June 8, 1965 R. E. OAS ETAL 3,187,980

CONTAINER

Filed July 29, 1963

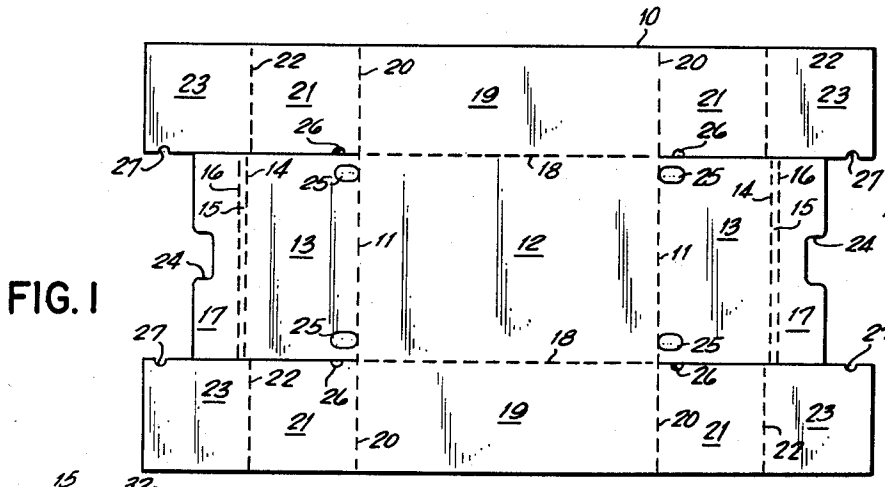


FIG. 1

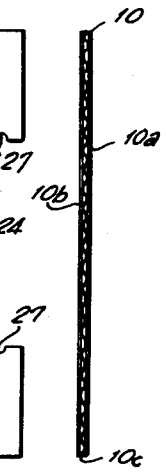


FIG. 2

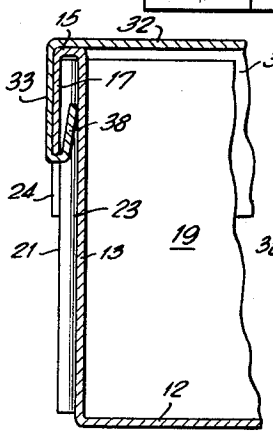


FIG. 3

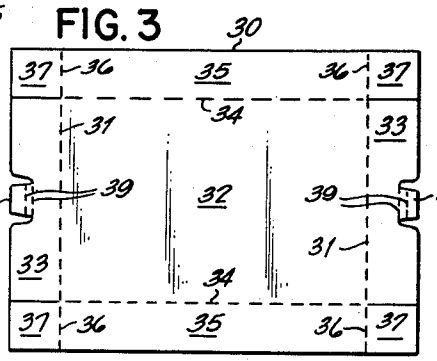


FIG. 4

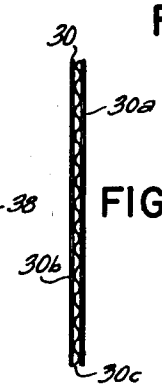


FIG. 6

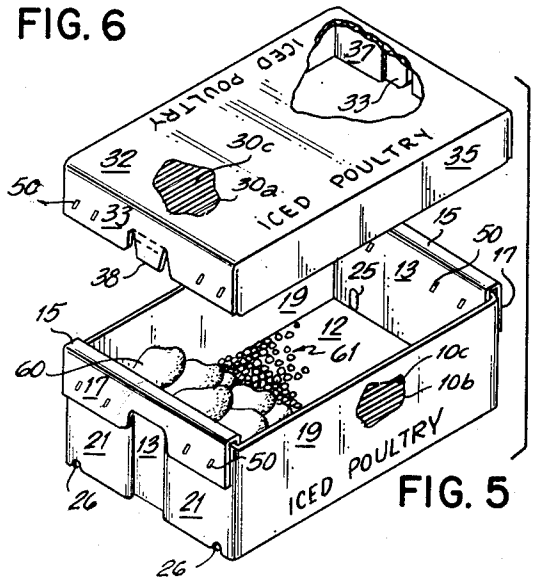


FIG. 5

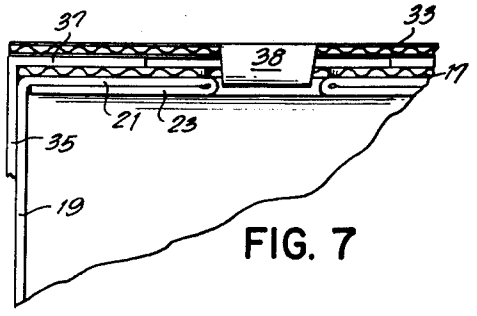


FIG. 7

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CONTAINER

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16 Claims. (Cl. 229—34)

