July 4, 1961 E. J. POWLENKO 2,990,996

TOP-LIFTING CARTON

Filed Feb. 27, 1959

FIG. 1

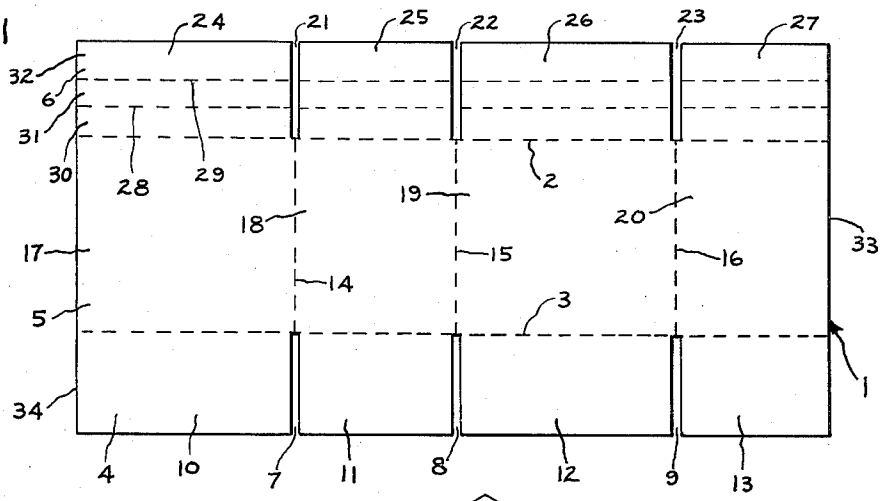


FIG. 2

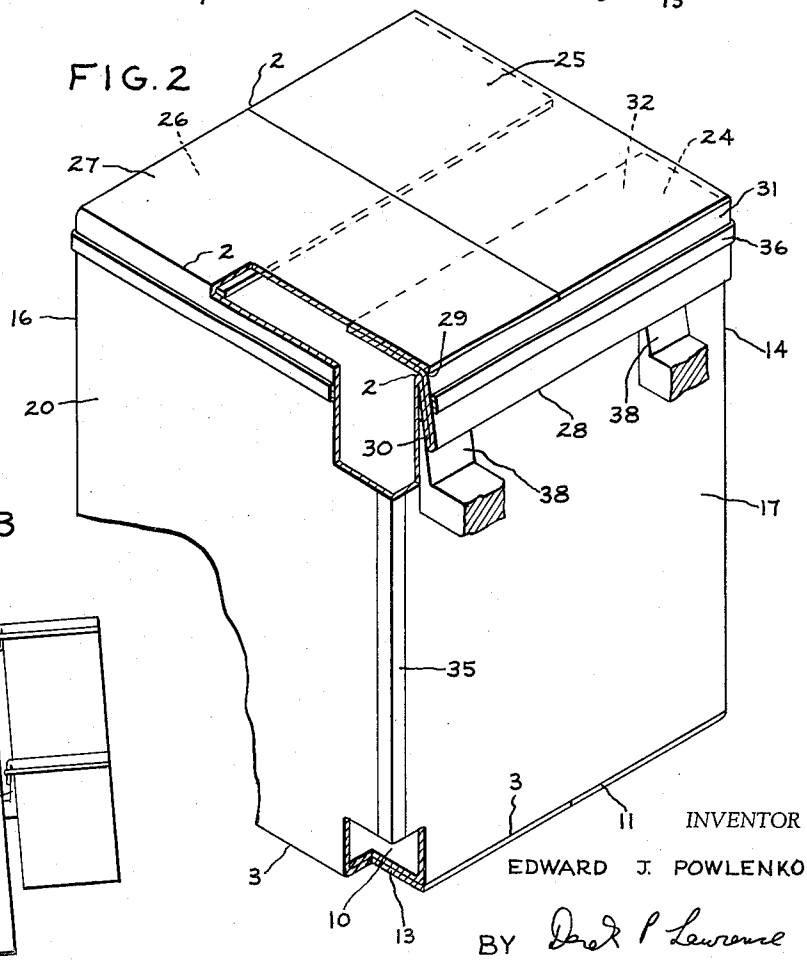
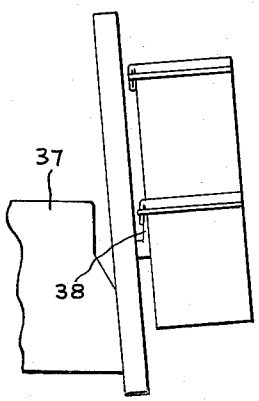


