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Weir et al.

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[54] **ASSEMBLING OF A PREDETERMINED NUMBER OF CONTAINERS FOR CONVEYANCE AS A UNIT**

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[52] **U.S. Cl.**.....**206/482,** 53/48, 206/148, 206/150, 206/432

[51] **Int. Cl.**..... **B65d 81/00,** B65d 85/62

[58] **Field of Search**..... 53/30, 48; 206/65 C, 65 E, 206/65 S, 65 R; 220/97 B

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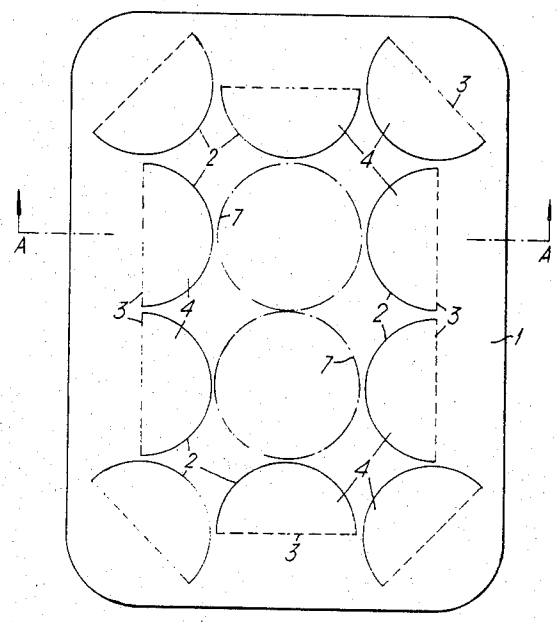
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[57] **ABSTRACT**

This invention relates to a method of assembling a predetermined number of cans or other containers for conveyance on a unit, particularly through a shrink wrapping tunnel, and to a carrier for use in said conveyance. The carrier is provided with raisable portions, which are raised after cans with peripheral rims have been loaded on to the carrier so as to engage with said rims, the cans being so arranged that they are then retained against movement relative to the carrier, or is provided with pre-formed raised portions on which the cans can be positioned to achieve the same effect, or is provided with sunken portions to receive cans which need not have peripheral rims.

4 Claims, 8 Drawing Figures



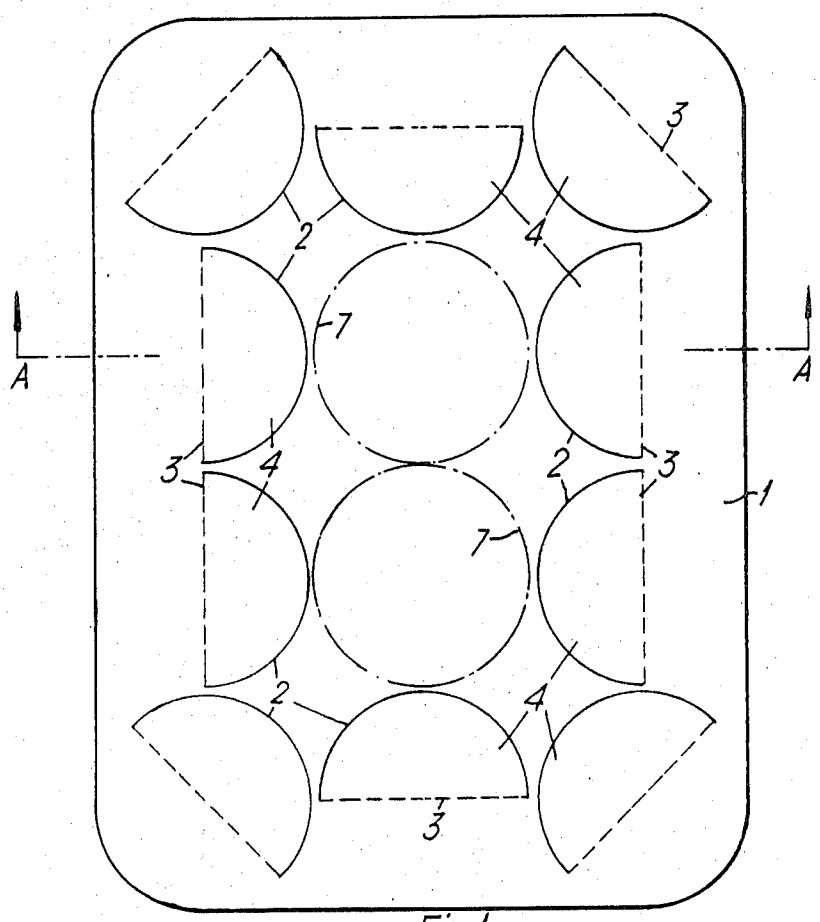


Fig. 1.

