May 28, 1963 M. WEINHART 3,091,357

DEVICE FOR HINGING COVERS ON CONTAINERS

Filed Sept. 5, 1961

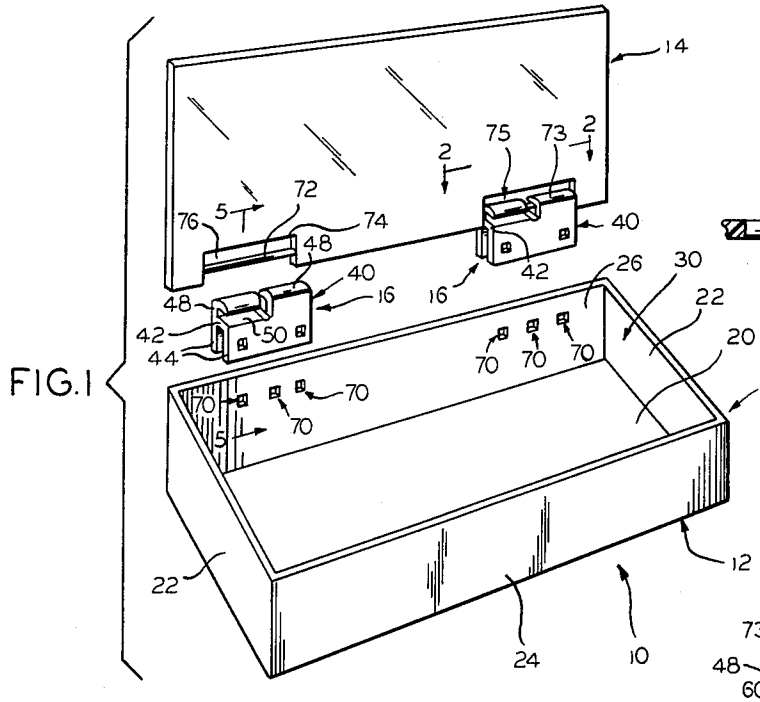


FIG.1

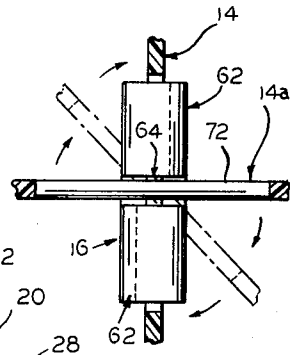


FIG.2

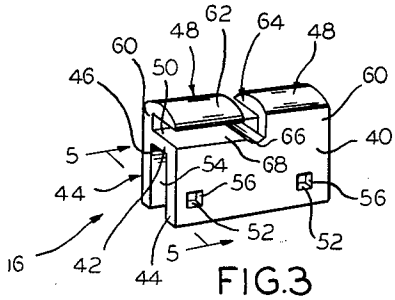


FIG.3

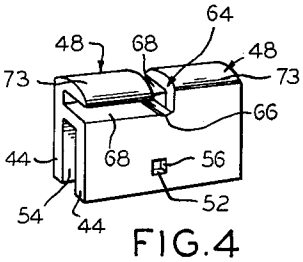


FIG.4

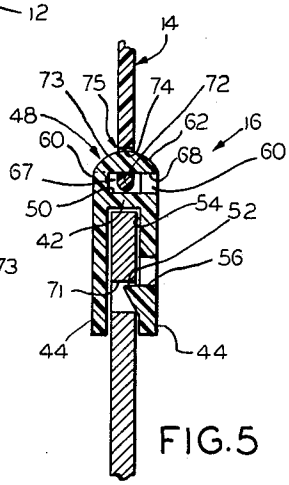


FIG.5

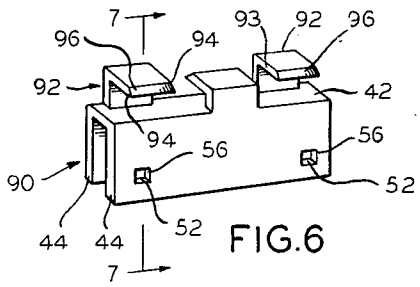


FIG.6

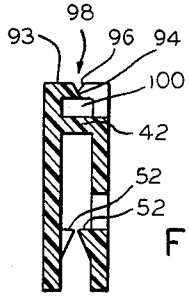


FIG.7

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United States Patent Office 3,091,357 Patented May 28, 1963



