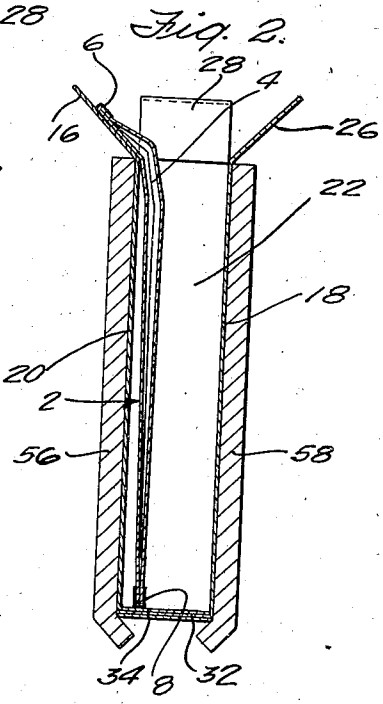


Fig. 2.



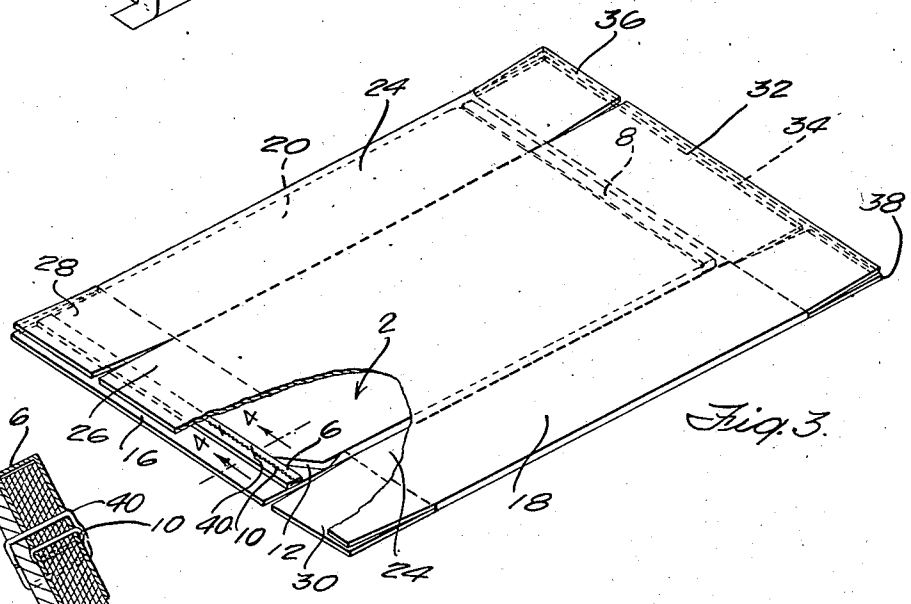


Fig. 3.

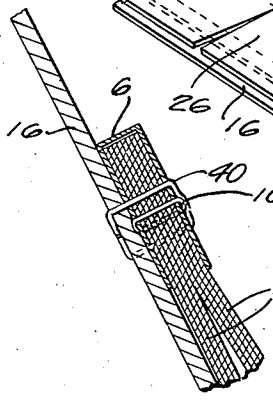


Fig. 4.

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Fig. 5.

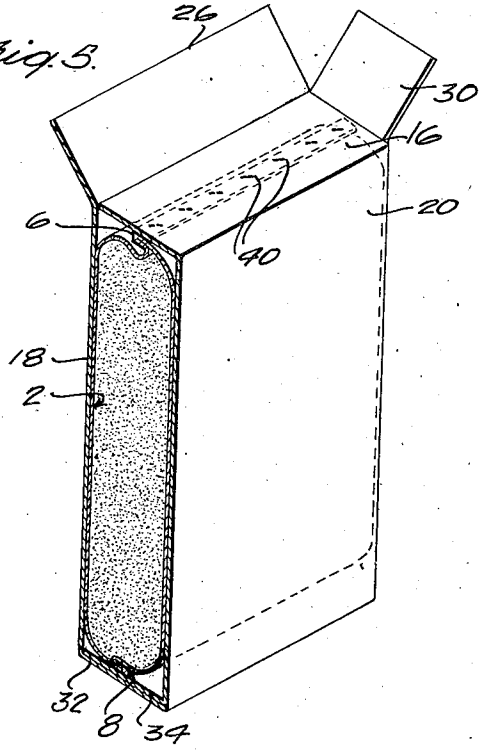


Fig. 6.

