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C. D. FALLERT
HEAVY-DUTY CONTAINER FOR BULK MATERIAL WITH
PROTECTIVE LINER AND RELEASABLE LOCK COVER

2,902,202

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2 Sheets-Sheet 1

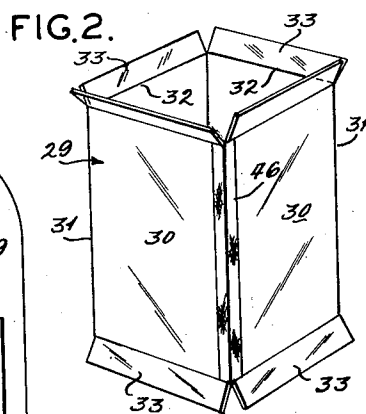
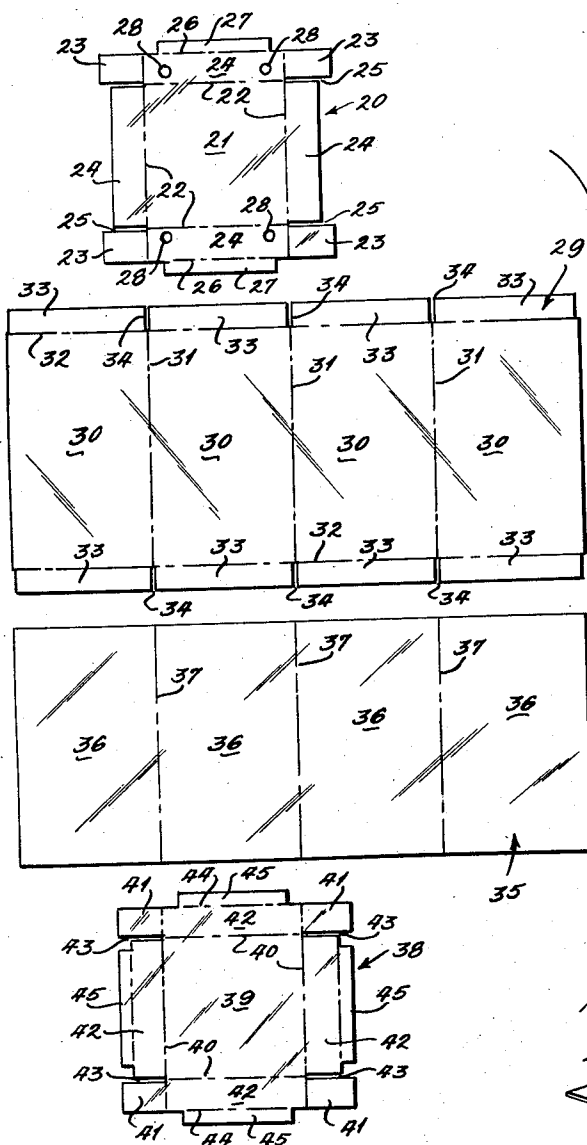


FIG. 1

FIG. 3

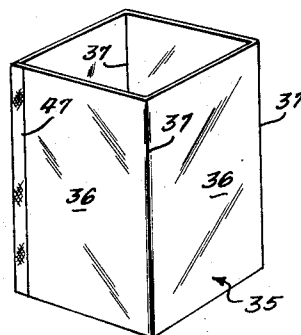


FIG. 4

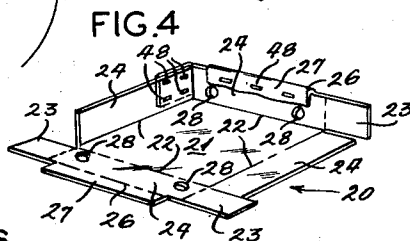


FIG. 6

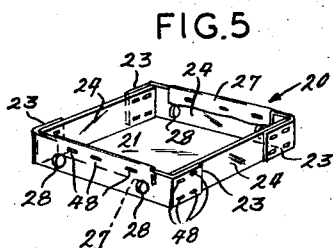
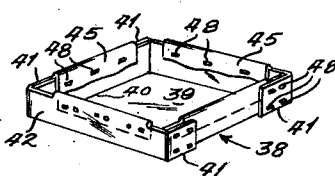