3,091,357

# DEVICE FOR HINGING COVERS ON CONTAINERS

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Filed Sept. 5, 1961, Ser. No. 136,034
2 Claims. (Cl. 220—31)

My invention relates to a device for hinging covers on containers, and more particularly, to a device for hinging covers on containers made of sheeting material such as cardboard, paperboard, plastic, foil, or the like.

Since time immemorial, container tops have been hinged to containers by the familiar hinge leaf construction, wherein one or more hinge assemblies, each comprising a pair of hinge leaves pivotally joined together by a hinge pin, are applied to the container and cover therefor by having the hinge leaves screwed, riveted, nailed or otherwise fixed into place. In instances where this long established practice has not been followed, suitable hinging equivalents have been provided by fixing flexible strips between the container and its top or cover, by employing screw eyes in the container and top and pivoting them about a common axis, and by other devices and means intended to replace the usual hinge leaf arrangement, all of which require that the hinging structures be fixed in place by implements such as screws, rivets, or nails that necessarily must be embedded in the cover and container, respectively.

More recently, plastic containers having plastic covers have come into common use in which the cover is hinged to the container by using interlocking knobs that are integral parts of the container and cover, respectively.

However, none of these methods and devices are suitable for hinging covers to containers made of sheeting materials such as cardboard, paperboard, foil and the like, for the reason that these materials do not have enough "body" to form a purchase for attachment screws and the like, and, of course, they do not have the rigidity to warrant employing the interlocking knob type arrangement.

Modern merchandising techniques, particularly in the hardware field, have turned to the now familiar plastic box in which small items, such as screws, are placed for display and sale under the protection of a clear plastic top or cover that is hinged in place by the aforementioned interlocking knob arrangement or some equivalent thereof. However, experience has shown that less brittle substances such as cardboard or paperboard and other flexible sheeting materials would make more satisfactory containers since they inherently do not have the brittle qualities of plastic materials; but as heretofore there has been no satisfactory way to hinge covers to cardboard or paperboard containers, they have not come into general use for these purposes.

A principal object of my invention is to provide a hinging arrangement for readily and permanently hinging covers to cardboard or paperboard containers and the like.

Another principal object of my invention is to provide a way of hinging covers to containers that is of practical application to containers that are formed from the various types of flexible sheeting materials that are exemplified by cardboard, paperboard, foil, and the like.

Other objects of the invention are to provide a simplified one-piece hinging device for applying covers to containers, to provide an inexpensive hinged container arrangement that is especially adapted for displaying merchandise, and to provide a hinge construction that is inexpensive of manufacture, convenient in use, and readily adapted for application to a wide variety of container forms.

Other objects, uses and advantages will become obvious or be apparent from a consideration of the following detailed description and the application drawing.



In the drawing:

FIGURE 1 is a diagrammatic perspective view showing in exploded relation a container and cover hinging arrangement in accordance with this invention;

FIGURE 2 is a diagrammatic two-position fragmental cross-sectional view substantially along line 2—2 of FIGURE 1 (but on an enlarged scale) illustrating the manner in which the hinging device of this invention is applied to the container top;

FIGURE 3 is a perspective view of the hinging device per se that is shown in FIGURE 1, it being illustrated in a similar manner but on an enlarged scale;

FIGURE 4 is a view similar to that of FIGURE 3 but illustrating the reverse side of the hinging device;

FIGURE 5 is a diagrammatic cross-sectional view through the hinging device approximately along line 5—5 of FIGURES 1 and 3, but showing the hinging device, the container wall, and the container cover in assembled relation;

FIGURE 6 is a view similar to that of FIGURE 3 but illustrating a modified form of the invention; and

FIGURE 7 is a diagrammatic cross-sectional view substantially along line 7—7 of FIGURE 6.