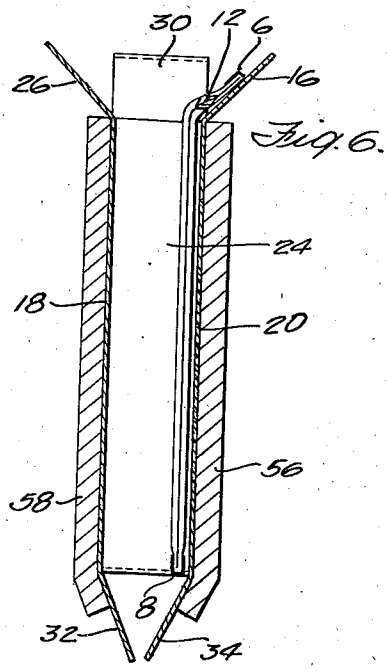


Fig. 7.

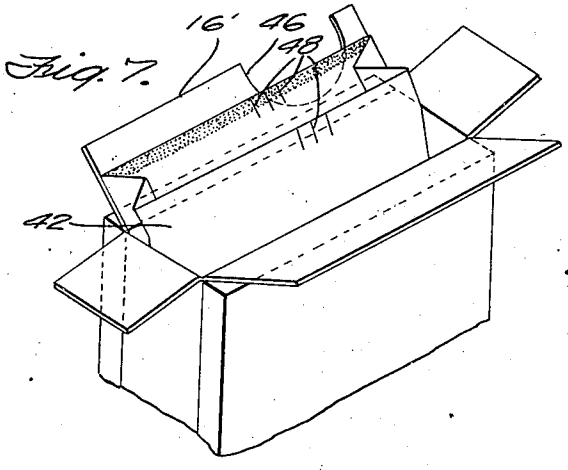
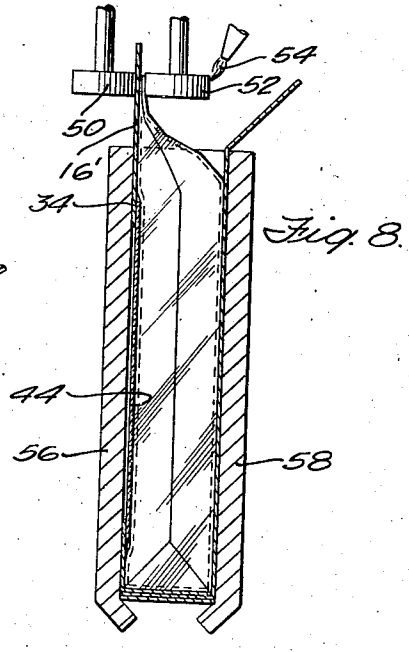


Fig. 8.



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UNITED STATES PATENT OFFICE

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CONTAINER

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Application October 1, 1938, Serial No. 232,759

4 Claims. (Cl. 229—14)

This invention relates to packages, and particularly to packages for holding materials of such a nature as to require especial protection in handling and shipment.

In the packaging of materials which come in powdered form and which are easily damaged by moisture, such, for example, as Portland cement, it is important not only that the bag in which the material is packed be tight, but, if the bag is to be exposed to dampness or if it is to be subjected to rough handling, it frequently becomes necessary to protect the bag itself against injury. This is, of course, also true in the packaging of many materials which come in other than powdered form.

In preparing Portland cement for export it has been the very recent practice to enclose the cement first in a paper bag, such, for example, as the ordinary "Bates valve" bag, and then to enclose the filled bag of cement in a cardboard box. This practice has increased the cost of packaging the cement very materially for two reasons: First, it has required a separate handling of the cement to insert the filled bag in the box and to seal the box and, secondly, by reason of the difficulty of getting the filled bag into the box, a box considerably larger than would otherwise be necessary, were the cement put directly in the box, has been required.

Similar experience has been encountered in attempts to provide nested containers for other materials.

One of the objects of the present invention is to provide a combined bag and box package which may practically be filled and sealed in a continuous operation and which will thus effect a saving both in time and material by making possible the use of a box more closely fitting the filled bag.

Another important object of the invention is to provide a combined bag and box container having the bag and the box so connected that the box will maintain the receiving end of the bag in convenient position and condition for filling the bag, particularly when using automatic bag-filling machinery. The invention aims also to connect the bag and box as to facilitate the sealing of the bag and the final closing of the combined container.

Other objects and important features of the invention will appear from the following description and claims when considered in connection with the accompanying drawings, in which

Figure 1 is a perspective view of a combined bag and box package or container in position in bag-filling machinery, the illustrative embodiment of the invention showing a bag of the "Bates valve" type with the filling nozzle of the filling machine inserted in the "Bates valve";

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 shows the combined bag and box in the collapsed condition in which it is shipped;

Figure 4 is a detail section on the line 4—4 of Figure 3 showing one manner of connecting the top of the "Bates valve" bag to the box cover;

Figure 5 is a perspective view, partly in section, showing the combined bag and box package of Figure 1 filled and partly closed;

Figure 6 is a section similar to Figure 2 but showing the box as having both its top and bottom ends open while the bag is being filled in order to permit cementing the filled bag to the box bottom to facilitate emptying;

Figure 7 is a perspective view of the upper end of a combined bag and box in position in the filling machine, the bag shown in Figure 7 being of the type used for gelatin and similar materials; and

Figure 8 illustrates the manner of sealing the bag of Figure 7 after filling, the bag being partly in section.