FIG. 3



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United States Patent Office 2,990,996 Patented July 4, 1961

2,990,996

TOP-LIFTING CARTON

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Filed Feb. 27, 1959, Ser. No. 796,008
3 Claims. (Cl. 229—37)

This invention relates to fiber board shipping cartons, and more particularly to such cartons for shipping relatively heavy apparatus or appliances, for example washing machines, dryers, refrigerators and the like.

Heavy appliances are customarily shipped from the factory in individual cartons in order to prevent damage to them during shipment and storage. These cartons with their enclosed appliances are customarily handled by means of industrial lift trucks. The lift trucks have traditionally picked up the cartons in one of two ways. Either they have slipped forks beneath the cartons and picked them up from the bottom or else they have grabbed the cartons from opposite sides using a squeeze paddle arrangement. Neither of these methods of lifting has proven completely satisfactory: the fork lifting method requires the services of an additional laborer besides the operator of the lift truck in order to get the carton on and off the forks; the squeeze paddle method of lifting does not require an extra man but it does result in a space being left on the sides of the cartons between them thus wasting valuable warehousing space and requiring an extra operation in carloading to close up the space, since the cartons cannot be spaced for safe shipping.

Because of these problems, a more satisfactory method of handling the cartons is to lift them from the top, that is lift them by means on the lift truck which engages them at or near their tops. With such a lifting arrangement, the operator of the truck does not require help in loading and unloading, and the cartons may be stacked without any space left between them. However, the ordinary one-piece shipping carton, generally known as a regular slotted carton, cannot be lifted from the top. Because of this, various special top-lifting cartons have been developed.

One of these, for instance, provides a carton construction wherein a separate lid member fits over the top of the main body and interlocks with flaps formed at the top of the body of the carton. When this interlocking arrangement is secured by means of a strap, there are formed external flanges extending down from the top of the side panels of the carton, and it is then possible for a lift truck having appropriate vertically extending blades to insert them under a flange and transport the carton in that manner. While this eliminates both the spacing between cartons and the need for an additional operator, the requirement for two separate fiber board pieces for each carton results in additional handling and manufacturing costs, and additional assembly costs. It is consequently highly desirable to retain the economical one-piece structure of a regular slotted carton, formed from a single rectangular piece of fiber board, while at the same time obtaining the advantages in handling and shipping that the flanged carton construction offers.

It is therefore an object of this invention to provide a new and improved top lifting fiber board carton which is formed from a single blank of fiber board of the same shape as generally provided for a regular slotted carton, while at the same time providing the advantages offered by the two-piece flanged construction.

In carrying out my invention, I provide a top lifting fiber board carton which is formed of a single substantially rectangular sheet of fiber board, in the same manner as a regular slotted carton. A further similarity to the regular slotted carton is that the sheet is provided

with first, second and third longitudinally extending substantially parallel sections: the first section forms the bottom of the carton; the second section is appropriately creased to form the four side panels; and the third section is transversely cut to form four flaps for the top of the carton, each flap being jointed to and substantially coextensive with the side panel along the upper edge of the panel. The flaps are, at least in part, bent in over the side panels into a plane generally perpendicular thereto, and are secured together in that plane so as to entirely cover the space between the side panels and thereby close the carton.