This invention relates to the packaging, shipment, and protection of comestible articles. More particularly, it relates to corrugated paperboard container blanks, the containers formed therefrom, the packaging in which such containers are used and the method of packaging with cooling agents in which such containers are employed.

The present invention is of particular significance in the shipment of freshly killed and eviscerated poultry in ice. It has, heretofore, been the general practice to ship this type of food in wirebound wooden crates, but such crates give rise to a number of problems, all of which the present invention obviates or overcomes.

Perhaps the prime concern of the shipper of fresh poultry by truck or rail from, for instance, Atlanta, Georgia to Chicago, Illinois is the avoidance of contamination leading to spoilage. Such contamination can come both from within and without the shipping container or package. Accordingly, it is desirably to get away from the slatted wood and wire crates now in use which allow water from ice melted in one crate, splinters, and foreign objects to flow or pass into another neighboring crate or one stacked below and allow such foreign matter to gain entrance between the slats and cause contamination of the poultry meat. Additional contamination and spoilage can come from exposed poultry and parts thereof which can, and often do, protrude through the slats.

Further, it is desirable to heighten the insulation provided by any iced fresh poultry container or packaging; to maintain or improve its strength notwithstanding the assault made thereon by the melting ice in which the poultry must be packed; and, yet, to reduce packaging bulk and weight, if that is at all possible, so as to make the most efficient use of available shipping space. Adequate drainage of melted ice from the container in a manner to avoid its admission to other like containers is also most important.

Again, elimination of the presence of wood which splinters and wires which tear is welcome both to the workmen handling fresh poultry boxes and their ultimate recipients, as is adequate stacking strength in the containers used therefor. And, in reverse order, the poultry distributor or a chain store manager has a major interest in being provided with a printable container, rather than a slatted wood and wire box whereon stapled or pasted labels are short-lived in the presence of ice, water, grease, and rough handling, so that the handler can be given explicit, printed handling instructions and others can be informed or persuaded by an advertising message.

What has been specified above as desirable is achieved by the present invention, along with other objects which will become evident from the disclosure hereinafter to those skilled in the art. And it is all accomplished by, broadly, a resort to corrugated paperboard instead of wooden slats and wire and the like.

Of course, not all corrugated paperboard is suitable for the purpose here being considered. For, not all corrugated paperboard has the requisite printability and resistance to water, grease, and cold or, in other words, the necessary high wet strength, wet rigidity, and resistance to facial penetration by water, water vapor, gases, grease, and organic fluids commonly involved in the packaging of fresh meat, produce, and dairy products.

Thus, it has been found that particular attention must be paid to the choice of components, i.e., liners and corrugated medium, which go into making the single or multiwall corrugated paperboard to be used in the present invention and to the choice of the additives, formative steps, and manufacturing conditions involved in its production. Without such attention the corrugated paperboard used for the container of the invention would not, for instance, retain or have the improved wet strength and rigidity, i.e., the high resistance to burst, tear, crush, and tensile stresses under conditions of prolonged ice and water exposure or water immersion, which provided the basis of selection of one or more of its components.

By way of example of the type of materials chosen and the care exercised in their utilization in the present invention, a preferred corrugated paperboard made in accordance therewith has liners which are wet strength resin treated, wax impregnated kraft linerboard, available commercially under the trademarks "Hydro Kraft" and "Gator Pak" owned by International Paper Company, and a corrugated medium which is wet strength resin treated, high rigidity, semi-chemical hardwood paperboard, available commercially under the trademark "Hydro Chem" owned by International Paper Company. The wet strength resins are normally added to the paper pulp before a sheet is formed therefrom on a Fourdrinier wire, but the wax impregnation of the individual linerboard face surfaces is accomplished either prior to or in tandem with the combination of the liners and medium on the corrugator. Such wax must, of course, be of a refined quality suitable for use in contact with foods and it is applied with particular regard respecting its temperature, wax applicator control settings, and point of application so as to assure linerboard receptivity to the wax and also continued printability of the outer liner. On the other hand, the corrugated medium is impregnated with a molten blend of waxes and thermoplastic resins—at a rate of about 8 lbs. per 1000 square feet—ahead of, or in tandem with, the corrugator, using bath temperatures and paper preconditioning, after heating to increase the depth of impregnation, and re-moisturizing to insure satisfactory bonding performance on the corrugator wherein, preferably, waterproof resorcinol-starch adhesive formulations are utilized. Then, the combined corrugated paperboard can be printed, if the linerboards were not already preprinted when they entered the corrugator, and is coated on both sides with a blend of petroleum waxes and natural or synthetic copolymers.

