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APPARATUS FOR GLUING OVERWRAPPED PORTIONS OF WRAP-AROUND BOTTLE CARRIER CARTONS

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Fig. 1

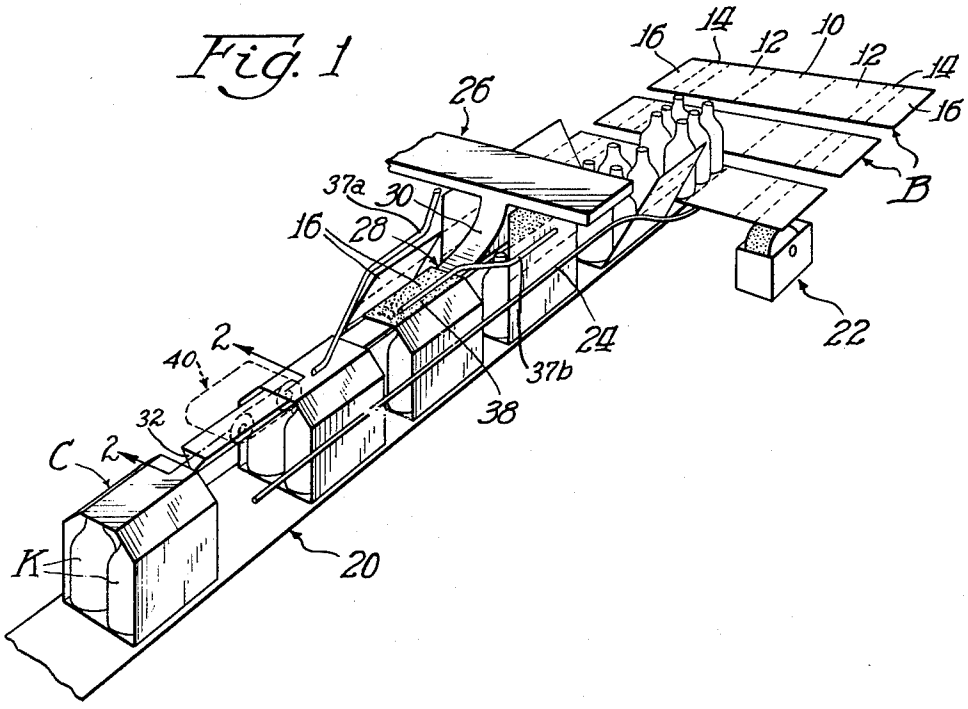


Fig. 3

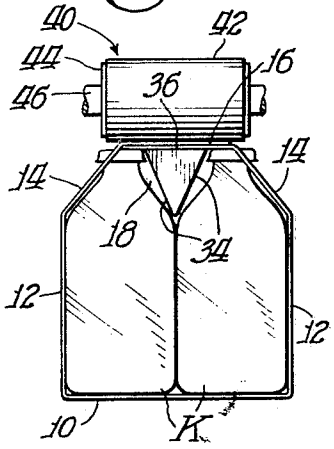
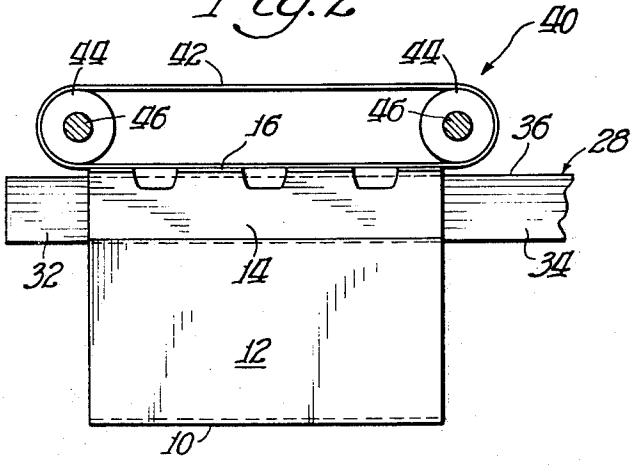


Fig. 2



Inventor:
Francis A. Chidsey, Jr.
By: Richard W. Carpenter
Atty.

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APPARATUS FOR GLUING OVERWRAPPED PORTIONS OF WRAP-AROUND BOTTLE CARRIER CARTONS

Francis A. Chidsey, Jr., Wayne, Pa., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware

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This invention relates to carton forming, and more particularly to apparatus and method for gluing overlapped portions of wrap-around bottle carrier cartons.