I depart, however, from the general concept of a regular slotted carton in that I provide on at least one of the flaps two creases which are both formed substantially parallel to the junction line between the flap and the side panel to which it is joined, thereby dividing that flap into three portions. The first portion, which is adjacent the junction line, is bent downwardly outside of the side panel; the second portion, which is adjacent the first portion, is bent back upwardly and reaches approximately back to the junction line; and the third portion constitutes that part of the flap which is bent in over the side panels and secured to the other flaps. I further provide a reinforcing member secured over the first and second portions of the one flap so as to prevent them from bending away from the side panel. The first and second portions of the flap thus provide a flange for handling with a vertical blade, so that the advantages of a carton having separate interlocked top and bottom pieces are obtained. It will, however, also be seen that the construction is nonetheless formed from a single rectangular piece of fiber board with the single addition of a steel strap. With this construction, the only difference from the regular slotted carton as far as the price is concerned and insofar as the difficulty of assembly of the carton is concerned is in the formation of the flange, which is very simple, and in the provision of the steel strap which is also a relatively economical step insofar as labor cost is concerned. The two piece carton is avoided while at the same time the flange for handling purposes is provided.

The subject matter which I regard as my invention is particularly pointed out and distinctly claimed in the concluding portion of this specification. My invention, however, together with further objects and advantages thereof, will be best understood from the following description taken in conjunction with the accompanying drawing.

In the drawing:

FIGURE 1 is a plan view of a fiber board body or blank for forming a preferred embodiment of my top lifting carton;

FIGURE 2 is a view in perspective of the assembled carton, partly in cross-section and partly cut way in order to show details of the invention; and

FIGURE 3 is a fragmentary view showing two of my improved cartons being lifted by an industrial lift truck.

Referring now to FIGURE 1, I have shown therein a substantially rectangular fiber board body or blank for forming a preferred embodiment of my top lifting carton. Blank 1 is preferably formed from a sheet of single-wall double-spaced corrugated fiber board, that is, of fiber board having inside and outside plane surfaces which are joined together by means of a corrugated or undulating sheet disposed between them. This type of fiber board, known as corrugated fiber board, is commercially available and is widely used in shipping cartons and the like.

The blank 1 is divided by crease lines 2 and 3 into three sections 4, 5 and 6 extending longitudinally of the blank, substantially in parallel relation to each other. Section 4 is provided with slits or cuts 7, 8 and 9 which divide

section 4 into four flaps 10, 11, 12 and 13. The center section 5 has crease lines 14, 15 and 16 which divide section 5 into four side panels 17, 18 and 19 and 20. Section 6 is similar to section 4 in that it has transverse slots or cuts 21, 22 and 23 which divide section 6 into flaps 24, 25 26 and 27, substantially coextensive with panels 17, 18, 19 and 20 respectively along junction line 2. In addition, each of the flaps 24, 25, 26 and 27 is provided with two creases 28 and 29 which are substantially parallel to each other and to crease 2, and which divide flap 24 into three parallel portions 30, 31, and 32. As will appear more clearly herebelow the essence of the invention is carried out if creases 28 and 29 are provided only in one of the four flaps 24, 25, 26 and 27. However, normally in manufacturing processes the carton creases are formed by running the rectangular blank through a machine which provides creases the full length of the blank. Therefore in practice it will generally occur that all four of the flaps 24, 25, 26 and 27 will be provided with creases such as 28 and 29, although they will not all necessarily be used in the manner to be described herebelow.