However, it is to be distinctly understood that the drawing illustrations are provided primarily to comply with requirements of 35 U.S.C. 112, and that the invention may take other specific embodiments which will be obvious to those skilled in the art after a consideration of this disclosure.

Referring now to FIGURE 1, reference numeral 10 generally illustrates a typical container arrangement to which my invention has been applied which comprises a container or receptacle 12, that may be formed from paperboard, cardboard, foil, or the like, a cover 14 for the container or receptacle, and a pair of hinging devices 16 which function to hingedly mount the cover 14 on the container 12.

For purposes of illustration, it is assumed that the container 12 is formed from a suitable paperboard material which may be arranged in any conventional manner to define bottom wall 20, side walls 22, front wall 24 and rear wall 26, with the walls 22, 24 and 26 defining a wall structure generally designated 28 which is in circumambient relation about the bottom wall 20.

It is also assumed that it is desired to hingedly mount a cover on the container or receptacle 12 which is transparent so that anything placed in the receptacle 12 will be readily observable, and consequently the cover 14 is assumed to be a sheet or layer of clear or transparent plastic that is proportioned to cover the open top 30 of container 12.

In the embodiment of FIGURES 1–5, two devices 16 are required to hinge the cover 14 to the container 12, and each hinging device 16 comprises (see FIGURES 3 and 4) a channel-shaped body or member 40 defining a web 42 and spaced parallel walls or flanges 44 projecting from one side 46 of the web, and a pair of angled fingers or projections 48 that project from the other side 50 of the web.

The walls or flanges 44 are preferably spaced apart sufficiently to adequately accommodate the wall of a container 12 that the hinge is to be applied to, and the walls or flanges 44 in the illustrated embodiment are provided with at least one pointed projection or protuberance 52 (see FIGURE 5) which projects inwardly from the inner surface 54 of the wall 44 that it forms a part of (note that three projections 52 are employed in the embodiment of FIGURES 1–5 as indicated by the showing of FIGURES 3 and 4 and this is the preferred arrangement). In the embodiment of FIGURES 1–5, the pointed projections or protuberances 52 are formed in such a manner that a recess or opening 56 remains in the

finished product, and this opening or recess 56 in and of itself is useful for locating purposes, as hereinafter described.

The angled fingers 48 are arranged in oppositely directed, interdigitatedly disposed relation and each comprises an upright wall portion 60 from the top of which projects an overhanging flange portion 62 that extends substantially across the width of the hanger device 16 (see FIGURE 5). As clearly brought out in FIGURES 3 and 4, the fingers 48 are two in number in the embodiment of FIGURES 1–5, and are disposed on opposite sides of the hinging device 16 and project in opposite directions. Furthermore, they are separated by a slot or opening 64 which terminates in a rounded groove 66 in the side 50 of web 42. Fingers 48 define a hinge pivot seat 67 which is open at opposite sides under the respective fingers 48, as indicated at 68.

The hinging devices 16 may be formed from any suitable substance, such as a resiliently flexible plastic material and may be readily injection molded on a mass production basis to define substantially the shapes indicated in the drawing. The protuberances 52 may be formed as part of the injection molding process, or they may be subsequently defined by a suitable punching operation, which presses the material defining the respective walls 44 inwardly to form the protuberances 52 as well as the openings 56. In any event, the protuberances or projections 52 illustrated should have an inwardly diverging taper of the general type illustrated in FIGURE 5.

The hinging devices 16 are employed to hinge cover 14 to container 12 in the following manner: To start off with, the container wall to which the hinging devices 16 are to be applied, for instance, wall 26, is formed with spaced openings 70 that are to receive the pointed projections 52 substantially in the manner indicated in FIGURE 5, and consequently the openings 70 must have a spacing for each hinging device corresponding to the spacing of the protuberances or projections 52 both longitudinally of the hinge device and downwardly of web 42. In the form of FIGURES 1–5, two sets of the holes or recesses 70 should be formed, as indicated in FIGURE 1.