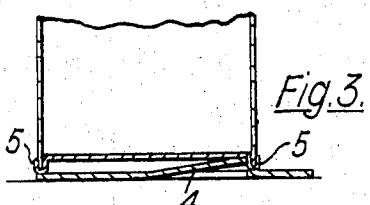


Fig. 3.

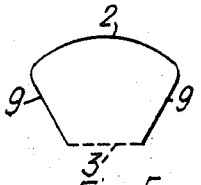


Fig. 5.

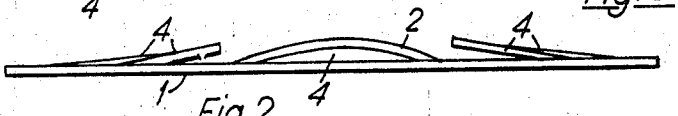
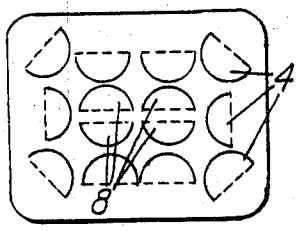


Fig. 2.

Fig. 4.



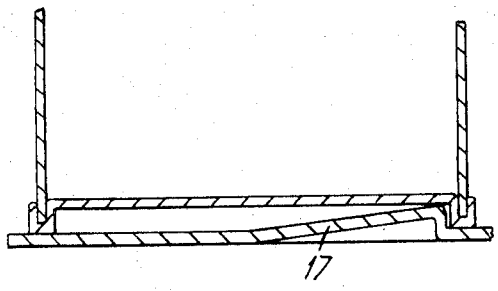


Fig. 7.

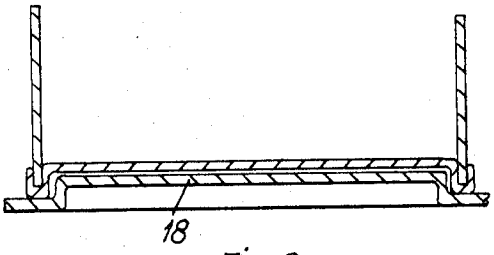


Fig. 8.

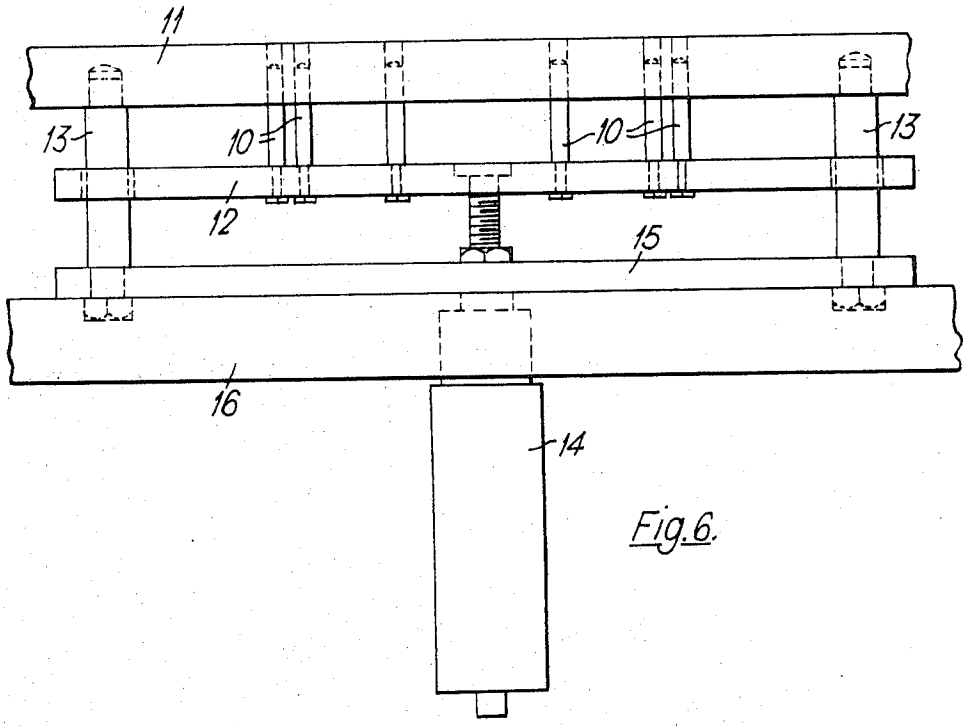


Fig. 6.

