Sept. 24, 1957 R. E. VAN ROSEN 2,807,407

HANDLE FOR PAPERBOARD CONTAINERS AND THE LIKE

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Fig. 1.

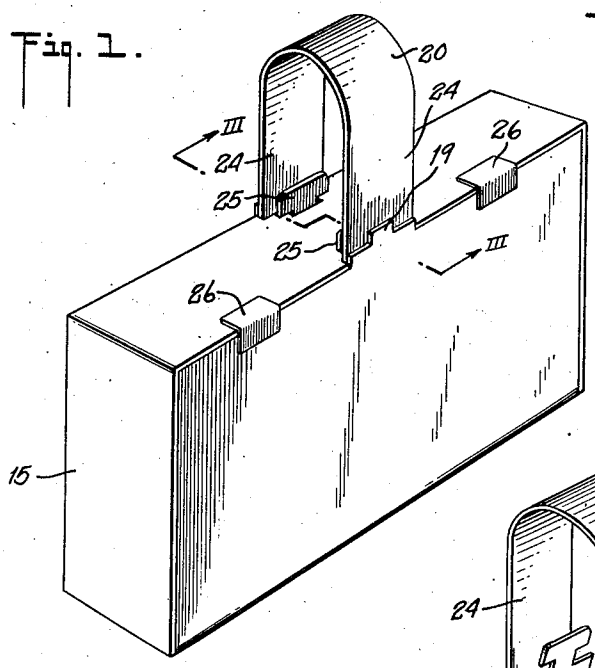


Fig. 1a.

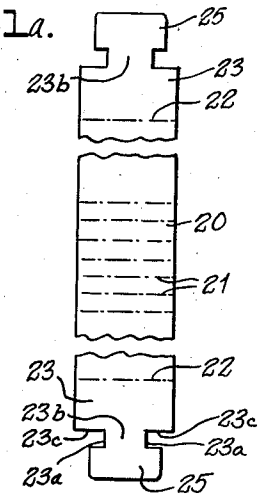


Fig. 2.

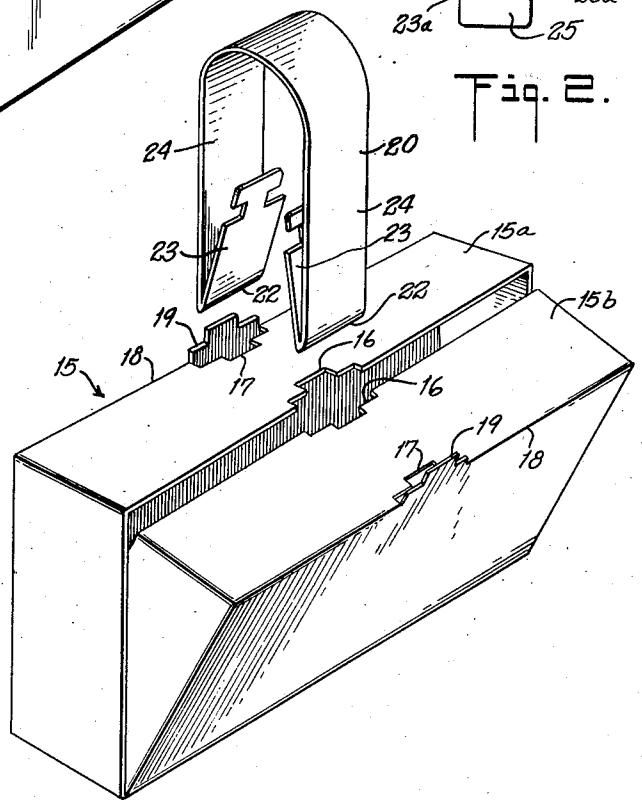
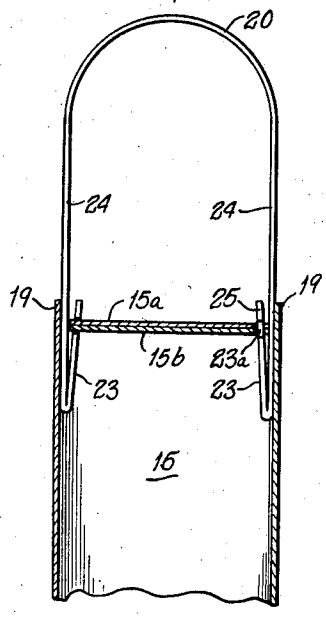


Fig. 3.