Once having in hand the corrugated paperboard of the present invention or an equivalent thereof, container blanks are stamped from sheets of it by well-known means and with standard equipment. But, this converting operation has a most important, not to say critical, feature, even as there have been shown to be such features in the corrugating operation. This feature entails juxtapositioning the blank dies and corrugated paperboard sheets so that the flutes of the corrugated medium in the resulting container blanks and the containers produced therefrom will be disposed predominantly longitudinally thereof. And the object of this feature is to assure that, in the finished containers, the minimum number of flute openings will, in the normal course, be disposed to accept debilitating water or the like.

More specifically, with regard to the blanks and containers of the present invention, the blanks in question constitute a body member and a cover member and the containers are comprised of a body and cover which can readily be secured or locked on the body as a final step of a process or method of packaging comestible articles, e.g., fresh poultry, and a cooling agent, e.g., ice chips or shavings, in the containers. The container body is pro-

vided with reinforced ends to give it torque and bottom sag resistance and to bolster the integrity and strength given it by the material of its construction, simple fastening means by which it is secured erect, efficient and non-contaminating drainage means, and channel means or cut-out portions to receive the lock bolt or tongue provided by the container cover and actuated by the container packer. For a more complete understanding of these aspects of the present invention, reference should be had to the attached drawings in which

FIGURE 1 depicts a plan view of a blank of a comestible article container body member in accordance with the present invention;

FIGURE 2 depicts an end view of the blank of FIGURE 1;

FIGURE 3 depicts a plan view of a blank of a comestible article container cover member in accordance with the present invention;

FIGURE 4 depicts an end view of the blank of FIGURE 3;

FIGURE 5 depicts an exploded isometric view of the container body and cover erected from the blanks of FIGURES 1 and 3;

FIGURE 6 depicts a sectional side view of the container body and cover of FIGURE 5 locked together; and,

FIGURE 7 depicts a sectional plan view, taken from below, of the container body and cover of FIGURE 5 locked together.

In FIGURES 1 and 2, the container body blank **10** is shown to be made from corrugated paperboard comprised of two liners **10***a* and **10***b* lying on either side of the corrugated or fluted medium **10***c*. It is also shown to be divided into several panels by means of scores or foldlines. Thus, foldlines **11** separate rectangular bottom panel **12** from end panels **13**; foldlines **14** separate end panels **13** from ledge panels **15**; and, foldlines **16** separate ledge panels **15** from end flaps **17**. Again, foldlines **18** separate bottom panel **12** from side panels **19**; foldlines **20** separate side panels **19** from end supporting panels **21**; and, foldlines **22** separate end supporting panels **21** from end supporting flaps **23**.

FIGURES 1 and 2 also reflect the orientation of the flutes of corrugated medium **10***c* with respect to body blank **10**, i.e, predominantly longitudinally thereof, and the provision of cut-out portion **24** which are disposed centrally along the outer edges or ends of end supporting flaps **23**. In addition, they show spaced-apart orifices **25** in end panels **13** along foldlines **11** and vents **26** and **27** along the sides (next adjacent end panels **13** and end flaps **17**) of end supporting panels **21** and end supporting flaps **23**, respectively. Orifices **25** are shown in their preferable configuration, i.e., limited in their width to cross a minimum number of flutes in the corrugated medium, and extending to, and preferably tangential to, foldlines **11**, so as to assure unblocked drainage. Vents **26** and **27** are seen to be substantially equidistant in each case from foldlines **22**.