As shown in Figures 1 to 6 inclusive, the invention is embodied in a combined bag and box in which the bag is of the "Bates valve" type and the box is of the collapsible type illustrated particularly in Figure 3. This permits shipment of the combined package in the collapsed flat form illustrated in Figure 3.

As illustrated, the bag 2, which is formed from continuous tubing having single satchel or accordion folds 4 in its two side edges, has reinforcing strips 6 and 8 folded over its ends, the ends being permanently closed, except for the valve hereinafter described, by stitching 10 extending through both the bag ends and the reinforcing strips 6 and 8. One corner of the bag is provided with the self-closing bag-filling valve 12 known for many years to the trade as the "Bates valve" and which is of well-known construction.

This is a type of bag that has been used for many years in the cement industry for bagging Portland cement, which is blown into the bag through a nozzle 14 on a filling machine, this nozzle fitting into the "Bates valve" 12 and being of sufficient length so that the nozzle to some extent supports the bag while it is being filled.

According to the present invention a bag of the type just described is so attached to the box

in which the bag is to be enclosed when filled that the bag can conveniently be filled in position in the box and that the box cover will serve to maintain the bag in convenient filling position, particularly when it is to be used with automatic bag-filling machinery. I have discovered that, if a bag 2 of the type just described has its top end attached to one of the flaps 16, which serve to close the top end of a collapsible box of the type which comprises two side members 18 and 20 and two end members 22 and 24 made from a single sheet scored to permit bending, having its side edges fastened together to form the fourth box corner and cut back at the ends to form side cover flaps 16 and 26 and end cover flaps 28 and 30 and side bottom flaps 32 and 34 and end bottom flaps 36 and 38, the top end of the bag being so attached to the end flap 16 that when the flap is in open position, as shown in Figure 1, the valve 12 will be in convenient position to receive the nozzle 14 of the filling machine, I will obtain a combined bag and box package in which, when the bag has been filled to the usual extent and the nozzle 14 withdrawn, the top flaps of the package can be folded into closed position, as partially shown in Figure 5, and the box sealed with a minimum of waste space between the box and the enclosed filled bag. In other words, a box closely fitting the bag can be utilized with the bag, thus preventing the shucking motion experienced with the boxes now used with bags of this type, which results in a tendency to pump air into and out of the box and also into and out of the bag, and also results frequently in damage to both the box and the bag.

The top of the bag 2 may be attached to the cover flap 16 in any suitable manner, as, for example, by cementing, sewing or stapling, one of the most convenient methods of securing the top of the bag 2 to the cover flap 16 being by means of staples 40 driven through the reinforced top end of the bag and through the cover flap 16 and clenched on the cover flap. As shown, these staples may, if desired, be driven at a slight inclination to the line of stitching 10 so that the legs of the staples straddle the stitching 10, thus making a very secure attachment of the bag top to the cover flap 16. The position, in respect to the width of the cover flap 16, of the line of staples 40 will depend somewhat upon the position of the line of stitches 10 with respect to the valve 12, it being important that the valve 12, when the cover flap is in the position shown in Figure 1, be above the top edge of the box proper, so that it will be in position for convenient insertion of the nozzle 14.

As shown in Figure 2, in a box of the type illustrated in Figures 1 to 6 inclusive, which has sides of considerably greater width than its ends, the bottom of the bag, when the cover flap 16 is in the open position shown in Figures 1 and 2, will be substantially on a line with the bottom of the closed box or with the score lines determining the bottom flaps of the open bottom box as shown in Figure 6. If, however, the box be made more nearly square in cross-section, it will be obvious that in such a case the bottom edge of the bag will extend somewhat below the scoring for the bottom flaps of the box when the bag is in the position shown in Figures 1 and 2, in which case it may, if desired, be attached to one of the bottom flaps prior to filling.

If it be desired to attach the bag shown in Figures 1 and 2 to the bottom of the box to prevent any tendency of the bag to follow the material when pouring from the upper end, this may be accomplished, as shown in Figure 6, by filling the bag with the bottom end of the box as well as the top end open and then providing the flap, which contacts with the bottom when the box is closed after the bag is filled, with cement which will cause it to adhere to the bottom. Attachment of other portions than the tops of the bags to the boxes in the case of combined bags and boxes for use with Portland cement is not so desirable as with some other materials, since the Portland cement packages, when used, are most often opened by cutting through the middle thereof, as with an ax.