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HANDLE FOR PAPERBOARD CONTAINERS AND THE LIKE

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Fig. 4.

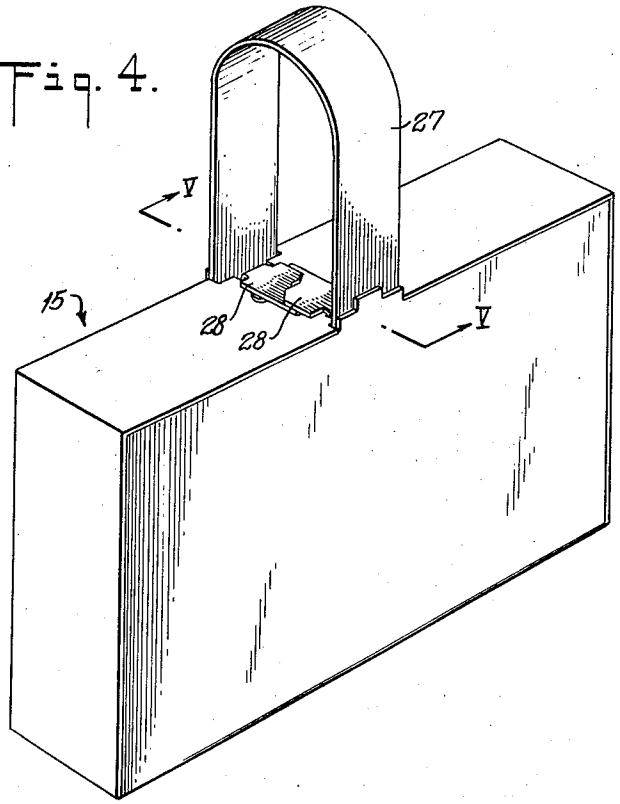


Fig. 5.

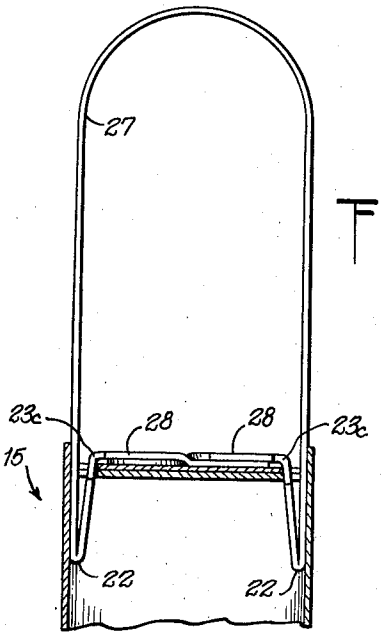
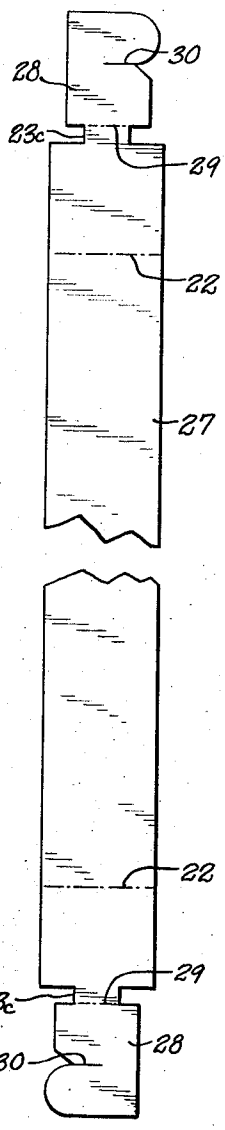


Fig. 6.



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HANDLE FOR PAPERBOARD CONTAINERS AND THE LIKE

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Fig. 7.

