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CARTON AND CARTON BLANKS

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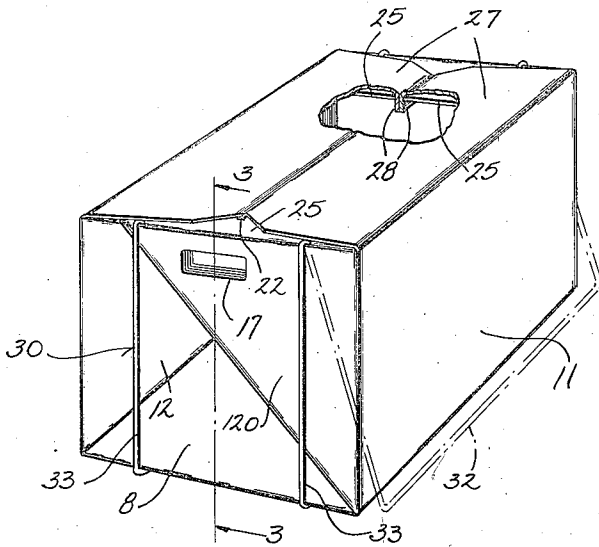


Fig. 1

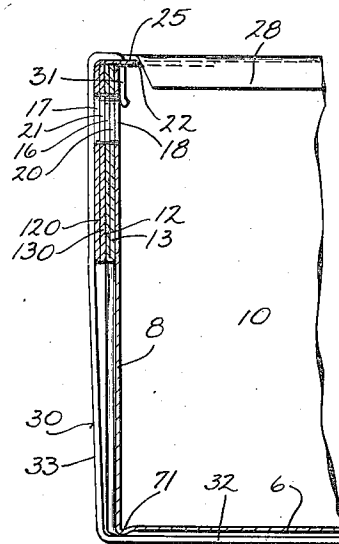


Fig. 3

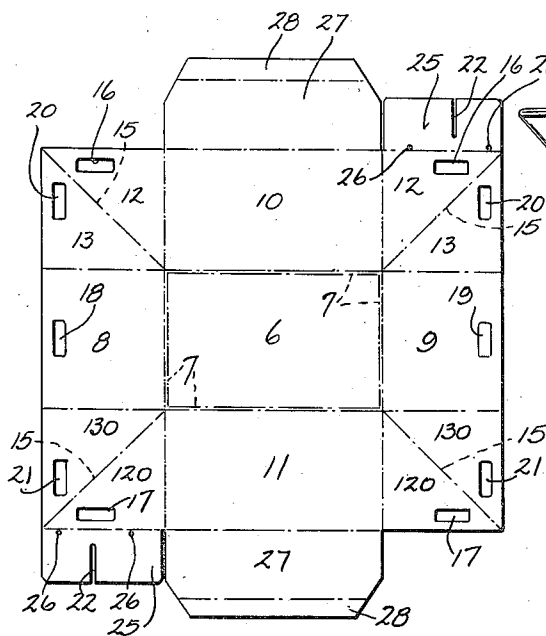


Fig. 2

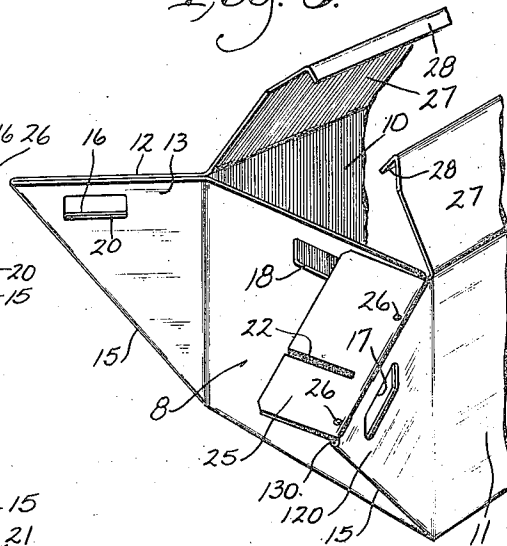


Fig. 4

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CARTON AND CARTON BLANK

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9 Claims. (Cl. 229—49)

This invention relates to improvements in cartons and carton blanks.