Also, the cover 14 is formed to define a pintle or pin member 72, and this may be done by cutting away the material of the cover 14 as may be necessary to form the pintle or pin 72, with sufficient space being provided between the pintle or pin 72 and the end 74 of the recess 76 that is so formed by this forming operation to accommodate the thickness of the hinge member flanges 62 (see FIGURE 5). As is indicated in FIGURE 1, two recesses 76 and pintles 72 are formed to accommodate the two hinging devices 16 in the form of FIGURES 1–5.

When this is done, the cover may be applied to the container by taking one of the hinge devices 16, such as the hinging device 16 shown at the left of FIGURE 1, and applying it over the top of the container rear wall 26 in such a manner that the openings or recesses 56 are aligned with the respective recesses 70, after which the hinging device is pressed downwardly with respect to the wall until the projections 52 slip into the respective openings 70, and behind their upper walls 71, in the manner suggested by FIGURE 5. Recesses 56 thus serve as a locating or orientating arrangement for properly aligning projections 52 with openings 70. The resiliency of walls 44, and their proportioning with respect to wall 26, should be such as to provide a snap fit between projections 52 and openings 70.

The cover 14 is then turned at right angles with respect to its position of FIGURE 1 (and thus to the position indicated at 14*a* in FIGURE 2) to dispose the left hand pintle 72 (in the showing of FIGURE 1) in alignment with slot 64 (this positioning should be 90 degrees counterclockwise of the position of FIGURE 1), after which the pintle is moved downwardly into engagement with the rounded recess 66, and then the cover returned to substantially the position of FIGURE 1 to dispose the pintle or pin 72 in substantial parallelism with the hinge device walls 44 and container wall 66 and under the oppositely projecting fingers 62.

Then the second hinging device 16 is positioned at right angles to the other pintle or pin 72 and moved to dispose such pin or pintle 72 in the slot 64 thereof, after which this second hinge device 16 is turned back into alignment with wall 66, and then pressed on to the wall to dispose its pointed projections 52 in the second set of recesses 70. The distance between web 42 and finger flanges 62 of each hinge device is made sufficiently wide to permit cover 14 to be angled with respect to the container 12 as required to perform these movements.

Alternately, both the hinging devices 16 may be applied to cover 14 before either are applied to container wall 26.

The tops 73 of the finger flanges 62 may be rounded as required to close any gap between cover 14 and such flanges as might appear at 75 in any position of cover 14 with respect to container 12.

This arrangement will be found to securely and hingedly mount the cover 14 on container 12. The hinging devices 16 are not subject to accidental dislodgement from the container 26 due to the engagement of the projections 52 in the recesses 70, and the container 10 when assembled as described above will serve all the purposes of the more complex and expensive types of containers well known to the art.

In the embodiment of FIGURES 6 and 7, which is generally indicated by reference numeral 90, the walls 44, their projections 52, and the web 42 are the same as described above. However, the pintle engaging structure comprises a plurality of angled fingers 92 which are at least three in number, and where the number is less than four as in the embodiment of FIGURES 6 and 7, two of the fingers 92 are positioned in spaced relation on one edge of the web 42 while a single finger 92 is positioned on the other edge of web 42 between the first mentioned fingers 92. In addition, the ends 94 of the respective finger overhanging flanges 93 are tapered as at 96, and only ends 94 of the finger flanges are disposed in indigitated overlapping relation, as indicated in FIGURE 7, and in such a manner that the tapered surfaces 94 together define a pintle or pin receiving recess 98 against which a pintle or pin 72 of cover 14 may be pressed to separate the fingers 92 as may be required to lodge the pintle 72 in the hinge seat 100.

The hinging devices 90 may be applied in any suitable manner to the container 12 and cover 14, though in practice only a single hinging device 90 need be used to hinge the cover to the container in view of the fact that the spaced fingers 92 will hold any pintle 72 formed in cover 14 in substantial parallelism with wall 26 due to the bracing positioning of these fingers. The container to which the hinging device 90 is applied will thus be initially formed with a single set of openings 70 in a wall corresponding to wall 26 (presumably in a centrally located position), and a single pintle 72 would be formed in a cover member corresponding to cover 14, after which the hinging device 90 would be applied to the cover, and then to the wall 26 in the manner described above.

