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3,471,077

SHIPPING BOX WITH HANDHOLE LOCK

Filed Dec. 22, 1967

FIG. 1

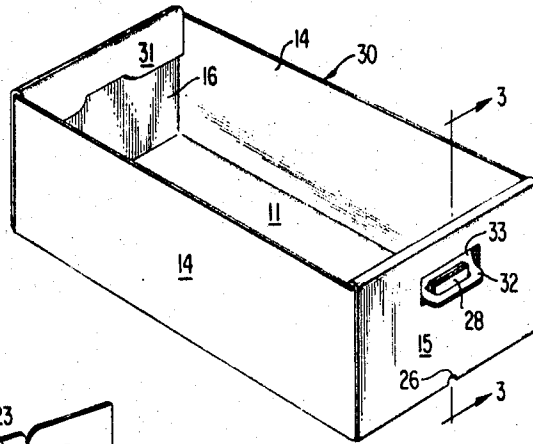


FIG. 2

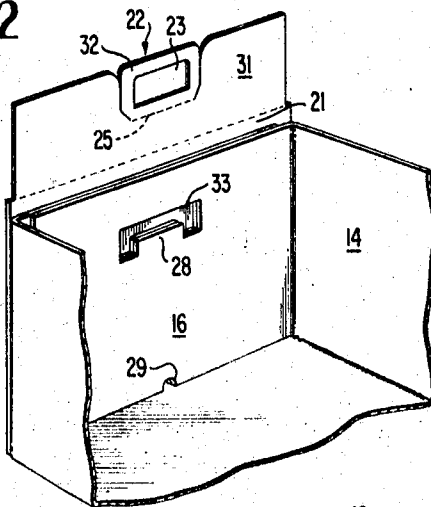


FIG. 3

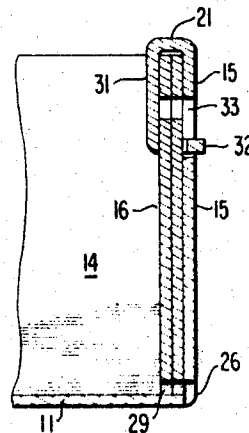
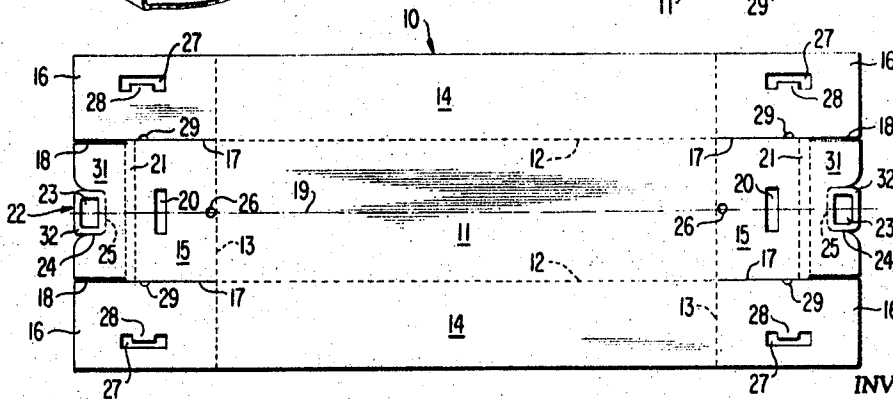


FIG. 4

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SHIPPING BOX WITH HANDHOLE LOCK
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4 Claims

ABSTRACT OF THE DISCLOSURE

A shipping box having side flaps extending from its side walls, the side flaps lying between an end portion and an end flap connected to the upper edge of the end portion and disposed in spaced juxtaposition thereto. The side flaps and end portion have complementary cutouts which form a handhole and a locking slot having an upwardly extending tab; the end flap has a locking tongue consisting of a loop which is disposed about the tab when the locking tongue is inserted into the complementary cutouts, thereby holding the shipping box in assembled condition and simultaneously providing a handhole for transporting the box.