FIG. 5



INVENTOR:
CLIFFORD D. FALLERT

BY

ATTORNEY

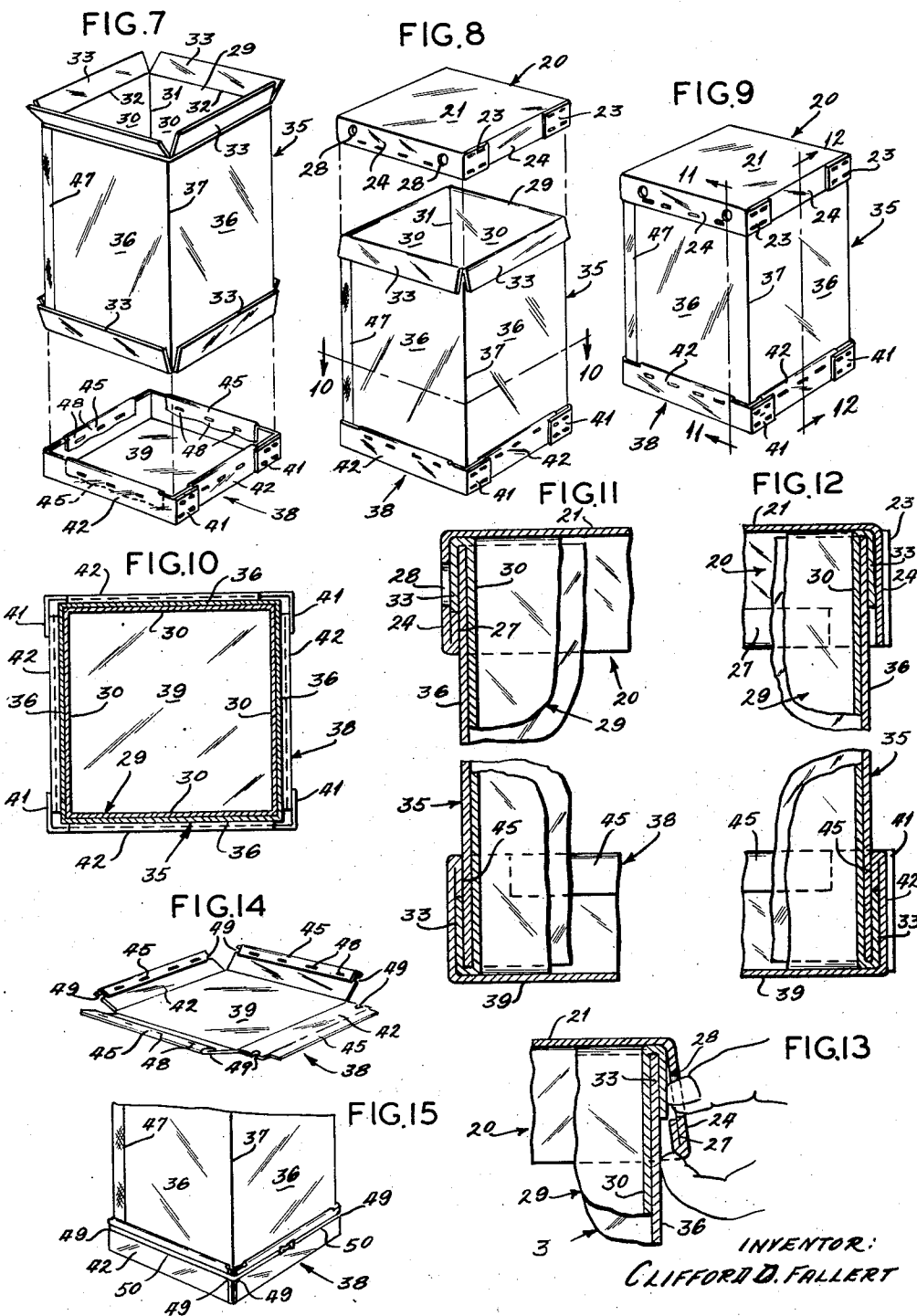
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By

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HEAVY-DUTY CONTAINER FOR BULK MATERIAL WITH PROTECTIVE LINER AND RELEASABLE LOCK COVER

Clifford D. Fallert, St. Louis, Mo., assignor to Crown Zellerbach Corporation, San Francisco, Calif., a corporation of Nevada

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3 Claims. (Cl. 229—23)

This invention relates to heavy-duty containers for packing, shipping, and storing bulk commodities which require positive protection from sifting and leakage and from contamination including a top closure cap which may be securely locked in place, yet may readily be removed when desired. Containers employing this invention may be constructed of solid fibreboard, corrugated fibreboard, or any other suitable material.