As hereinabove pointed out, however, the invention is equally applicable to combined bags and boxes used in packaging other materials, such as gelatin, granulated sugar, pop-corn, molding plaster, etc., in which other types of bags than the "Bates valve" bag are utilized. Figures 7 and 8 show the invention applied to a combined bag and box in which a bag 42 of transparent material, such as Cellophane, is employed.

In the form of the invention shown in Figures 7 and 8, the bag 42, which, as above suggested, may be of Cellophane, of the heat-sealing type, for example, has its filling end normally completely open and is attached to the cover flap 16' of the box in the manner shown in Figure 7, that is, one side of the open top is attached to the flap 16' in any suitable manner, as by cementing it thereto. For convenience in pouring, the side of the bag is also preferably attached to the side wall 34 of the box in a similar manner by cementing it thereto and this attachment may be incidental to providing a window 44 in the box, through which and the transparent side of the bag the contents of the package can be viewed. In such case the side of the bag will preferably be cemented to the box around the four sides of the window opening.

Packages of this sort are sometimes provided with pouring openings 46. For convenience in opening the package, that is, for breaking through the bag, the bag may be weakened by scores 48, some of which will lie within the opening 46 so that a tear may readily be started for providing an opening in the bag coinciding with the opening 46.

As shown in Figure 8, when the bag and box shown in Figure 7 have been filled, the two sides of the top end of the bag can be brought together and heat-sealed as, for example, between rolls 50 and 52, between which the top of the bag and the box flap 16' are passed, the roll 52 being heated in any suitable manner as, for example, by a flame 54.

In the forms of the invention shown in Figures 1, 2 and 8, the bottom of the box is closed before the box comes into bag-filling position between the combined guides and supports 56 and 58 of the bag-filling machine. In Figure 6 the bottom of the box is shown as open, as hereinabove pointed out.

From the foregoing description the construction and manner of use of the novel container of the present invention will readily be understood.

Among the advantages which use of this container offers, as compared with the use of separate containers, are the following:

The customer receives one complete package ready for use instead of the two pieces, box and bag, which he has heretofore used, and since the bag is filled in position in the box the labor

of placing the filled bag in the box is avoided. Moreover, a smaller box, that is, a box more nearly fitting the filled bag can be employed and the sides of the box are protected when the bag is being filled and thus keep their shape, which is not the case where separate packages are used unless special equipment be provided for holding the box while the filled bag is being inserted. By reason of the closer fit that is possible between the box and the bag, play is eliminated and, moreover, as hereinabove pointed out, the bag can readily be permanently attached to the box in other places as well as at the top.

The container of this invention is particularly useful in that it lends itself to existing means of filling and automatic sealing. Particularly in the forms of the invention shown in Figures 7 and 8, in which provision is made for emptying the bag from one end, the permanent attachment of the bag to the box along its side as well as at the top insures better flowing of the material when pouring, since the bag will not bend and thus give uneven flow. Also, as hereinabove pointed out, the tight fit and the substantial filling out of the box by the bag prevent the pumping of air into and out of the box and into and out of the bag, which takes place when there is a loose fit.

What is claimed as new is:

1. A container comprising a box having a cover hinged to a top edge thereof, a bag of a capacity approximating that of the box, and adapted to fit snugly in the box when filled, the filling end of said bag being attached to said cover at points between its hinge and its side edge opposite thereto and in such manner as to permit the bag to extend into the box, said bag being otherwise unattached to said box and said filling end of said bag being closed independently of the box structure.

2. A container comprising a box having a cover hinged to a top edge thereof, a bag of a capacity approximating that of the box, having an independent closure and adapted to fit snugly in the box when filled, the opened end of the bag having its free edges secured together in line contact to substantially close the open end of the bag, said secured edges of said bag being attached to said cover on a line substantially parallel to the hinge thereof and substantially intermediate between said hinge and the side edge of said cover opposite thereto and in such manner as to permit the bag to extend into the box, said bag being otherwise unattached to said box.

3. A container comprising a collapsible box having four sides with flexible corner connections and cover and bottom flaps hinged to side ends, a bag of a capacity approximating that of the box and adapted to fit snugly in the box when filled, the filling end of said bag being attached to said cover flap at points between its hinge and its side edge opposite thereto and in such manner as to permit the bag to extend into the box both in its collapsed and in its erect condition, said bag being otherwise unattached to said box and said filling end of said bag being closed independently of the box structure.

4. A container comprising a box having a cover hinged to a top edge thereof, a bag of a capacity approximating that of the box and adapted to fit snugly therein when filled, said bag being normally closed at both ends except for a self-closing filling valve formed therein at one side of its upper end and being permanently attached to said box cover at points between its hinge and its side opposite thereto and in such manner that said filling valve is accessible above the upper edge of said box and that the bag may extend into the box while being filled.

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