This invention relates to an improved shipping box and, more particularly, to an improved shipping box having an integral means for locking the box in an assembled condition, without need of staples, adhesive, brads or other extra fastening means, and simultaneously providing a handhole for lifting the box.

A great many edible products that are highly susceptible to spoilage must be shipped from their point of origin to their final destination. The distances are often quite lengthy and many days may be spent in transit. In order to protect the products and to prevent spoilage, they are packed in shipping boxes containing ice.

It has been the general practice to pack the edible products and ice in a shipping box made of spaced wooden slats joined by wire. This type of box has many disadvantages from the standpoint of both the shipper and the receiver. Quite often, some of the edible product will squeeze out between the slats and become contaminated. Also, the ice can cause the binding wire to become rusty and thereby contaminate the products and make the box highly unsightly to the ultimate consumer or receiver. In addition, the slats often splinter to make the box unhealthy and a hazard to whomever handles the boxes. Another disadvantage is the cost of making the wood and wire boxes and the fact that they cannot be shipped in a flat condition when empty.

In order to eliminate some of these problems, experimentation has been done on high wet strength paperboard boxes. However, while eliminating some of the problems inherent in wood and wire boxes, other problems have developed. For instance, the paperboard boxes are usually held together by staples or other metal securing means and, quite often, the securing means oxidizes or rusts and becomes unsightly and a potential contamination threat to the products being shipped therein. Also, when mechanical or chemical securing means are used to hold the shipping box in its assembled state, they cannot be shipped in a flat condition when empty.

In order to eliminate all of the aforementioned problems, the present invention provides a paperboard box that can be assembled without the use of extraneous securing means and shipped in a flat, space-saving condition when empty. The improved shipping box of this invention is made of components that have the necessary high wet strength, wet rigidity and resistance to penetration by water, grease and organic fluids found in meat,

fish, produce and dairy products. In addition, the new improved shipping box described hereinafter has the ability to retain its wet strength and rigidity for great lengths of time under the most adverse conditions, such as prolonged ice and water exposure or water immersion.

The high resistance to water saturation or contamination of the present shipping box is accomplished by coating and impregnating the components of the box with wax, in a manner known to those skilled in the art. The wax must be of a type and quality suitable for use in contact with edible products and should be applied with particular regard to its temperature, wax applicator control settings, and point of application so as to assure board receptivity to the wax.

An important improvement of the applicant's shipping box is that the body of the box can be assembled without the use of mechanical or chemical securing means. This is accomplished by providing a plurality of integral interlocking elements which enable the box to be assembled or dis-assembled quickly and easily at any location without the necessity of extraneous fastening means. The integral interlocking elements provide an adjunct function in preventing contaminated matter from entering the box while providing a handhole space enabling handlers of the box to obtain a good grip thereon in order to move the box from one location to another quickly and easily. In addition, the improved shipping box, when folded in erected condition, provides substantially treble thickness in the end walls and in the hand grip thereby providing a heavy-duty, highly efficient, secure combination carrying means and assembly means.

An object of this invention is to provide an improved shipping box for shipping edible products.

Another object is to provide a box that can be assembled or dis-assembled entirely by hand without the utilization of extraneous securing means.

Another object is to provide a box that is held in its assembled condition by integral interlocking means.

Another object is to provide a box the integral interlocking means of which provides a reinforced handhole.

Another object is to provide a box that has a high resistance to penetration by water, grease and organic fluids and has a high wet strength and rigidity.

Another object is to provide an improved shipping box that is economical to construct and of greatly reduced weight and complexity.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of the assembled box;

FIGURE 2 is an inside end view of the box during an intermediate assembly step;

FIGURE 3 is a view along line 3—3 of FIGURE 1; and,

FIGURE 4 is a plan view of the blank from which the box is constructed.