My invention is directed to containers for packaging quantities of bulk materials up to approximately five-hundred pounds, that is, free flowing bulk commodities in granular, pellet, or powder form. The containers often range in size up to approximately 24" x 24" x 30". Free flowing bulk commodities hereinbefore mentioned exert a substantial outward force on the walls and bottom structure of the container. Consequently, it is unexpected that containers constructed of relatively light, foldable material, such as fibreboard and the like, can be used successfully for the purposes described.

Many of the bulk materials, for example, flour, chemicals in pellet and powder form, grain and the like, have heretofore been shipped in non-collapsible cylindrical fibreboard or metallic drums usually having a maximum capacity of from 50 to 300 pounds depending on the density of the commodity. Containers employing the subject invention may be pre-assembled and shipped partially knocked-down to the user which results in substantial economies. The containers may be, and usually are, palletized so that they may be stacked two, three, or even four high. Furthermore, shipping and storing space is saved and stacking ease facilitated as a result of their rectangular configuration. Other economies have resulted from their use.

More specifically, the container comprises a bottom tray, inner and outer telescoped sleeves, and a top closure cap. The bottom tray has a flat bottom panel with upstanding integral wall panels. Each wall panel has an integral upper marginal flap positioned intermediate its width and whose height is substantially one third the height of the tray wall panel, the said marginal flaps being folded inwardly and downwardly and affixed to the inner face of the wall panel in any suitable manner. The wall panels are preferably connected together by rectangular wall panel end extensions on opposing wall panels which are folded over the adjoining wall panels into flatwise relation and secured thereto in any suitable manner.

However, in an alternate bottom tray design the wall panels are unconnected and have a semi-circular or other type notch placed at each end of each wall panel intermediate its height. Said notches are receiving means for a strap or other banding means during final assembly of the bottom tray to the telescoped sleeves.

The inner and outer tubular sleeves are open ended and of substantially the same height and are in telescoping relationship one within the other. The inner sleeve thereof has integral lower and upper flaps of substantially two thirds the height of the bottom tray and the top closure cap respectively.

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The top closure cap has a flat top panel with downturned integral wall panels connected together by rectangular wall panel end extensions on opposing wall panels which are folded over the adjoining wall panels into flatwise relation and secured thereto in any suitable manner. The two opposing wall panels which have the rectangular end extensions also have integral upper marginal flaps positioned intermediate its width and whose height is substantially one third the height of the top cap wall panels, the said marginal flaps being folded inwardly and upwardly and affixed to the inner face of the wall panel in any suitable manner. In each of the same opposed wall panels are two thumb access holes, positioned midway the height of the said wall panel and intermediate its width.

In the assembly of the container the bottom flaps of the inner liner or sleeve are folded outwardly and upwardly over the outer lower marginal portion of the outer liner. The sleeves together are then telescoped within the bottom tray and locked permanently therein by means of the upturned edge of the inner sleeve bottom flaps which engage the downturned edge of the bottom tray wall panel marginal flaps in abutting relation, the combined height of the inner sleeve flaps together with the height of the bottom tray wall marginal flaps being slightly less than the height of the bottom tray walls.

If the alternate bottom tray is used, the telescoped sleeves are placed on the bottom panel of the bottom tray. The bottom tray wall panels together with the lower inner sleeve flaps, the upper edges of which engage the lower edge of the wall panel extension flaps, are folded upwardly into normal relation to the tray bottom panel and held in place by a tightly encircling strap or other banding means seated in peripherally aligned notches.

The inner sleeve upper flaps are then folded outwardly and downwardly over the upper margin of the outer sleeve. The top closure cap is then telescoped over the outwardly and downwardly folded upper inner sleeve flaps and locked in place by the engagement of the free end edges of the opposite pair of upwardly turned marginal flaps with the free end edges of the downturned inner sleeve flaps, completing the assembly of the container. The combined height of the inner sleeve flaps together with the height of the top cap wall marginal flaps is slightly less than the height of the top cap walls. The hereinbefore mentioned thumb access holes permit the top closure cap to be removed by inwardly depressing the upper inner sleeve flaps thereby disengaging its abutting relation with the edge of the top cap marginal flaps.

The above described interengagement and cooperation of the structure of the top cap and bottom tray with the top and bottom flaps of the inner liner results in a container for bulk materials, proof against both sifting and contamination of the contents.

An object of this invention is to provide an inexpensive sift-proof and contamination-proof rigid rectangular container with releasable locked cover for quantities of bulk material up to approximately 500 pounds which will provide positive protection from contamination by extraneous matter during transportation and storage.

A further object is to provide a container with upper and lower integral flaps on the inner liner which are folded out and over the outer liner, the purpose being to prevent the packaged material from coming into contact with free end edges of paperboard and means for locking the bottom tray and the top closure cap to the telescoped sleeves.