The invention comprehends an improved means and mechanism for obtaining compression on glued, overlapped portions of a wrap-around carton for bottles after the carton has been loaded.

In the formation of a wrap-around carton for bottles, as distinguished from cans or other articles having flat ends, it is extremely difficult, if not impossible, to obtain sufficient compression on the overlapped portions of the carton to make the adhesive effective.

Accordingly, it is a primary object of this invention to provide improved method and apparatus for holding together the overlapped carton portions while the loaded cartons are traveling along the conveyor in a continuous carton forming and filling operation.

A more specific object of the invention is the provision of a mandrel arrangement which will permit the insertion of a compression member into a formed carton between the necks of a pair of rows of bottles as the carton is continuously traveling along the adhesive and compression sections of a carton forming and filling machine.

These and other objects of the invention will be apparent from an examination of the following description and drawings, wherein:

FIGURE 1 is a schematic view of a carton forming and filling machine line employing the mandrel arrangement of the invention;

FIGURE 2 is a fragmentary transverse section taken on line 2—2 of FIGURE 1; and

FIGURE 3 is a fragmentary side elevation of a portion of the structure illustrated in FIGURE 1.

It will be understood that, for purposes of clarity, certain elements have been intentionally omitted from certain views where they are illustrated to better advantage in other views.

Referring now to the drawings for a better understanding of the invention, it will be seen that FIGURE 1 is a schematic view illustrating a basic carton forming and filling machine conveyor line which includes the mandrel arrangement of this invention.

The structural details of the blank depositing mechanism, the bottle depositing mechanism, and the conveyor mechanism, are not shown in detail, as they do not form an essential part of this invention. This invention is directed primarily to the mandrel mechanism and method of employing same in the forming and filling of a wrap-around type carton, and the details of the machine may be of various types. An example of the type of mechanism which could be employed in an arrangement of this kind is that shown in Patent No. 3,013,796. Although this patent discloses a mechanism for forming a carrier carton for cans, the same general type of an arrangement could easily be adapted for use in the forming of a bottle carrier carton.

Still referring to FIGURE 1, it will be seen that the completed carton C containing two parallel rows of necked bottles K arranged in side by side relationship, may be formed from a one piece blank of foldable paperboard, indicated generally at B.

The blank includes a centrally located bottom wall panel 10 having hingedly attached to the side edges thereof a pair of side wall panels 12. If desired the side wall panels 12 may include additional or auxiliary sections 14 hinged to their free edges and sloping upwardly and inwardly toward the center of the carton. Hingedly attached at the free edges of panels 14 are a pair of top wall panels 16 which, when the carton is in the assembled condition, are disposed with overlapping portions secured to each in a manner hereinafter described.

To describe the forming of the carton and loading of the bottles, it will be understood that after the blank B has been deposited on the conveyor, indicated generally at 20, in a flat condition the bottles are deposited onto the carton bottom wall panel 10 by conventional means, not shown, so as to repose in two parallel rows of three each arranged in side by side relation. It will be noted, from an examination of FIGURE 3, that because of the configuration of the upper portions of the bottles there is provided a hollow elongated opening or space 18 extending the length of the carton between the necks of the bottles of adjacent rows.

As this is taking place the surface of at least one of the top wall panels is coated with an adhesive. This may be done in any desired manner, such as by means of a glue roller mechanism indicated generally at 22.

As the blank containing the bottles moves along conveyor 20 the side wall panels 12 of the blank are engaged by conventional carton folding means, such as plows 24, which urge the side wall panels up into the vertical position.

At this point, it will be seen that the partly formed carton, with the bottles in place, passes under a mandrel assembly, indicated generally at 26, which may be carried by the machine itself or supported by some other structure, not shown, so as to be positioned over the conveyor 20.

The mandrel assembly 26 includes an elongated first compression member 28 mounted in a cantilever arrangement so as to project forwardly, or in the direction of travel of the carton, along the conveyor 20. The compression member 28 has a closed end 30 from which it is supported and has a free end 32 spaced forwardly from the closed end along the direction travel of the conveyor.

