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CARTON FLAP HOLD-DOWN DEVICE

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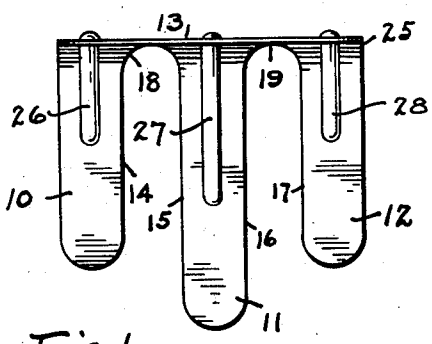


Fig. 1

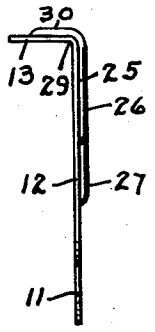


Fig. 2

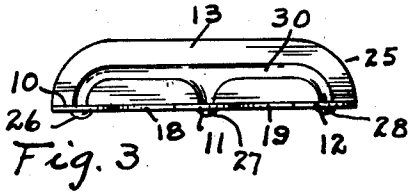


Fig. 3

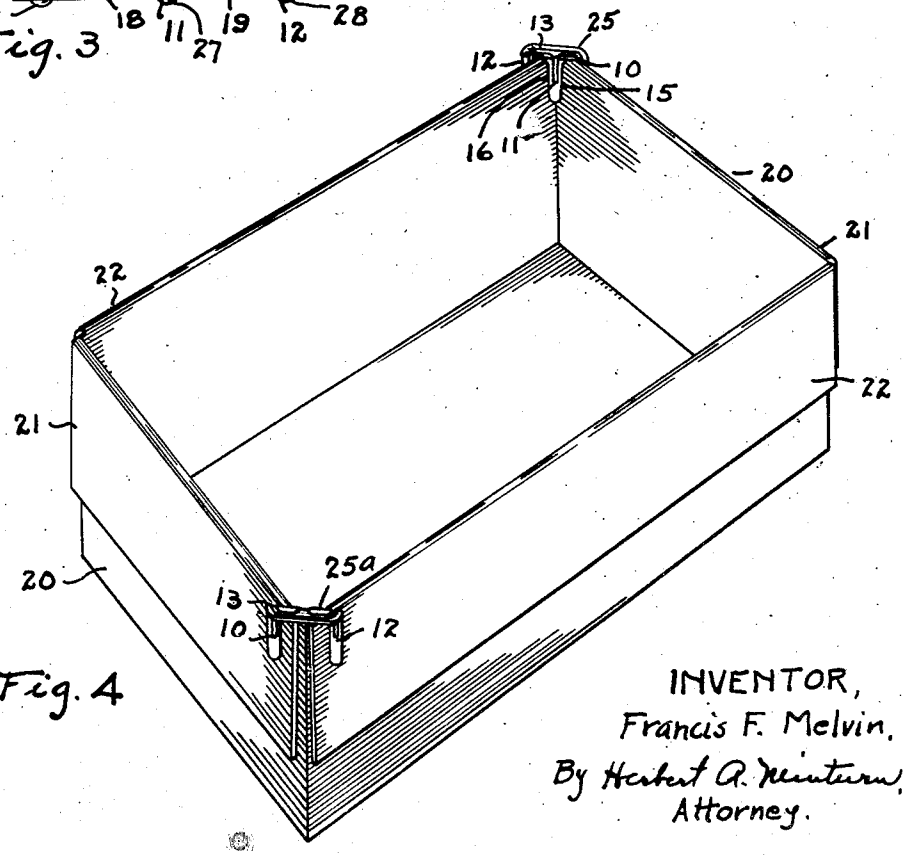


Fig. 4

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CARTON FLAP HOLD-DOWN DEVICE

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3 Claims. (Cl. 24—81)

This invention relates to a device in the nature of a fork which is inserted in opposite corners of a carton for the purpose of holding the top closing flaps downwardly against the sides of the carton to permit filling of the carton with bottles or cans and the like, particularly on assembly lines where the carton is carried by suitable conveyors.

While the invention is not limited hereto, it finds particular use in the situation where glass bottles or jars are shipped into a packing plant in fiberboard cartons; the enclosing top flaps are opened; the contents of the carton placed on a conveyer line and the carton itself thus emptied is sent around the filling station to the end thereof so that the filled bottles may be replaced in that same carton. In the handling of the carton, it is necessary that the flaps be turned downwardly so as to be out of the way and not interfere in the conveying of the carton from one station to another. The structure of the invention is inserted at opposite corners to compress the flaps downwardly on the outsides of the carton, and by reason of the particular formation of the structure, the structure may serve as means for supporting superimposed cartons one above the other since there is a flat area provided on the top side of the carton hold-down device, primarily for lifting the device from the carton after it has been refilled, but secondarily for supporting superimposed cartons without the danger of the cartons tipping from one side to the other by the slipping of a corner down into the under carton.

An important feature of the invention resides in the fact that there is a rigid relatively horizontally disposed upper plate from which outer flap engaging fingers extend downwardly at right angles thereto, the plate serving in conjunction with the rigid fingers as a means for preventing the spreading apart of the fingers one from the other.

Further important objects of the invention are to provide a structure which will fit snugly in the corners of the carton to be out of the way during packing or refilling operation, and at the same time will be easily removed when desired. Moreover another purpose of the invention resides in the fact that the structure requires some little pull to remove it from the hold-down position so that it is not easily disturbed or loosened during the travel of the carton on a conveyer or during the filling operation.

