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RECEPTACLE HAVING A HANDLE

Filed Jan. 23, 1958

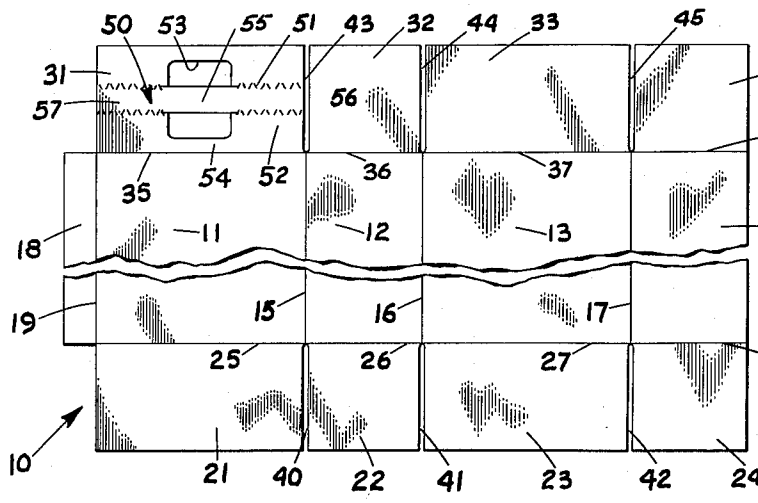


FIG. 1

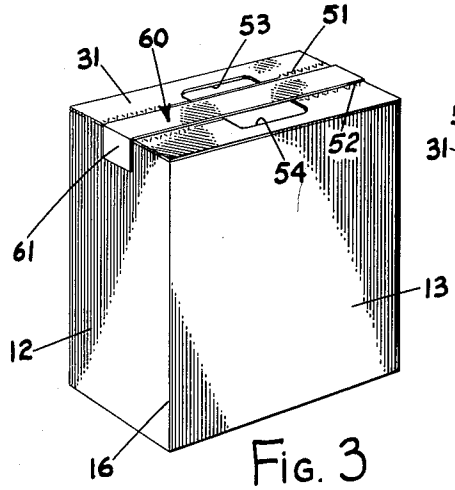


FIG. 3

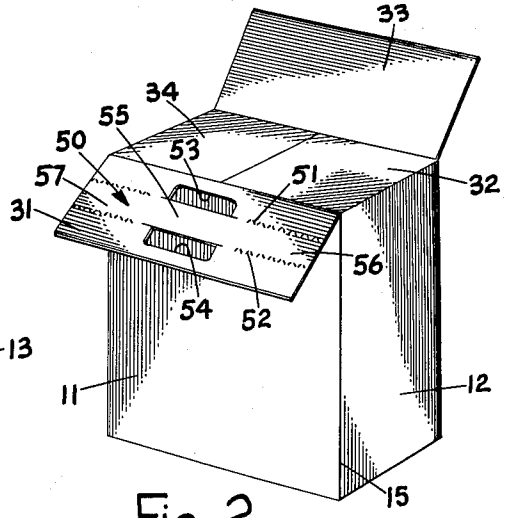


FIG. 2

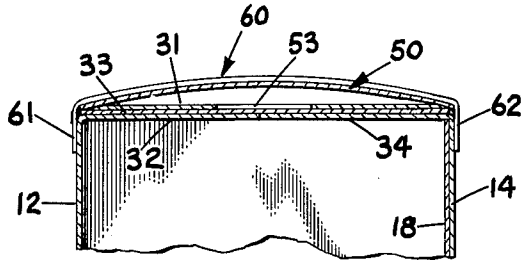


FIG. 4

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RECEPTACLE HAVING A HANDLE

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This invention relates to paper board boxes generally and more particularly to a heavy duty box having an improved carrying handle.

Paper board boxes are used to package numerous different products. It is necessary that the cost of the boxes be kept to a minimum to preserve the profits of the packaged product. The cost of paper board boxes is reflected in the type of paper board material used, the complexity of the paper board blank required, the loss of material in forming the blank, the number of operations required to form the blank and later to fold and erect the box, the ease of handling the box blanks, the ease of grouping numbers of boxes together for shipment, and numerous other factors.