Referring now to the drawings, wherein like reference numerals designate like or corresponding parts throughout the several views, there is shown in FIGURE 4 a flat, substantially rectangular blank 10 of sheet material,

such as corrugated board or the like, of a weight suitable for the size and type of box to be constructed. The sheet material is impregnated and/or coated with a suitable wax or other liquid-resistant material in a manner well known to those skilled in the art.

The blank 10 comprises a bottom 11 defined by score lines 12 and 13; a pair of side walls 14 extending along the score lines 12 adjacent the bottom 11; a pair of end portions 15 extending along the score lines 13 adjacent the bottom 11; an end flap 31 secured to the outer edge of each said end portion 15; and a pair of side flaps 16 secured to each end of the side walls 14 along the score lines 13.

The side flaps 16 are separated from the end portions 15 and the end flaps 31 by slits 17 which extend through the blank 10 from the intersection of the score lines 12 and 13 to the outer free edges of the blank. The end flaps 31 have a cutout 18 along their side edges adjacent the slit 17, the cutout 18 being of a width greater than the thickness of the sheet material from which the blank 10 is constructed.

A longitudinal center line 19 bisects the bottom 11, the end portions 15 and the end flaps 31. Disposed within the end portion 15 symmetrically about the center line 19 is a substantially rectangular hand hole 20. The hand hole 20 is adjacent the outer end of the end portion 15 and is substantially parallel to the score line 13.

A double score line 21 extends laterally along the outer end of the end portion 15 substantially perpendicular to the longitudinal center line 19 and serves as the connecting means between the end portions 15 and the end flaps 31. The double score line 21 is spaced a distance slightly greater than the width of the side flaps 16 from the score line 13. The width of the double score line 21 is greater than twice the thickness of the sheet material from which the blank 10 is constructed.

Disposed within the end flap 31 and terminating adjacent its outer free edge is a locking tongue 22 having an opening 23 therein. The locking tongue 22 and the opening 23 in combination form a loop 32 which extends symmetrically about the center line 19. The locking tongue 22 is defined by the outer free edge of the end flap 31, a pair of slits 24 extending through the blank 10 separating the sides of the locking tongue 22 from the end flap 31, and a score line 25 which provides the connecting means between the locking tongue 22 and the end flap 31. The lateral dimensions of the locking tongue 22 relative to the longitudinal center line 19 are less than those of the hand hole 20, so that the locking tongue 22 may pass through the hand hole 20.

Located in the end portion 15 approximately along the mid-point of the score line 13 is an aperture 26. The aperture 26 allows the drainage of water and other liquids from inside the box after assembly. The configuration of the apertures 26 is such as to assure unblocked drainage. While the apertures 26 have been shown and described as being along the mid-point of the score line 13, it is obvious that they can be situated anywhere along the length of the score line 13 where it connects the end portion 15 to the bottom 11.

A substantially rectangular inverted U shaped cutout 27, which forms a locking slot 33 having an upwardly extending tab 28, is disposed in each side flap 16. The cutouts 27 are substantially the same length as the hand hole 20 and are positioned to coincide in a complementary manner with each other and the hand hole 20 when the side flaps 16 are superimposed along the end portion 15 as shown in FIGURE 2. The tab 28 extends into the cutout 27 a distance greater than the thickness of the sheet material from which the blank 10 is constructed and is of a width sufficient to fit within the locking tongue opening 23 which forms the loop 32.

FIGURE 4 shows an aperture 29 in the side flap 16 along the slit 17 separating the side flap 16 from the end portion 15. When the blank 10 is folded to form an

assembled shipping box 30, as illustrated in FIGURE 1, the apertures 29 coincide with the apertures 26 in the end portions 15 to form drain passages through the box 30.

While the cutouts 27 and the hand hole 20 have been shown and described as being substantially rectangular, it will be obvious to those skilled in the art that they can be circular, oblong, or any other configuration without departing from the spirit and scope of the present invention.