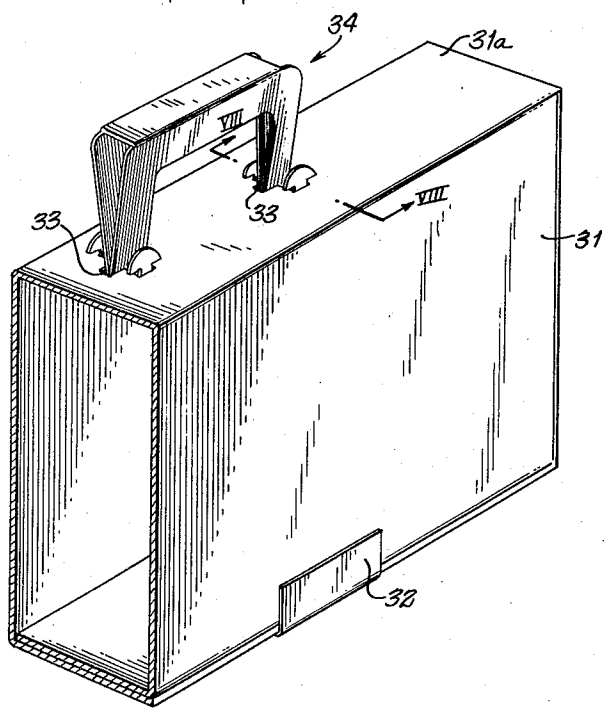

Fig. 8.

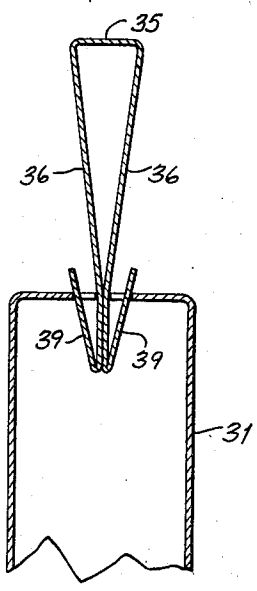

Fig. 9.

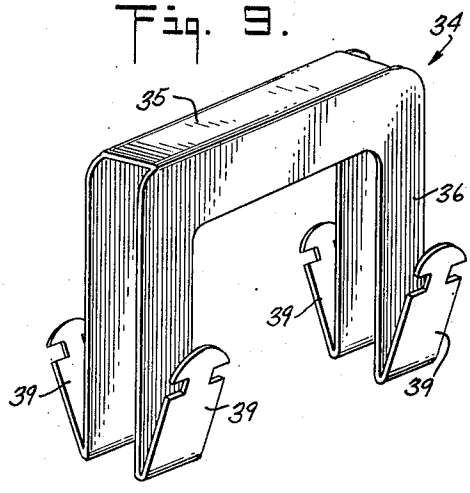

Fig. 10.

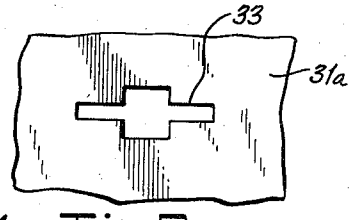

Fig. 9a.

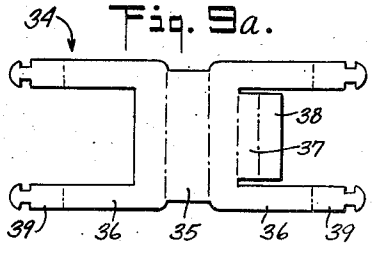

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Fig. 11

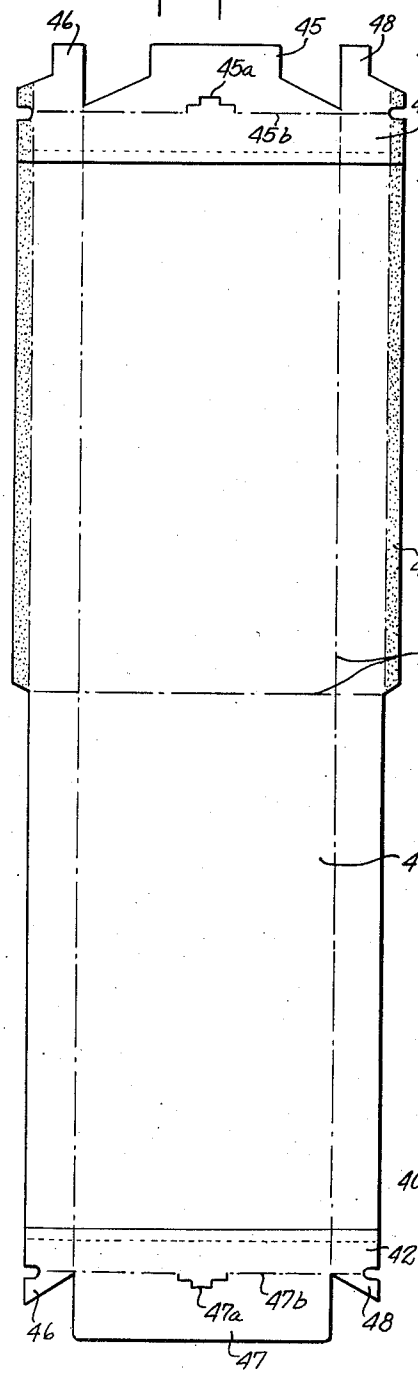


Fig. 12.