It is sometimes desirable to have a paper board box include a carrying handle. Carrying handles may be formed from the paper board box blank or may be separately formed and later attached to the box blank or erected box. Separately formed handles require additional materials and equipment to form and assemble the handle to the blank or erected box. Either form of handle, when made a part of the box blank, often proves obstructive to the stacking of the box blanks on top of each other and side by side. If the handle is one which is later attached to the erected box, it is frequently a hinderance to conveyor transfer, group stacking, arranging the boxes for display purposes, etc.

Carrying handles are most frequently attached to either a top or side wall of the erected box. The full weight of the box and its contents are required to be carried by the handle engaged top or side wall of the box. Unless the box is reinforced in the vicinity of the carrying handle, it will frequently tear under a heavy load or some slight misuse. Having the paper board box reinforced to accommodate a carrying handle, or the handle formed in a more complicated manner for reinforcement purposes, is always expensive.

One of the more commonly known and used paper board box receptacles is that formed from a rectangular paper board blank to include adjacent side and end walls having closure flaps provided at each end thereof. This is a simple paper board blank to form, involves no complicated forming dies, there is no appreciable loss of materials, and the blank lies flat for shipment. The paper board box which is formed from the blank has no obstructions to interfere with the group packaging of numbers of the boxes for shipment. Such paper board boxes are commonly used for household laundry soap, and numerous other products.

Producers of the products commonly packaged in the simple paper board boxes just described have lately begun to supply their product in larger and larger sizes. These extra lareg economy sized packages are very awkward for customers to carry and require some form of carrying handle. However, since the price of the product is reduced in the larger sizes to attract customers it is impractical for the producer of these goods to provide a more expensive receptacle for his product; such as

would be involved in having a package including any of the commonly known carrying handles. Furthermore, most commonly known types of carrying handles for paper board boxes would be totally inadequate for the heavier loads to be carried by these containers. Those handles which are formed solely as a part of the box blank, as in dress or suit boxes and the like, would prove totally inadequate. Those handles which might be separately formed and attached to the erected box are too expensive to provide and are unsuitable for several of the reasons mentioned.

This invention is particularly directed to an inexpensive heavy duty paper board box having an improved carrying handle provided therewith. The paper board material is not required to be of any heavier construction because of the carrying handle. The box blank is formed in the manner of the simplest of paper board box blanks. During the blanking operation, one of the closure flaps of the paper board box blank is adapted to later provide the carrying handle. However, the handle portion remains flat within the closure flap and presents no obstruction to a stacking of the blanks for shipment. Furthermore, the handle forming part of the blank is so disposed that it cannot be inadvertently damaged or broken.

The disclosed paper board box blank is readily erected into a box or receptacle shape. The handle forming part of the box blank remains undisturbed within the closure flap. The closure flap is used to close the receptacle in the conventionally known manner.

Except for providing for the handle in the blanking operation, the disclosed paper board box is formed, handled, erected, etc., in the conventionally known manner of the most simple of paper board boxes.

After the closure flap, which includes the handle portion, is secured in place, a reinforcing member is secured across the top of the paper board box and is engaged with the side walls thereof. This reinforcing member is preferably a reinforced tape, including nylon threads or the like, and has no appreciable thickness. The width of the reinforcing tape is only such as required by the width of the handle part formed in the receptacle closure flap.

This completes the packaging of the product and provides a handle member for later use by the customer. The handle portion remains a part of the closure flap and with the thin reinforcing tape remains unobstructive to the group packaging of the individual paper board boxes for shipment.

The handle carrying member is made accessible by the consumer in selecting the paper board box container for purchase. The uppermost closure flap includes hand hold cutouts or accesses on each side of the handle forming part of the cover flap. When the customer reaches for the box his hand engages the part of the carrying handle extending across the handle access area. In grasping the handle to lift the box the handle is separated from the uppermost closure flap. The handle portion and the reinforcing member provide a lifting strap which is engaged with the side walls of the container rather than the top thereof. The weight of the package is distributed between the two side walls and across the bottom of the package and is adequately supported by the disclosed handle.

In the drawings:

Fig. 1 is a paper board box blank formed to include the carrying handle hereinafter described.

Fig. 2 is a perspective view of a paper board box formed from the paper board blank of Fig. 1 and having the closure flaps partly open.

Fig. 3 is a perspective view of the paper board box shown in Fig. 2 having the closure flaps closed and the handle portion of this invention ready for use.