As best seen in FIGURE 3 compression member 28 is generally triangular in section having a pair of upwardly diverging sloping side surfaces 34 and an upwardly facing flat top surface 36. Still referring to FIGURE 3 it will be seen that compression member 28 is contoured and dimensioned so as to be receivable within the space 18 between the necks of the bottles of adjacent rows. Thus, as the bottles travel along the conveyor, when they reach compression member 28 the respective rows pass on opposite sides of the compression member with the tops of the bottles being disposed in vertical alignment with the plane of the top surface 36 of the mandrel or compression member 28.

As the carton reaches compression member 28 additional folding means or plows 37*a* and 37*b* fold the carton top wall panels over into parallel flat, abutting face-to-face relationship on top of compression member 28 with glue surface 38 interposed between the overlapped portions. At this point the overlapped portions are supported by the top surface 36 of compression member 28.

The carton then passes under a second compression member or mechanism, indicated generally at 40, which, as best seen in FIGURE 2, preferably comprises a belt 42 supported for rotational movement about a pair of rollers 44 supported on a pair of spaced shafts 46.

Thus, it will be seen that the overlapped glued portions of the carton top wall panels are compressed between

the first and second compression members to maintain the portions in tight engagement with each other until the glue or adhesive can set.

I claim:

1. Apparatus for sealing overlapped top wall sections of a tubular, open-end, wrap-around, paperboard carrier carton containing two parallel rows of necked bottles arranged in side-by-side relation, said apparatus comprising:

(a) conveyor means;

(b) a first compression member located over the conveyor means and presenting an outwardly facing surface disposed between the necks of the bottles of adjacent rows in substantial alignment with the upper extremities of the bottles;

(c) said first compression member including an elongated anvil-like mandrel element supported at the trailing end in a cantilever arrangement and having an unsupported free leading end;

(d) means for applying adhesive to a surface of at least one of the carton top wall sections of said blank;

(e) means acting as the carton advances for folding portions of the blank around the outer sides of the bottles and the top wall sections of the blank over the bottles into overlapped abutting relation with each other and against said first compression member; and

(f) a second compression member located over a portion of said first compression member and presenting an inwardly facing surface spaced a slight distance from the surface of said first compression member for cooperation therewith to compress said overlapped carton top wall sections between said surfaces.

2. Apparatus for sealing overlapped top wall sections of a tubular, open-end, wrap-around, paperboard carrier carton containing two parallel rows of necked bottles arranged in side-by-side relation, said apparatus comprising:

(a) conveyor means;

(b) a first compression member located over the conveyor means and presenting an outwardly facing surface disposed between the necks of the bottles of adjacent rows in substantial alignment with the upper extremities of the bottles;

(c) means for applying adhesive to a surface of at least one of the carton top wall sections of said blank;

(d) means acting as the carton advances for folding portions of the blank around the outer sides of the bottles and the top wall sections of the blank over the bottles into overlapped abutting relation with each other and against said first compression member; and

(e) a second compression member located over a portion of said first compression member and presenting an inwardly facing surface spaced a slight distance from the surface of said first compression member for cooperation therewith to compress said overlapped carton top wall sections between said surfaces;

(f) said second compression member including an endless, flexible belt supported for movement about a pair of horizontally disposed rollers mounted for rotation about a pair of parallel axes extending transversely of the conveyor means and spaced longitudinally of the conveyor means from each other.

3. Apparatus for sealing overlapped top wall sections of a tubular, open-end, wrap-around, paperboard carrier carton containing two parallel rows of necked bottles arranged in side-by-side relation, said apparatus comprising:

(a) conveyor means;

(b) a first compression member located over the conveyor means and presenting an outwardly facing surface disposed between the necks of the bottles of adjacent rows in substantial alignment with the upper extremities of the bottles;

(c) means for applying adhesive to a surface of at least one of the carton top wall sections of said blank;

(d) means acting as the carton advances for folding portions of the blank around the outer sides of the bottles and the top wall sections of the blank over the bottles into overlapped abutting relation with each other and against said first compression member; and

(e) a second compression member located over a portion of said first compression member and presenting an inwardly facing surface spaced a slight distance from the surface of said first compression member for cooperation therewith to compress said overlapped carton top wall sections between said surfaces;

(f) said first compression including an elongated mandrel supported at only one end by a cantilever arrangement, and said second compression member including a belt supported for movement about a pair of spaced rollers.

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FRANK E. BAILEY, *Primary Examiner.*

TRAVIS S. McGEHEE, *Examiner.*