In FIGURES 3 and 4, the container cover blank **30** is shown to be made from corrugated paperboard comprised of two liners **30***a* and **30***b* lying on either side of the corrugated or fluted medium **30***c*. It is also shown to be divided into several panels by means of scores or foldlines. Thus, foldlines **31** separate rectangular top panel **32** from terminal flaps **33**; foldlines **34** separate panel **32** from lateral flaps **35**; and, foldlines **36** separate lateral flaps **35** from terminal supporting flaps **37**.

FIGURES 3 and 4 also show the orientation of the flutes of corrugated medium **30***c* with respect to cover blank **30**, i.e., predominantly longitudinally thereof, and the provision of tongues centrally and inwardly of the outer edges or ends of terminal flaps **33** and the connection of such tongues to such flaps along double foldlines **39**.

FIGURE 5 shows the results of erecting a container body and cover from blanks **10** and **30** by making folds along the several foldlines which hingedly connect the several panels and flaps and fastening such panels and flaps in place with, for example, rust resistant staples **50** or adhesives or heat sealing materials.

In the container body, end panels **13** and side panels **19** are disposed substantially perpendicularly to bottom panel **12** and ledge panels **15** are disposed substantially perpendicularly to end panels **13**. Again, end flaps **17** are substantially perpendicularly disposed with respect to ledge panels **15**. Similarly, end supporting panels **21** and end supporting flaps **23**, which are caused to lie abuttingly against each other by a folding along foldlines **22** (preferably by the manufacturer), are disposed substantially perpendicularly to side panels **19** in a manner such that flaps **23** abut the outsides of end panels **13**. Then, by means of staples **50**, end panels **13**, end flaps **17**, end supporting panels **21**, and end supporting flaps **23** are secured together.

In the container cover, terminal flaps **33** and lateral flaps **35** are disposed substantially perpendicularly to top panel **32** and terminal supporting flaps **37** are disposed substantially perpendicularly to both top panel **32** and lateral flaps **35** with flaps **37** abutting the insides of terminal flaps **33**. There, flaps **33** and **37** are secured together with staples **50**.

FIGURE 5 further emphasizes additional structural features which are most important, not to say critical, in the container and its use in packaging in accordance with the present invention. These include the placement into registration upon the container's erection of orifices **25** and vents **26** and **27** to form drainage holes in the container. They also include the juxtapositioning of corrugated media **10***c* and **30***c* so that their flute openings are minimally exposed to debilitating moisture or water in the normally disposed container. Rather, such flute ends face downwardly or to one side. Again, they include ledge panels **15** which yield both an assured purchase for the cover or the body and a firm foundation when several of the containers are stacked, one upon another. Then too, they include a characteristic of printability in the corrugated paperboard of the container, so that informational indicia, whether of an instructive nature (dealing, for instance, with handling directions) or an advertising nature (reflected in the legend "Iced poultry" shown in FIGURE 5), can be made a part of the entire package, in addition to the container and the contents of, for example, chickens **60** and ice **61**.

FIGURES 6 and 7 bring out the features of the container of the present invention which permit such container to be secured and, thereafter, resecured and which are utilized in packaging method of such invention. These features include cutout portions **24** of the container body and tongues **38** of the container cover and they come into play when the container's contents have been disposed therein and the cover has been placed over the body so as to rest upon ledge panels **15** of the body. The container handler can then manually cause tongues **38** to move, along the path provided by the channel between panels **21** (FIGURE 5) and through cut-out portions **24** and to be turned upwardly, so that they find themselves disposed between flaps **17** and end panels **13** fore and aft and between the corner posts furnished by end supporting panels **21** and end supporting flaps **23** on either side.

Another advantage of the container of the present invention which should be emphasized is that it furnishes entirely smooth interior surfaces enabling the prevention of damage by such container to the articles contained or packed therein.

What is claimed is:

1. A comestible article container comprising a body of corrugated paperboard having its flutes disposed predominantly longitudinally of the body and having characteristics of printability and resistance to water, grease, and

cold, the body including a rectangular bottom panel, end panels each hingedly connected at one end to one end of the bottom panel along a fold-line and disposed perpendicularly to the bottom panel, ledge panels each hingedly connected at one end to the other end of an end panel along a foldline and disposed perpendicularly to the end panel, end flaps each having a length shorter than an end panel length and hingedly connected at one end to the other end of a ledge panel along a foldline and disposed perpendicularly to the ledge panel, side panels each hingedly connected at one side to one side of the bottom panel along a foldline and disposed perpendicularly to the bottom panel, end supporting panels each having a length shorter than one-half of an end panel width and hingedly connected at one end to one end of a side panel along a foldline and disposed perpendicularly to the side panel and outwardly of an end panel, and end supporting flaps each having a length shorter than one-half of an end panel width hingedly connected at one end to the other end of an end supporting panel along a foldline and disposed parallelly to the end supporting panel and inwardly thereof.