It is the primary object of the invention to provide a novel and improved type of carton well adapted to be manufactured from corrugated board (as distinguished from fiber board) and particularly designed for use as a beer case or for shipment of other products in bottles or cans.

Fiber board, no longer obtainable on the open market, has heretofore been preferred to corrugated board because of its greater inherent strength and moisture resistance. By means of the present invention, I seek to provide a beer case which, when made of corrugated board, will be protected from moisture and will be inherently reenforced by its mechanical structure to equal or surpass the strength of a case of corresponding size made of fiber board and stapled together in the conventional manner.

In addition, I seek to provide a case which, irrespective of the material used in its construction, will have important advantages over any previously known device in several respects. One important objective is the provision of a case which may be shipped flat, thereby saving ninety per cent of the freight rates heretofore charged for cases adequate to serve the demands of this industry. Yet, I seek to provide a case which may be readily erected and knocked down by hand for re-shipment. Another important objective is to save a large part of the original cost of cases of this character and to provide a case which will last longer in service.

Another object of the invention is to provide a packing case which, despite its production from relatively light and inexpensive material, can be maintained in assembly and supported in use by light, strong metal parts readily applicable and removable and, consequently, adapted for repeated usage to remain in service long after substantial numbers of packing cases supported thereby have worn out. The amount of metal required is very small and taking into consideration the possibility of re-using the metal upon successive cases, the invention will actually show a saving as compared to the use of ordinary staples, this being over and above the other advantages achieved through its use.

Additional objectives and particularly the specific features contributing to the general objects above stated will be readily apparent to those skilled in the art upon study of the following disclosure of the invention.

In the drawing:

Figure 1 is a view in perspective of a completed

case embodying my invention, a portion of its cover flaps being broken away to expose the interlocking construction.

Figure 2 is a plan view on a reduced scale of the blank from which the case shown in Figure 1 is erected.

Figure 3 is a detail view taken in section on the line 3—3 of Figure 1.

Figure 4 is a fragmentary detail view in perspective showing in process of erection the end of the case which is illustrated completed in Figure 1.

Like parts are identified by the same reference characters throughout the several views.

The blank shown in Figure 2 is preferably of one piece of material, though this is not necessarily the fact. While corrugated board or ordinary cardboard may be used in many instances, the material of the blank may also comprise fiber board or metal, in which case the resulting carton will be very much stronger than anything previously available. If the carton is made of corrugated board, it will be equal or superior in strength to fiber board cartons as previously constructed and yet will cost less than half as much to make and can be knocked down without damage and with much greater facility than a fiber board carton stapled in the usual manner.

In the blank shown in Figure 2, the area at 6 representing the bottom of the carton is defined by broad or dual scoring at 7 which, in the erected carton, results in the formation of the bead shown at 71 in Figure 3. To the ends of the rectangular bottom section 6 are attached the end wall sections 8 and 9 and the side wall sections 10 and 11. The end and side wall sections are not separated by notching out the blank, but are joined by corner flaps which comprise sections integral not only with the side and end wall sections but also with each other. Corner flap sections 12 are connected to the ends of the side wall section 10 and corner flap sections 120 are connected to the ends of side wall section 11 while corner flap sections 13 and 130 are connected to the sides of the end wall sections 8 and 9. The respective sections 12 and 13 and 120 and 130 at each corner of the box are connected with each other upon a diagonal score line 15.

The end walls 8 and 9 are provided with handhold openings 18 and 19. The corner sections 12 and 120, and 13 and 130 have handhold openings 16, 17, 20 and 21 which, in the erection of the box, are made to register with the handhold openings 18 and 19 of the respective end walls.

Projecting laterally from diagonally opposite

corner flap sections 12, 120 are end tabs 25 having apertures 26 at or near the fold lines upon which they are joined to the respective corner flap sections 12, 120.

Likewise projecting laterally are the cover flaps 27 which are connected to the side wall sections 10 and 11 substantially throughout the length thereof. Each cover flap section 27 has a foldable terminal flange portion 28.

The manner in which the carton is erected is clearly illustrated in Figure 4.