These and many other objects and advantages of the invention will become apparent to those versed in the art in the following description of one particular form of the invention, in which as illustrated by the accompanying drawing,

Fig. 1 is a view in front elevation of a structure embodying the invention;

Fig. 2 is a view in end elevation;

Fig. 3 is a bottom plan view; and

Fig. 4 is a view in perspective of an opened carton with the invention applied thereto.

The structure constituting the invention is made out

of a rather rigid piece of metal to have three spaced apart tongues **10**, **11**, and **12**. All of these tongues lie in the same plane, and integrally extend downwardly from a top plate **13** which is turned at right angles to the plane of these fingers.

In order to make clear the relative proportioning of these fingers, they are approximately seven-sixteenths to one-half inch in width, and the spacing between the fingers is of like dimension. The edges of the fingers **10**, **11**, and **12** which are in opposition one with the other such as the edges **14**, **15** and **16**, **17** are parallel and merge one with the other respectively through substantially semi-circular arcs **18** and **19** which are tangent with the underside of the plate **13**.

As will be noted in the drawing, Fig. 1, the central finger **3** is longer than the two outer fingers **10** and **12** which are of equal lengths as measured downwardly from the plate **13**. The extension of the finger **11** below the outer fingers **10** and **12** is approximately five-eighths of an inch. The dimensions given by way of example in proportioning the various elements are suitable for use on a carton which is made of a single corrugated core covered by an inner and outer sheet. While the width of the plate **13** is not critical, it is preferably held to a width of approximately a half inch as measured outwardly from the plane of the legs **10**, **11**, and **12**.

As indicated in Fig. 4, the carton generally designated by the numeral **20** has end and side flaps **21** and **22**. These flaps are folded down against the ends and sides of the carton respectively and then one of the devices generally designated by the numeral **25** is brought up to a corner of the carton to have the tongue **11** started downwardly on the inside of the carton to be followed by the other fingers **10** and **12** coming down on the outsides of the flaps **21** and **22** thereby compressing them against the ends and sides of the carton. The device is pressed downwardly until the plate **13** bears across the top folds of the flaps so that the device **25** is thus firmly seated. Then a second device **25***a* is inserted diagonally across the carton in that opposite corner **26** with its center tongue **11** entered downwardly on the inside of the carton and the two fingers **10** and **12** carried downwardly on the outside of the flaps. Thus the plates **13** are substantially horizontally positioned diagonally across the corners as indicated in Fig. 4. These outturned plates **13** serve as means not only to support the fingers in vertical alignment, but also serve as "lifts" in order to pull the devices from the holddown position. In addition as above indicated, cartons may be stacked one above the other with these plates **13** extending across the corners of the under cartons tending to prevent the cartons from tilting.

It is to be emphasized that these fingers **10**, **11**, and **12** are substantially rigid, that is they are not elastic in the nature of springs, and are preferably made out of a sheet metal blank of a gauge someplace near dimension of about one-sixteenth of an inch. The vertical edges **15** and **16** will be in compressive contact with the side and end of the carton, whereas the edges **14** and **17** will be in compressive contact with the outside of the flaps **21** and **22**.

In order to emphasize the rigidity of the structure, ribs **26**, **27**, and **28** are formed in the upper portions of the respective legs **10**, **11**, and **12** and carried around over the bend **29** to extend onto the plate **13**, and merge into a longitudinally disposed rib **30**. By reason of this construction, the legs **10**, **11**, and **12** are made to be extremely resistant to bending on the bend line **29**. Also the plate **13** is made to be extremely resistant to bending intermediate its ends.

Therefore while the invention has been shown and

described in the one particular form, it is obvious that structural variations may be employed particularly in respect to dimensions, without departing from the spirit of the invention, and it is not intended that the invention be limited to that precise form beyond the limitations which may be imposed by the following claims.

I claim:

1. For a carton having end and side walls and corresponding closure flaps hinged to said walls, a hold-down device for holding the flaps in open condition against the outside faces of the walls of the carton comprising a rigid base plate, and three spaced apart fingers rigidly extending from a marginal edge of the plate in a common plane and at approximately right angles to the plane of said plate, the centermost finger being longer than the two other fingers, each of said fingers being planar and of widths substantially exceeding their thicknesses, the spacing apart of said fingers being that, when said centermost finger is positioned diagonally across and inside of a corner of and in side edge abutment with the side and end walls at said corner, the opposing edges of said two other fingers compressibly bear against the outersides of the corresponding end and side flaps and maintain them compressibly against said carton end and side walls.

2. For a carton having end and side walls and corresponding closure flaps hinged to said walls, a flap hold-

down device for maintaining the flaps in full open condition against the outer faces of said walls comprising a flat sheet-like plate, and three spaced apart flat sheet-like fingers extending in a common plane from a marginal edge of said plate, said plane being at substantially right angles to said plate, and said plate and said fingers being substantially rigid and rigidly interconnected, the fingers and plate being approximately of the same width and the spacing apart of the fingers one from the other being approximately a distance equal to the width of the fingers, the centermost of said fingers being longer than the two other fingers.

3. The structure of claim 2 in which said finger spacing distance is approximately equal to the combined thickness of a carton wall and its hinged flap as measured on a line substantially at forty-five degrees thereacross.

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