It will therefore be seen that I have provided a hinge construction or device contemplating a channel-shaped body provided with locking inwardly projecting angled protuberances and angled, overhanging fingers arranged in interdigitated arrangement to define a hinge seat for a pintle or pin structure formed in a cover that is to be applied to the container. While the hinge devices illustrated are very simple in nature, they effectively hingedly mount covers on containers from paperboard and the like substances which are characterized by their inability to provide a suitable purchase for nails, screws, rivets or the like, but which also do not have the objectionable brittleness characteristics that have been encountered in connection with conventional plastic containers.

While the walls 44 of the hinge devices and their protuberances or projections 52 must be spaced and proportioned to accommodate wall thicknesses of the various types of containers now formed from paperboard and the like, the only critical requirement is that the projections 52 protrude sufficiently into the respective container wall recesses 70 to preclude withdrawal of the hinging devices from the container walls; while the wedge-shaped configuration suggested by FIGURE 5 is preferred for the projections 52, rounded protuberances would be satisfactory.

The foregoing description and the drawings are given merely to explain and illustrate my invention and the invention is not to be limited thereto, except insofar as the appended claims are so limited, since those skilled in the art who have my disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

I claim:

1. In a container structure including a receptacle defining an open top and a side wall structure, and a closure for closing the receptacle top with the closure including a pintle structure along one edge thereof that is spaced from the closure along its mid portion and connected to the closure at its ends, a device for hinging the closure to the receptacle comprising a channel shaped member defining a pair of spaced parallel walls spaced to be received over one edge of the receptacle side wall structure and a web portion, with said walls projecting from the same side of said web portion, protuberance means projecting from the inner surface of one of said walls for locking engagement with the side wall of the receptacle when the side wall structure is received between said walls, said device further including a pair of fingers projecting from the other side of said web portion, said fingers being spaced from each other longitudinally of said member a dimension that is at least equal to the thickness of said pintle structure, one of said fingers being disposed adjacent one edge of said web portion and the other of said fingers being disposed adjacent the other edge of said web portion, said one finger having its end portion angled in the direction of said other web portion edge and said other finger having its end portion angled in the direction of said one web portion edge, with the angle portions of said fingers being spaced from said web a dimension that is at least equal to the thickness of said pintle structure, said fingers thereby defining a seat for the pintle structure, whereby the pintle structure may be applied to said seat by disposing the pintle structure at right angles to said device walls, inserting the pintle structure in the space between said fingers that separates them longitudinally of said member, and then swinging the pintle structure into substantial parallelism and under said angled portions of said fingers.



2. A container structure comprising a receptacle defining an open top and a side wall structure, a closure for closing the receptacle top with the closure including a pintle structure along one edge thereof that is spaced from the closure along its mid portion and connected to the closure at its ends, and a device for hinging the closure to said receptacle, said device comprising a channel shaped member defining a pair of spaced parallel walls spaced to be received over one end of the receptacle side wall structure, and a web portion with said walls projecting from the same side of said web portion, protuberance means projecting from the inner surface of one of said walls for locking engagement with the side wall of the receptacle when the side wall structure of the receptacle is received between said walls, said device further including a pair of fingers projecting from the other side of said web portion, said fingers being spaced from each other longitudinally of said member a dimension that is at least equal to the thickness of said pintle structure, one of said fingers being disposed adjacent one end of said web portion and the other of said fingers being disposed adjacent the other end of said web portion, said one finger having its end portion angled in the direction of said other web portion edge and said other finger having its end portion angled in the direction of said one web portion edge, with the angled portions of said fingers being spaced from said web portion a dimension that is at least equal to the thickness of said pintle structure, said fingers thereby defining a seat for the pintle structure, whereby the pintle structure may be applied to said seat by disposing the pintle structure at right angles to said walls, inserting said pintle structure in the space between said fingers that separates them longitudinally of said member, and then swinging same into substantial parallelism with said walls.

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