The carton is formed by folding the blank along crease lines 14, 15 and 16 so that side panels 17, 18, 19 and 20 form a generally cubical enclosure. The two ends 33 and 34 of blank 1 are then secured together by any appropriate means such as suitable heavy duty tape 35, as shown in FIGURE 2. The four bottom flaps 10, 11, 12 and 13 are then bent inwardly so as to overlap each other. Due to their dimensions and the dimensions of the side panels, the flaps 10, 11, 12 and 13 when so arranged completely cover the bottom of the carton so as to form a closure at that end thereof. The flaps are then secured, as by gluing or stapling. Conventionally, a pair of opposite flaps such as 10 and 12 is folded in first and then the other pair of opposite flaps 11 and 13 is folded over flaps 10 and 12 and glued to them so as to form a rigid base for the carton. However, the precise manner of forming the bottom of the carton is not the prime point of the invention and the foregoing description is provided merely for purposes of illustration.

Portion 30 of flap 24 is bent down outside side panel 17 as shown. Portion 31 is then bent upwardly from crease line 28 so that it extends back up reaching approximately to the line 2 which forms the junction line between flap 24 and panel 17. The third portion 32 of flap 17 is then bent in over the side panel into a plane which is substantially perpendicular to the panel. Flap 26 is then bent into the same plane toward flap 24. As shown, with the construction provided the two flaps 24 and 26 do not meet each other and there is a space left between them; however, it will be clear that if so desired, the length of each of the flaps 24 and 26 may be made sufficiently great for the flaps to meet notwithstanding the fact that portions 30 and 31 of flap 24 are used to form a flange extending down outside panel 17.

The other pair of opposing flaps 25 and 27 is then bent in over the side panels into substantially the same plane so that they extend directly over the flaps 24 and 26. As shown, the length of flaps 25 and 27 is such that they meet in abutting relation in the center thereby entirely covering the space between the side panels and forming a closure for the carton. The four flaps 24, 25, 26 and 27 are then secured together by any preferred means such as for instance stapling, gluing, or both, in the conventional manner of regular slotted cartons.

In order to strengthen the flange formed by portions 30 and 31 so that it will perform its intended purpose, suitable reinforcing means are provided to make sure that the flange cannot bend away from its downwardly extending position. This is most economically achieved at the present time by providing steel band 36 extending entirely around the carton over the side panels and over portions 30 and 31. The steel band, as is conventional, is formed of an endless loop so that it prevents any outward movement of the flange.

The formation of the carton is then complete: the carton is entirely secured and enclosed, and the flange formed of portions 30 and 31 is secured in a downwardly extending position. With the flange thus formed it is a simple matter for a lift truck, such as that fragmentarily and schematically shown in FIGURE 3 at 37, to position its blades 38 under the flange and then exert a lifting force to raise the carton as well as any cartons which may be positioned on top of the particular carton.

It will readily be seen that although the carton is formed from a single blank of fiber board and is closed in the most economical fashion, that is, in the manner of a regular slotted carton with the flaps at the top extending in and secured to each other, a suitable flange formed by portions 30 and 31 of flap 24 is provided for handling purposes and the carton may thus be handled by a lift truck operator by himself without the necessity for leaving spaces between cartons and without the expense involved in the provision of separate interlocking body and top portions.

It will, of course, be understood that various details such as for instance, the bending of flaps 25 and 27 in over flaps 24 and 26 constitutes merely a preferred construction and is not a limitation on the broad concept of the invention since the flaps may be folded in any order and will constitute a complete closure. It will further be understood, as stated above, that the flaps may be formed of lengths different than as shown so that even those flaps which have portions forming flanges extending down outside the side panel will meet in the center. It will be further clear that, without modifying any of the dimensions of the blank, flap 26 may be formed in precisely the same manner as flap 24 to provide flanges on opposite sides of the carton without sacrificing the completeness of the closure. In addition, by making the flaps suitably long, all four flaps may be provided with flanges so that the flanges are available from any side of the carton. Also, while strap 36 represents the most desirable known means of providing the necessary strength in the flange formed of portions 30 and 31, it is readily conceivable that other means such as, for instance, a loop of wire or suitable pressure sensitive tape (which might even not extend all the way around the carton) could be used to achieve the desired strengthening effect.