The side walls 10 and 11 and the end walls 8 and 9 are folded upwardly about the bottom 6, folding the corner flap sections 12 and 13, and 120 and 130 upon each other respectively upon score lines 15, leaving the resulting corner flaps projecting from the corners of the carton as shown in Figure 4. The triangular corner flaps, each comprising a section 12 (or 120) and a section 13 (or 130), are now folded on to the end wall at the appropriate end of the box as illustrated in Figure 4.

When the side wall portions and corner flaps are erected in assembly as above described, the end tabs 25 project inwardly across the upper margins of the multi-ply end wall of the resulting case. I then apply pre-formed wire reinforcement and locking members 30 by springing their hooked ends 31 into the apertures 26 of opposing end flaps 25 with the reinforcing members 30 in the positions illustrated by the dotted line in Figure 1, and thereafter swinging each of the reinforcing and locking members 30 downwardly and forcing it beneath the bottom of the case to the full line positions shown in Figure 1.

Each of the wire reinforcing and locking members 30 comprises a bottom rail portion 32 which, when forced beneath the bead or rib at 71 slightly deforms the bead or rib to form for itself a slight notch upwardly therein, the adjacent material of the bead or rib tending thereby to confine the rail portion 32 of the wire against displacement from the position to which it is adjusted. The length of the arms 33 which extend upwardly across the ends of the box from the rail portion 32 of the wire is just sufficient to permit the wire to be forced beneath the box from the dotted line position to the full line position as shown and described. In this position, the wire maintains the carton in rigid assembly, holding the corner flaps securely across the ends of the box to reinforce the ends at the handhold openings therein. The positive location of the hooks 31 in the apertures 26 precludes any displacement of the upper ends of the wires while the pressed fit of the rail portions 32 of the wires beneath the bottom of the carton prevent any accidental displacement at this point.

Not only do the wire members 30 maintain the box detachably in assembly, but they also are an important factor in making it possible to use water permeable materials in the manufacture of the carton blank. Corrugated board, for example, readily becomes softened when wet—a factor which has hitherto precluded its general use in beer cases. My improved carton is supported not only by the rails 32 but by the beads 71 so that the bottom 6 of the carton is carried at a substantial elevation above moisture on any conveyor surface over which the carton is delivered. In addition, the rail portions 32 of the wire members 30 reduce friction when the carton is slid along a counter or conveyor surface, in accordance with conventional practices in bottling

plants. The wire members may be used repeatedly on successive cartons.

The end flaps 25 are notched at 22 so that after the contents have been introduced into the case, the cover flaps 27 may be folded over the end flaps 25 and the cover flap flanges 28 may be forced against each other and confined in the notches 26 at the two ends of the carton, Figure 1 and Figure 3 being illustrative of this feature.

The resulting carton is much lighter than a carton of metal or wood and it is well adapted to withstand moisture because its bottom 6 is elevated well above the wire rails 32 and the underlying surface upon which moisture may be present. Additionally, however, it is to be noted that even if the interior of the carton becomes wet, the rail portions 32 of the wire members 33 contribute important support since each of them is so located as to extend longitudinally for the full length of the one of the three rows of bottles or cans for which the case is designed. Thus, even if the bottom of the case should sag, the weight of its contents would be sustained quite largely by direct contact with the underlying rails 32.

The resulting case is not only strong in the sense of being highly resistant to distortion under impact, but it also has great tensile strength at its ends. When an operator lifts the box by inserting a hand in the registering handhold openings at the end of the box, the tension is transmitted through five full plies of material to the bottom of the box. Incidentally, the presence of five full plies of material at the handhold provides such thickness at this point that there is no tendency for the operator's hand to be cut as would be the case if only a single thickness were engaged by his hand.

While my improved carton has particular serviceability in the particular fields indicated and is particularly adapted to be made of materials which would not otherwise be serviceable for these purposes, nevertheless, in its broader aspects, the invention is not so limited but contains features of generic application as set forth in the following claims.