A further object is to provide sift-proof containers which may vary in size, for example, up to approximately 24" x 24" x 30" or similar dimensions for shipping a wide variety of bulk commodities.

These and other objects and advantages of the inven-

tion will be apparent to those skilled in the art upon a full and complete understanding of the construction and operation of the device as hereinafter set forth.

The invention consists in the parts, arrangement and combination of parts hereinafter described and claimed. The accompanying drawings form a part of this specification and like numerals and symbols therein appearing refer to like parts wherever they occur.

Fig. 1 is a plan view of the component parts of the container embodying the preferred form of the invention;

Fig. 2 is a perspective view of the inner liner or sleeve in completely erected condition;

Fig. 3 is a perspective view of the outer liner or sleeve in completely erected condition;

Fig. 4 is a perspective view of the container top closure cap member shown in partially erected condition;

Fig. 5 is a perspective view of the container closure cap in Fig. 4 shown in completely erected condition;

Fig. 6 is a perspective view of the preferred container bottom tray in completely erected condition;

Fig. 7 is a perspective view showing the inner sleeve telescoped within the outer sleeve, the lower integral flaps of the inner sleeve, being folded outwardly and upwardly over the outer sleeve preparatory to being telescoped and locked into the bottom tray;

Fig. 8 is a perspective view showing the top closure cap preparatory to being telescoped over the upper flaps of the inner sleeve which have been outwardly and downwardly folded over the outside sleeve.

Fig. 9 is a perspective view of the completely assembled container;

Fig. 10 is a horizontal sectional view of the partially assembled box taken in the direction of the arrows 10—10 in Fig. 8;

Fig. 11 is a vertical sectional view of the assembled box taken in the direction of the arrows 11—11 in Fig. 9;

Fig. 12 is a vertical sectional view of the assembled box taken in the direction of the arrows 12—12 in Fig. 9;

Fig. 13 is a detailed sectional view showing the method of releasing the top closure cap by use of the thumb access holes;

Fig. 14 is a perspective view of an optional bottom tray shown in partially assembled condition; and

Fig. 15 is a perspective view of an optional bottom tray with a tightly encircling band seated in peripherally aligned notches strapped to the assembled container.

The top closure cap 20, shown in Fig. 1, is provided with a top panel 21 defined by score lines 22 which also define the hinge connection of the rectangular connecting flaps 23 and the wall panels 24. Slots 25 also define in part the rectangular flaps 23 and the wall panels 24. Score lines 26 in an opposed pair of the wall panels 24 define the two wall panel marginal flaps 27. Four thumb holes 28 are shown in opposed wall panels 24.

The inner liner or sleeve 29, shown in Fig. 1, is provided with four side panels 30 defined by three score lines 31 and two score lines 32 which also define the hinge connection of the upper and lower flaps 33. Side slots 34 define the side margins of the upper and lower flaps 33.

The outer liner or sleeve 35, shown in Fig. 1, is provided with three score lines 37 defining four wall panels 36. The bottom closure cap 38, shown in Fig. 1, is provided with a bottom panel 39 defined by score lines 40 which also define the hinge connection of the rectangular connecting flaps 41 and the wall panels 42. Slots 43 also define in part the rectangular flaps 41 and the wall panels 42. Score lines 44 in the wall panels 42 define the four wall panel marginal flaps 45.

The inner liner or sleeve 29 may be erected in any desired manner, however, a preferred method of erecting the blank is to affix a tape 46 to the outside of the two free edges of the side panels 30, as shown in Fig. 2.

A preferred method of erecting the outer liner or

sleeve blank 35 is to affix a tape 47 to the outside of the two free edges of the side panels 36 as shown in Fig. 3.

A preferred method of erecting the top closure cap 20 is to affix staples 48 through the rectangular flaps 23 and wall panels 24 which are in juxtaposed relation. The wall panel marginal flaps 27 are folded downwardly and inwardly and affixed by staples 48 as shown in Fig. 4 and Fig. 5.

The bottom tray 38 may be erected in any desired manner, however, a preferred method as shown in Fig. 6 is identical to that of erecting the top closure cap 20.

The inner sleeve 29 is telescoped inside the outer sleeve 35. The lower inner sleeve flaps 33 are folded outwardly and upwardly over the outer sleeve wall panels 36, then the inner and outer sleeves 29 and 35 together are telescoped into the erected bottom tray 38, as shown in process in Fig. 7.