ASSEMBLING OF A PREDETERMINED NUMBER OF CONTAINERS FOR CONVEYANCE AS A UNIT

BACKGROUND OF THE INVENTION

This invention relates to a method of assembling a predetermined number of cans or other containers for conveyance as a unit and to a carrier of such a unit. Such cans or other containers may be of metal, glass, wood, plastics material, cardboard and associated products paper and the like and other rigid, flexible or semi-flexible containers including those reinforced, such as waxed paper containers and the like, all of which are hereinafter included in the term "cans".

Where a predetermined number of cans are conveyed as a unit during, for example, a packaging operation such as shrink wrapping, the cans tend to move relative to one another during conveyance through the shrink wrap tunnel with the result that the speed of the operation, i.e. the number of cans which are packed in a given time, is seriously curtailed. Further, the resulting package may not be correctly formed due to misalignment of the cans, and accordingly the package may be easily damaged. In other packaging operations considerable amount of packing material may be required to pack the cans as a unit, which naturally increases costs.

It is an object of the present invention to provide a method of assembling a predetermined number of cans for conveyance as a unit, in which virtually no movement of the cans relative to a carrier member can take place thus enabling packaging operations such as shrink wrapping to proceed at a considerably greater rate than has been previously possible.

It is also an object of the present invention to provide a carrier member for conveyance of a predetermined number of cans which carrier member is simple and inexpensive to manufacture.

DESCRIPTION OF PREFERRED EMBODIMENTS

Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a plan view of a first embodiment of a carrier member;

FIG. 2 is a sectional elevation on line A-A of FIG. 1;

FIG. 3 is a detail view of a can positioned by a raised securing flap;

FIG. 4 is a plan view of a modified carrier member provided with stacking flaps;

FIG. 5 is a plan view of a modified securing flap;

FIG. 6 is a side view of a machine for raising the securing flaps;

FIG. 7 is a detail sectional side view of a second embodiment of a carrier member; and

FIG. 8 is a detail sectional side view of a modified carrier member similar to FIG. 7.

Referring to FIGS. 1, 2 and 3 a substantially flat carrier member 1 is made of cardboard, metal, plastics material, wood or the like, to be substantially rigid, but not necessarily so.

The carrier 1 is made rectangular in shape with rounded corners and of a size that will hold, for example, 10 cans arranged around the four sides. There may be two cans in the middle thereof so that 12 cans of the same size are so arranged. Cuts 2 and scores 3 forming fold lines are formed in the carrier 1 in the positions to be occupied by at least the outside cans to outline

hinged raisable regions or securing flaps 4 and each flap has a curved cut and a straight fold line extending between the ends of the cut. When the cans are arranged in position and the flaps pressed upwardly the curved outer edge 2 of each flap 4 will engage with the inside face of a peripheral rim 5 of the can 6. As all the flaps face inwardly as shown they will hold the cans from moving outwardly and, as the flaps are arranged in a closely spaced relationship, adjacent cans engage one another to prevent any inward or sideways movement. Thus if there are two inside cans 7 they will be retained in position without the need for securing flaps although such flaps may be used.

A carrier of the above type can be made quite cheaply and will readily hold cans which can be located thereon by hand or by automatic loading means. Cans may be placed on the carrier and the flaps then pressed upwardly into their engaging position. The pressing up of the flaps can be accomplished by small pushers or pins 10 caused to rise through a supporting work plate 11 and this operation could be carried out by hand or foot operated means, or automatically in a timed sequence. The flap raising means may be moved upwardly or the workplate depressed. A machine for raising the securing flaps is shown in FIG. 6. A set of 10 pins 10 are carried by a plate 12 which is mounted to rise and fall on guide pillars 13 and is operated by an air operated piston-cylinder unit 14. Alternatively, the pins may be raised by piston cylinder operated cams. The guide pillars 13 and the unit 14 are secured to a bottom mounting plate 15 carried by a structure 16 which also supports the work plate 11. The plate 12 is removably mounted for interchangement purposes. A stop (not shown) is provided at one end of the work plate 11 for correctly positioning the carrier on the work plate 11 for loading of the carrier from the other end of the work plate 11, this stop being retractable to allow the loaded carrier to be moved off the plate 11.