While in accordance with the patent statutes I have described what at present is considered to be the preferred embodiment of my invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and I therefore aim in the appended claims to cover all such equivalent variations as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of United States is:

1. A carton formed of a single substantially rectangular sheet of fiber board, said sheet having first, second and third longitudinally extending substantially parallel sections; said first section being creased and secured to form a bottom; said second section being creased to form four side panels; said third section being transversely cut to form four flaps each joined to and substantially coextensive with a side panel along the upper edge of said side panel, one of said flaps having two creases both formed substantially parallel to the junction line between said one flap and the one side panel to which it is joined so as to divide said one flap into three portions, the first of said portions adjacent said junction line being bent downwardly outside said one side panel, the second of said portions adjacent said first portion being bent upwardly and reaching approximately back to said junction line, the third of said portions being bent in over

said one side panel into a plane substantially perpendicular thereto, a second flap secured to a second side panel opposite said one side panel being entirely bent into said perpendicular plane toward said one flap, the third and fourth of said flaps being entirely bent into said plane over said one flap and said second flap, said third and fourth flaps substantially abutting each other at their ends, said third portion of said one flap and said second, third and fourth flaps being secured together; and a reinforcing member formed of a metallic strap extending over said first and second portions of said one flap above the crease joining said first and second portions and around said carton over all of said side panels adjacent the tops thereof so as to prevent substantial bending of said first and second portions of said one flap away from said one side panel.

2. A carton formed of a single substantially rectangular sheet of fiberboard, said sheet having first, second and third longitudinally extending substantially parallel sections; said first section being creased and secured to form a bottom; said second section being creased to form four side panels; said third section being transversely cut to form four flaps each joined to and substantially coextensive with a side panel along the upper edge of said side panel; one of said flaps having two creases both formed substantially parallel to the junction line between said one flap and the one side panel to which it is joined so as to divide said flap into three portions, the first of said portions adjacent said junction line being bent downwardly outside said one side panel, the second of said portions adjacent said first portion being bent upwardly and reaching approximately back to said junction line, the third of said portions being bent in over said one side panel into a plane substantially perpendicular thereto; a second flap secured to a second side panel opposite said one side panel being entirely bent into said perpendicular plane towards said one flap; the third and fourth of said flaps being entirely bent into said plane over said one flap and said second flap, said third and fourth flaps substantially abutting each other at their ends, said third portion of said one flap and said second, third and fourth flaps being secured together; and a plurality of reinforcing members formed of strip portions engaging said second portion and extending over said first and second portions of said one flap substantially parallel to the crease joining said first and second portions and around adjacent side corners of said carton to engage the adjacent side panels adjacent the tops thereof so as to prevent substantial bending of said first and second portions of said one flap away from said one side panel.

3. A carton formed of a single substantially rectangular sheet of fiberboard, said sheet having first, second and third longitudinally extending substantially parallel sections; said first section being creased and secured to form a bottom; said second section being creased to form four side panels; said third section being transversely cut to form four flaps each joined to and substantially coextensive with a side panel along the upper edge of said side panel; one or more selected flaps of said flaps having two creases both formed substantially parallel to the junction line between the selected flap and the one side panel to which it is joined so as to divide the selected flap into three portions, the first of the portions adjacent the junction line of the selected flap being bent downwardly outside the one side panel, the second of the portions adjacent the first portion being bent upwardly and reaching approximately back to the junction line, the third of the portions being bent in over the one side panel into a plane substantially perpendicular to said side panels; the remaining flaps being entirely bent into said plane perpendicular to said side panels, one opposing pair of said flaps substantially overlying the other opposing pair of said flaps, at least one opposing pair of said flaps substantially abutting each other at their ends, said flaps being secured together along their overlying surfaces; and a plurality of reinforcing members formed of strip portions engaging the second portions and extending over the first and second portions of the selected flap substantially parallel to the crease joining the first and second portions and secured to said carton around adjacent side corners of said carton to prevent substantial bending of said first and second portions of the selected flap away from said one side panel.

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