Fig. 4 is a vertical cross sectional view of a paper board box showing the handle portion disposed for use.

The paper board box blank **10**, shown by Fig. 1, includes adjacently disposed and contiguous side and end wall forming sections **11**, **12**, **13** and **14** separated by fold lines **15**, **16** and **17**. A gluing flap **18** is connected to side wall section **11** along fold line **19** and is secured to the inside face of side wall section **14** when the blank is folded into a tube. Flap **18** is shown secured to the end wall section **14** in the other figures of the drawing.

Bottom closure flaps **21**, **22**, **23** and **24** are provided at one end of the wall sections **11**, **12**, **13** and **14** respectively. They are defined from the wall sections by fold lines **25**, **26**, **27** and **28** and are separated from each other by cut lines, or cutout separations, **40**, **41** and **42**.

Top closure flaps **31**, **32**, **33** and **34** also extend from the other end of the wall sections **11**, **12**, **13** and **14**, respectively. The top closure flaps are defined from the wall sections by fold lines **35**, **36**, **37** and **38** and are separated from each other by cut lines, or cutout separations, **43**, **44** and **45**.

One of the top closure flaps, in this instance side wall flap **31**, is formed to include a carrying handle part **50**. This is accomplished by having parallel spaced lines of separation or weakness **51** and **52** formed in the cover flap. The lines of weakness **51** and **52** are shown as tear perforations disposed across the cover or closure flap **31** parallel to and spaced from both the free end of the flap and the fold line **35**. The tear perforations **51** and **52** are shown centered within the cover flap **31** and, as formed, retain the handle part **50** as a part of the cover flap.

The tear perforations, or lines of weakness, **51** and **52** are intersected by hand hold cutouts or accesses **53** and **54** respectively. The one cutout **53** is formed from the separation line **51** towards the free end of the cover flap **31**. The other hand hold cutout **54** is formed from the other separation line **52** towards the fold line **35**.

The carrying handle **50**, as it lies within the cover flap **31**, includes the handle portion **55** between the cutouts **53** and **54**, and the end portions **56** and **57** which lie between the lines of weakness **51** and **52** at each end of the cover flap.

The paper board box blank **10** is formed to the shape of the receptacle or container shown in Figs. 2 and 3 by folding the wall sections **11**, **12**, **13** and **14** to assume right angles to each other and securing the glue flap **18** to end wall **14**. The fold lines **15**, **16**, **17** and **19** become the side wall corners of the box member.

The bottom closure flaps **22** and **24** are folded across the bottom of the box and then the flaps **21** and **24** are folded over them. The bottom of the receptacle thus includes three paper board thicknesses; that of both side wall flaps **21** and **24** and of one of the end wall flaps **21** and **24** near each end wall.

The bottom closure flaps **21**, **22**, **23** and **24** are secured together by adhesive bonding, stapling or any other suitable means.

The top closure flaps **31**, **32**, **33** and **34** are folded together in a similar manner to that of the bottom closure flaps. The end flaps **32** and **34** are first folded in over the open upper end of the box, as shown in Fig. 2. The side wall closure flap **33** is next disposed over the end flaps **32** and **34**. The cover flap **31** is folded last over the top of the container. This disposes the handle part **50**, which is formed in cover closure flap **31**, uppermost on the closed receptacle or box. The closure flap **33** lies directly under the hand hold accesses **53** and **54**.

The cover closure flaps **31**, **32**, **33** and **34** may be secured together in any of a number of conventionally known manners. These include adhesive bonding, stapling or other means. In securing the cover closures together it is necessary that the handle part **50**, of cover flap **31**, not be secured to cover flap **33**.

After the container member is closed, a long, narrow and relatively thin reinforcing member **60** is secured across cover flap **31**. The reinforcing member **60** is preferably of high tensile strength such as one of oriented glass or synthetic resin fibers embedded in a suitable resinous matrix or a paper tape reinforced with a suitable high tensile strength material such as nylon threads. The reinforcing member **60** overlaps the closure flap **31** and includes ends **61** and **62** engaged and secured to the side walls **12** and **14** of the container member.