Automatic feed means may be used for locating carriers in succession in the loading position on the work plate 11 from whence they can be pushed or otherwise caused to move into a delivery position, e.g. on to conveyor means to be taken, say, to a shrink wrapping or other packaging apparatus.

If the carrier is of substantially rigid material a loaded carrier can be handled and serve as a means for stacking cans in superposed layers. A carrier suitable for stacking is shown in FIG. 4 and includes a number of securing flaps 4 and a pair of centrally located double flaps 8, which, when the carrier is loaded and stacked as a unit on top of another loaded carrier, are pushed downwardly to engage the upper peripheral rims of the two inner cans of the lower unit.

The flaps may be of some shape other than curved, for example, they may have tapering sides 9 and a curved outer edge 2 with a folding line 3, so to be of truncated fan formation as shown in FIG. 5.

Although single securing flaps and double stacking flaps are shown there may be three of more flaps for any one can.

If desired, a carrier may be located in a tray or box, or form the base or false bottom of such a tray or box.

It has been found that a carrier can be made cheaply in the aforesaid manner and that even flexible cardboard can be used when a loaded carrier is to be moved over workplates or other surfaces without lifting.

In a second embodiment as shown in FIG. 7, a carrier includes a number of raised parts 17 pre-formed by a moulding or pressing operation and serving a purpose similar to the securing flaps 4 of the first embodiment. The carrier is formed from a plastics or other like material. The parts 17 may have a shape similar to the flaps 4 or, in a modification as shown in FIG. 8, flaps 18 having a circular shape may be provided. To form the unit, the cans are located on the carrier over the parts 17 or 18 and are held against movement relative to the carrier by engagement with the parts 17 or 18 and with one another.

A carrier according to the invention may be provided with sunken regions to receive containers or articles which need not necessarily have a peripheral rim or have a base of round formation.

We claim:

1. A carrier member for use in conveying as a packaged unit a predetermined number of cans, each of which has a peripheral rim at at least one end, the carrier member having a substantially flat form with opposed main faces and a plurality of regions which are raised from one of said main faces at locations selected to enable cans to be positioned on the carrier member such that only a single one of said raised regions is located wholly within the peripheral rim at said one end of each of certain of said cans and engages an inner face of the can rim, said raised regions each being so shaped as to be engageable with at least the inner face of that part of the respective rim which faces outwardly toward the edge of the carrier member and retains the can against movement in any direction toward the edge of the carrier member, and said raised regions being of such a selected size and located in such a spaced relationship that the cans can be retained against movement in any direction on the carrier member solely by said engagement of the respective cans with but a single one of said raised regions and with one another.

2. The invention of claim 1 wherein the cans are of cylindrical form and the raised regions are of curved edge configuration, and have a radius of curvature corresponding essentially to that of the can rims.

3. A carrier member for use in conveying as a package unit a predetermined number of cans, each of which has a peripheral rim at at least one end, the carrier member having a substantially flat form with opposed main faces and a plurality of regions which are raisable from one of said main faces at locations selected to enable cans to be positioned on the carrier member such that only a single one of said raisable regions is located directly beneath said one end of each of certain of said cans, and can be raised to be located wholly within the peripheral rim of the respective can and engage the inner face thereof, the raisable regions each being so sized and shaped as to be engageable, when raised, with at least the inner face of that part of the respective rim which faces outwardly toward the edge of the carrier member and retains the can against movement in any direction toward the edge of the carrier member, and said regions being sized and located in such a spaced relationship that the cans can be retained against movement in any direction on the carrier member solely by engagement with said respectively singular regions and with one another.

4. A carrier member as claimed in claim 3, wherein said raisable regions are defined by arcuate cuts, each of which is in the form of a partial circle, and a straight score provided between the ends of each arcuate cut to form a folding line, each cut extending inwardly from the score so that the regions, when raised, extend upwardly in a direction inwardly from the edge of the carrier member.

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