I claim:

1. In a foldable carton having hingedly connected bottom, side and end walls, said side walls having extension sections foldable into reinforcing relation to the end walls, in combination with a bar extending along the bottom of the carton, arms connected with said bar and extending upwardly at the ends of the carton in a position to retain said sections folded upon the end walls of the carton, and hook means at the tops of said arms releasably engaged over the wall of the carton.

2. In a carton, the combination with a bottom and side walls, of corner flap structure continuously connecting said walls and comprising sections joined upon a crease extending obliquely from the point of juncture of said walls with said bottom, said sections being folded upon each other at said crease and disposed in substantial parallelism with one of said walls, in further combination with approximately parallel bars extending across the bottom of the carton between the walls upon which said sections are folded, each of said bars having arms extending upwardly along said walls outside of said sections, whereby to hold said sections to the respective walls, and hooks at the upper ends of said arms interlockingly engaged over the top margins of the respective sections and the contiguous walls,

whereby said bars are locked to said carton and said sections are locked to said walls.

3. A carton comprising the combination with a bottom and walls rising above said bottom at the four sides thereof, of flap means providing continuous connections between contiguous walls and comprising sections joined with respective walls and joined to each other upon fold lines extending obliquely from the points of juncture between contiguous walls and the bottom, the sections comprising each flap being folded upon each other and upon faces of the end wall, at least one section at each end of the carton being provided with tab means overlying the margins of the carton wall and the sections folded thereupon, together with metal retaining and reinforcing members having hook portions engaged over said wall margins and extending through apertures in said tab means at opposite ends of the carton, said members being continuous between their said hook portions downwardly along the end walls of the carton and across the bottom thereof.

4. A carton comprising the combination with a bottom and side and end walls, of flap means connecting each end wall with the side walls contiguous thereto, the several flap means comprising sections connected with the respective walls and connected with each other upon lines extending obliquely from the points of juncture of the respective walls with the bottom, said sections being folded upon each other and externally upon said end walls into general parallelism therewith, and retaining members having rail portions extending longitudinally of the bottom in substantial parallelism, arms extending upwardly of each of the respective end walls outside of the flap sections folded thereon, and hooks engaged over the upper margins of said end walls whereby to hold said flap sections securely folded against the end walls and to maintain the carton in assembly.

5. The carton of claim 4 in which the corner flap sections connected to the respective side walls are outermost in the assembly thereof upon the end walls and certain thereof are provided with flaps folded over the intervening sections and the tops of the respective end walls and are provided with apertures in which the respective hooks aforesaid are anchored.

6. The carton of claim 4 in which the corner flap sections connected to the respective side

walls are outermost in the assembly thereof upon the end walls and certain thereof are provided with flaps folded over the intervening sections and the tops of the respective end walls providing notches at the ends of the carton and being provided with apertures in which the respective hooks aforesaid are anchored, said side walls having cover flaps of such length as substantially to meet and marginally provided with flanges fitting in parallelism into the respective notches.

7. A knockdown carton comprising a bottom and wall sections foldable for erection, some of said walls having extensions foldable to reinforcing positions with reference to other erected walls of means for supporting said wall sections in erected position comprising a plurality of independent members each provided at each end with a hook independently detachably engaged over opposite wall sections of the carton and each extending from its respective hooks downwardly to the bottom of the carton in retaining relation to the folded extensions and longitudinally underneath the carton, the portions of the respective members beneath the carton being substantially parallel and comprising rails upon which said carton rides on a conveyor, the independence of said members facilitating their respective manipulation to engage and release their respective hook portions.

8. The combination with a carton having wall portions and corner flap portions folded thereon with the upper margins of the said wall portions and corner flap portions in proximity, of retaining means comprising laterally spaced members each extending beneath the whole bottom of the carton and extending thence upwardly along said wall portions and each provided at each end with hooks engaged over said margins for holding the carton erected.

9. The combination with a carton having wall portions and corner flap portions folded thereon with the upper margins of the said wall portions and corner flap portions in proximity, of retaining means comprising members extending beneath the carton and extending thence upwardly along said wall portions and provided with hooks engaged over said margins for holding the carton erected, one of said margins including a tab provided with an aperture in which said hook portion is engaged for its retention.

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