2. A container in accordance with claim 1 wherein means fasten together the end panels, end flaps, end supporting panels, and end supporting flaps.

3. A container in accordance with claim 1 wherein means define centrally disposed cut-out portions along the other ends of the end flaps.

4. A container in accordance with claim 1 wherein means define spaced-apart orifices in the end panels adjacent the foldlines between the bottom panel and the end panels.

5. A container in accordance with claim 1 wherein means define vents along the sides of the end supporting panels and the end supporting flaps next adjacent the end panels and the end flaps.

6. A container in accordance with claim 5 wherein the vents are spaced equidistantly from the foldlines between the end supporting panels and the end supporting flaps.

7. A container in accordance with claim 1 wherein means define spaced-apart orifices in the end panels adjacent the foldlines between the bottom panel and the end panels, means define vents along the sides of the end supporting panels and the end supporting flaps next adjacent the end panels and the end flaps, and the orifices and the vents are in registration.

8. A comestible article container comprising a body and a cover of corrugated paperboard having its flutes disposed predominantly longitudinally of the body and the cover and having characteristics of printability and resistance to water, grease, and cold,

the body including a rectangular bottom panel, end panels each hingedly connected at one end to one end of the bottom panel along a foldline and disposed perpendicularly to the bottom panel, ledge panels each hingedly connected at one end to the other end of an end panel along a foldline and disposed perpendicularly to the end panel, end flaps each having a length shorter than an end panel length and hingedly connected at one end to the other end of a ledge panel along a foldline and disposed perpendicularly to the ledge panel, side panels each hingedly connected at one side to one side of the bottom panel along a foldline and disposed perpendicularly to the bottom panel, end supporting panels each having a length shorter than one-half of an end panel width and hingedly connected at one end to one end of a side panel along a foldline and disposed perpendicularly to the side panel and outwardly of an end panel, and end supporting flaps each having a length shorter than one-half of an end panel width hingedly connected at one end to the other end of an end supporting panel along a foldline and disposed parallelly to the end supporting panel and inwardly thereof and

the cover including a rectangular top panel, terminal flaps each hingedly connected at one end to one end of the top panel along a foldline and disposed perpendicularly to the top panel, lateral flaps each hingedly connected at one end to one side of the top panel along a foldline and disposed perpendicularly to the top panel, and terminal supporting flaps each hingedly connected at one end to one end of a lateral flap along a foldline and disposed perpendicularly to the lateral flap, wherein

the top panel abuts the ledge panel, the lateral panels abut the side panels, and the terminal supporting flaps abut the end flaps.

9. A container in accordance with claim 8 wherein first means fasten together the end panels, end flaps, end supporting panels, and end supporting flaps and second means fasten together the terminal flaps and terminal supporting flaps.

10. A container in accordance with claim 9 wherein means define centrally disposed cut-out portions along the other ends of the end flaps.

11. A container in accordance with claim 8 wherein means define spaced-apart orifices in the end panels adjacent the foldlines between the bottom panel and the end panels.

12. A container in accordance with claim 8 wherein means define vents along the sides of the end supporting panels and the end supporting flaps next adjacent the end panels and the end flaps.

13. A container in accordance with claim 12 wherein the vents are spaced equidistantly from the foldlines between the end supporting panels and the end supporting flaps.

14. A container in accordance with claim 8 wherein means define spaced-apart orifices in the end panels adjacent the foldlines between the bottom panel and the end panels, means define vents along the sides of the end supporting panels and the end supporting flaps next adjacent the end panels and the end flaps, and the orifices and the vents are in registration.

15. A container in accordance with claim 8 wherein means define centrally disposed tongues inwardly of the other ends of the terminal flaps, each tongue being hingedly connected to its terminal flap along double foldlines.

16. A container in accordance with claim 15 wherein the tongues are disposed through the cut-out portions and between the end panels and end flaps.

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