FIGURE 2 shows the blank 10 in an intermediate step in assembly. It will be noted therefrom that the side walls 14 and the side flaps 16 are folded upwardly to a substantially vertical position relative to the bottom 11 about the score line 12. The side flaps 16 are folded substantially 90° about the score line 13 into overlapping juxtaposition about the score line 13. In this position, the side flaps 16 lie along the score line 13 perpendicularly to the bottom 11. The end portion 15 is now folded upwardly about the score line 13 until it is in juxtaposition to the external surface of the side flap 16, as shown in FIGURE 2. It will be noted that in this position the apertures 26 and 29 are in alignment and provide a drain and additionally the hand hole 20, the cutouts 27 and the tabs 28 are all in coincident register to form a unitary complementary locking slot 33.

After the side flaps 16 and the end portion 15 are in vertical juxtaposition, the end flap 31 is folded downwardly substantially 180° about the double score line 21. In this position, the end flap 31 lies between the side walls 14 and the side flaps 16 are sandwiched between the end portion 15 and the end flap 31.

When the side flaps 16 are sandwiched between the end portion 15 and the end flap 31, the locking tongue 22 is folded about the score line 25 and inserted through the combined complementary locking slot 33. As shown in FIGURE 3, the locking tongue opening 23 which serves to form the loop 32 is disposed about the tabs 28, so that the loop 32 encircles the tabs 28 and the tabs extend upwardly through the opening 23.

As shown in FIGURE 1, the locking tongue 22 in conjunction with the locking slot 33 provides an integral interlocking means causing the box 30 to be retained in its assembled condition. Additionally, the locking slot 33 consisting of the hand hole 20 and the cutouts 27 provides a hand grip for carrying the assembled box 30. The aspect of the interrelationship between the locking tongue 22 and the locking slot 33, serving the dual purpose of retaining the box 30 in its assembled condition and providing a carrying means, is of importance in that it provides advantages for the present box that are not found in other shipping boxes.

From the foregoing, it will be seen that there has been devised an extremely simple shipping box for edible products, the body of which requires only a single forming blank, which is assembled without the use of extraneous securing means. The described shipping box is secured in its assembled position by a plurality of integral interlocking tongues and slots and provides a high wet strength, resistant container for the shipping of edible products packed in ice. In addition, the interrelationship between the locking tongue and locking slot provides a carrying means which greatly facilitates the necessary handling of the present shipping box.

Since certain changes may be made in the above article, and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description (or shown in the accompanying drawings) shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An improved shipping box comprising:

a bottom;

side walls extending upwardly from said bottom;

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end portions extending upwardly from said bottom, said end portions having handholes intermediate their upper edges and said bottom;

side flaps connected to opposite free edges of said side walls and disposed in inwardly parallel juxtaposition to said end portions, said side flaps having locking slots in complementary coincidence with said handhole, each of said locking slots comprising a cut out having an upwardly extending tab disposed therein; and

end flaps secured to the upper edge of said end portions and disposed in substantially parallel overlapping juxtaposition to said side flaps whereby said side flaps are disposed between said end portions and said end flaps, said end flaps each having a locking tongue adjacent its free outer edge, said locking tongue extending through said complementary locking slots and handhole and cooperating with said locking slots and their tabs to form an integral interlocking means for said box and a self-contained reinforced handhole.

2. A shipping box in accordance with claim 1 wherein said cutout is of a substantially rectangular inverted U shape and said tab extends upwardly to a point intermediate the upper and lower edges of said cutout and substantially centrally thereof.

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3. A shipping box in accordance with claim 1 wherein said locking tongue has an opening therein forming a loop, said loop extending through said locking slots and said handhole in cooperating engagement with said tabs to form an integral interlocking means.

4. A shipping box in accordance with claim 1 wherein said locking tongue has an opening therein forming a loop, said loop extending through said handhole and said locking slots and disposed about said upwardly extending tab to form an integral interlocking means.

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U.S. Cl. X.R.

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