The upper inner sleeve flaps 33 are then folded outwardly and downwardly over the outer sleeve wall panels 36 and the top closure cap 20 telescoped over the folded upper inner sleeve flaps 33, as shown in process in Fig. 8.

As shown in Fig. 11, the bottom tray 38 is effectively locked to the container by means of the downturned edge of the bottom tray wall panel marginal flap 45 being in abutting relation with the upturned edge of the inner sleeve bottom flap 33. The top closure cap 20 is likewise locked in place by means of the edge of the top cap wall panel marginal flap 27 being in abutting relation with the edge of the inner sleeve upper flap 33.

Fig. 11 and Fig. 12 show that the bottom tray 20 is permanently locked to the sleeves on all four sides by the abutting relations of the edges of the bottom tray wall panel marginal flap 45 with the inner sleeve bottom flap 33. However, the top closure cap 20 is locked on only two sides as there are only two top cap wall panel marginal flaps 27 and those flaps are opposed to each other.

Fig. 11 and Fig. 12 also illustrate the means for effectively sealing the packaged contents from contamination by extraneous matter and from the container's raw edges of paperboard. The upper and lower flaps 33 when folded about the score lines 32 over the free end edges of the outer sleeve provide, at the exterior portion of the fold, a seal whose width is equal to a three ply thickness of paperboard, by the firm abutting relation of the flat top cap and bottom tray panels 21 and 39, with the said folded inner sleeve flap 33.

The releasable feature of the top closure cap 20 is shown in Fig. 13. By means of the thumb access holes 28, the upper inner sleeve flap 33 is depressed while the marginal flaps 27 of the wall panels 24 are pulled out of engagement with the upper inner sleeve flap 33 which permits the top closure cap 20 to be removed.

The optional bottom tray 38 is identical to the preferred form with the exception of the elimination of the wall panel end extensions 41 and the addition of two semi-circular slots 49 positioned at the side marginal edge and intermediate the height of each wall panel 42, as shown in Fig. 14.

The optional bottom tray 38 is secured to the container after positioning the telescoped sleeves 29 and 35 on the bottom panel 39. A strap 50 is looped around the bottom tray 38 and placed in the notches 49 and made taut, the edge of the bottom tray wall panel marginal flaps 45, as before, being in abutting relation with the edge of the lower inner sleeve flaps 33.

The above described invention wherein inner sleeve upper and lower flaps are folded outwardly and over the outer sleeve into interengagement and cooperation with the top cap and bottom tray structure provides a sift-proof container free from exterior contamination. All raw edges of paperboard are completely sealed from the contents of the container, thereby insuring the chemicals, comestibles, and other commodities packaged there-

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in from possible deleterious paperboard chemical and paperboard particle contamination.

It is to be understood that the embodiments herein described are illustrative and not restrictive, and it is also to be understood that the invention may be susceptible of embodiment in other modified forms, and that all such modifications which are similar or equivalent hereto come equally within the scope of the claims next appearing.

What I claim is:

1. A heavy duty rigid rectangular sift proof container with all interior surfaces free of exposed raw edges of paperboard for packaging bulk materials in powder, granular, pellet and other flowable forms, the container having a body member comprising telescoped inner and outer sleeves and top and bottom closure panels therefor, flanges hinged to the top and bottom edges of the inner sleeve folded over and adjacent the upper outer margins of the outer sleeve, flanges hinged to the side edges of the closure panels folded in right angular relation to their inner face with flaps on the outer edges of the flanges reversely folded flatwise against the inner faces thereof, said closure panel flanges being telescoped over the inner sleeve flanges with the respective free end edges of the reversely folded flaps thereof in abutment with the free end edges of the inner sleeve flanges and the underface of the closure panels in abutment with the folds of the inner sleeve flange enclosing the outer end margins of the outer sleeve, whereby linerboard exclu-

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sively forms the interior surfaces of the container, and the end closures are securely locked to the body member immobilized in fixed relation to each other and in firm contact with the respective folds at the ends of the body member.

2. The container set forth and claimed in claim 1 wherein the length of the portion of the inner sleeve flap adjacent the upper margin of the outer sleeve and the length of the reversely folded flaps of the cover panel flanges are regulated to provide snap locking abutment of the free end edges thereof when the cover panel is forced into abutment with the folds enclosing the ends of the outer sleeve.

3. The container set forth and claimed in claim 1 wherein reversely folded flaps are provided on two opposed flanges only of the top cover panel and these opposed flanges are provided thumb holes whereby the flanges may be released from locked relationship to remove the closure.

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