The box thus far described includes relatively flat side walls and closed ends. The reinforcing tape member **60** lies flat against the end closure formed by closure flap **31**. It is too thin to create an unevenness in the top surface of the carton which will be significant in the stacking of the cartons. The handle presents no obstruction to stacking the boxes for shipment or display either vertically or side by side. The receptacles may be moved on conveyors, shifted relative to each other, and handled in the same manner as boxes which do not include carrying handles. The flatness of the handle structure eliminates the danger of its becoming caught in handling equipment such as conveyors. This is important because it frequently results in interference with the conveyoring equipment of damage to the carton.

The disclosed receptacle is adapted to provide a carrying handle in the following manner:

When a customer reaches for one of the receptacles, formed as disclosed, the customer inserts his fingers through one of the hand hold cutouts **53** and **54** under the central portion **55** of the handle **50**. The customer's fingers grasp the handle part **55** and the reinforcing tape member **60** secured thereto. As the box is lifted, the handle ends **56** and **57** separate from the cover flap **31** along the tear perforation lines **51** and **52**. The ends **61** and **62** of the reinforcing tape member **60** remain engaged with the side walls **12** and **14** of the receptacle and the carrying strap is disposed as shown in Fig. 4. The weight of the contents of the receptacle is carried by the side walls **12** and **14** and is distributed between them. The primary weight of the carton is supported by the tape **60**. The transfer of stresses between the tape and the carton occurs exclusively in the area of attachment of the ends of the tape to the sides of the carton. This transfer occurs in shear providing the strongest possible structural arrangement for both the adhesive and the materials involved. Further, since these are substantially inwardly directed vectors of force at these points, the heavier the load the more tightly the tape is caused to clamp against the side faces of the box.

The paper board material forming the handle beneath the tape gives the grip portion of the handle lateral resistance to compression. This prevents the handle from crushing together like a rope as the carton is lifted. The wide handle distributes the load on the user's hand, preventing it from cutting or hurting him. This is particularly important in heavy cartons.

This carrying strap has proven suitable for use with packages weighing 25, 50 or more pounds and is structurally adequate for innumerable products being offered in large, economy size containers. The strength of the carrying strap is principally dependent on the strength of the paper board box material used since the reinforcing tape ends **61** and **62** may be made to overlap the side walls of the container member as much as proves necessary. However, because the joint between the tape and the box acts in shear, severe loads can be supported by conventional side wall materials since the invention takes advantage of the best structural characteristics of the paper board material used.

While a preferred embodiment of this invention has been described, it will be understood that other modifications and improvements may be made thereto. Such of these modifications and improvements as incorporate the principles of this invention are to be considered as in-

cluded in the hereinafter appended claims unless these claims by their language expressly state otherwise.

I claim:

1. A box having a handle forming means, comprising: a bottom; four vertical side walls; a cover forming a closure for said box; a pair of spaced, generally parallel perforated tear lines formed in said cover; a pair of hand hold cutouts formed in said cover, said hand hold cutouts lying outwardly of and adjacent to said perforated tear lines; and a separate reinforcing member overlying and secured to a pair of side walls of the box, said reinforcing member lying above said cover and bearing against that portion thereof lying between said perforated tear lines whereby said box may be held closed by said member, said member and said portion being capable of together forming a handle.

2. A box as defined in claim 1, said reinforcing member comprised of a strip of tape.

3. A box having a handle forming means, comprising: a bottom; four upstanding side walls; a plurality of cover flaps forming a top closure for the box; a pair of perforated tear lines formed in the uppermost of said cover flaps, said perforated tear lines lying generally parallel

to each other and extending generally to opposed edges of the top closure formed by said cover flaps; a pair of hand hold cutouts formed to lie adjacent said perforated tear lines and outwardly thereof; and a separate reinforcing member overlying and secured to a pair of opposed side walls of the box, said reinforcing member lying above the closure formed by said cover flaps and bearing against that portion thereof lying between said perforated tear lines whereby said box may be held closed by said member, said member and said portion being capable of together forming a handle.

4. A box as defined in claim 3, said reinforcing member comprised of a strip of tape.

References Cited in the file of this patent

UNITED STATES PATENTS

1,524,399	Krueger	Jan. 27, 1925
1,974,792	Berney	Sept. 25, 1934
2,639,082	Goldsmith	May 19, 1953
2,797,856	Jaeschke	July 2, 1957
2,842,304	Ringler	July 8, 1958
2,864,547	Guyer	Dec. 16, 1958
2,868,433	Anderson	Jan. 13, 1959