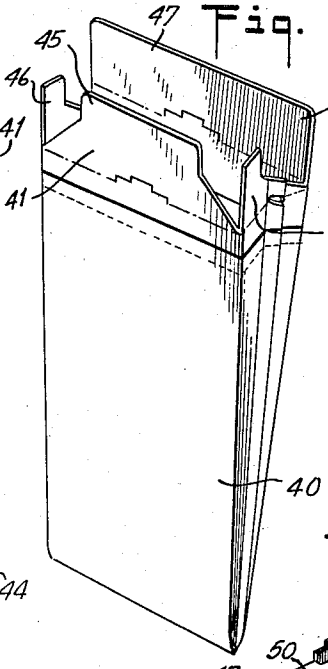


Fig. 13.

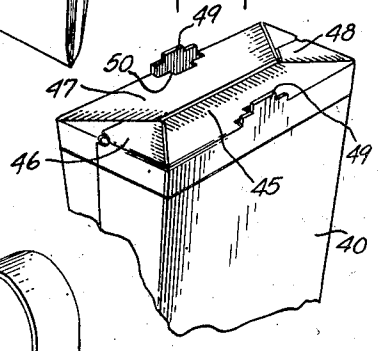
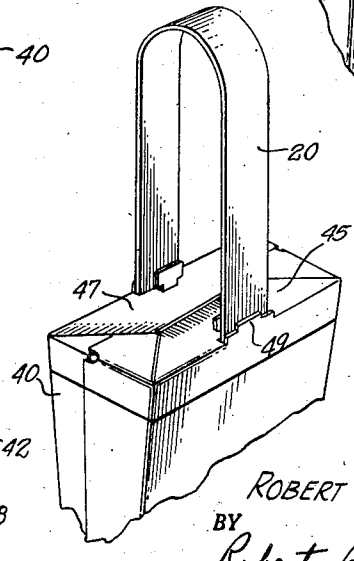


Fig. 14.



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2,807,407

HANDLE FOR PAPERBOARD CONTAINERS AND THE LIKE

Robert E. Van Rosen, New York, N. Y.

Application April 27, 1955, Serial No. 504,271

1 Claim. (Cl. 229—52)

This invention relates to handles to be applied to containers of various kinds and sizes, and particularly to handles adapted for use with paperboard or fibre boxes which are provided with specially shaped slots or apertures through which part of the handle may project to engage the box.

The slots may be in two overlapping parts of the box so that the parts and slots register when the box is closed. The handle may then be inserted through the registered slots. Such a handle may be constructed, in accordance with one feature of the invention to act as a locking device, holding the box closed and thus eliminating use of glue-tape, or other conventional fastening means.

The handle may be cut or formed from a single piece of material which may be scored or otherwise marked to aid in folding the handle to put it in final form for use.

The handle cannot be used without the specially shaped slots and containers having such slots are an important part of this invention. Both the handles and the containers may assume different shapes and proportions, the only necessary structures being the locking devices of the handle and the special contours of the slots.

An object of the invention is to provide an improved handle which is readily attachable to a separately manufactured container. Another object is to provide an improved container suitable for cooperation with such a handle.

A further object of the invention is to provide improved handles and containers of the type described which are suitable for manufacture from paperboard.

A further object of the invention is to provide improved handles and containers of the type described in which the stresses due to the load in the container are distributed over substantial areas of the material. A further object is to construct the handle and container so that localized shear stresses are avoided.

A further object is to provide a handle and container of the type described, in which the handle serves as a lock to hold the container closed.

The foregoing and other objects of the invention are attained, in the container and handle structures described herein, by providing the container with one or more slots, each slot having a wide portion and an adjacent narrow portion, and by forming the handle with a leg which fits within the wide portion of the slot and a folded panel on the end of the leg which also fits within the wide portion of the slot, but which has narrow neck portion fitting within the narrow portion of the slot. When the panel is folded back against the leg and the folded end inserted through the wide portion of the slot, the resilience of the material causes the narrow neck of the panel to spring into the narrow portion of the slot, so that a shoulder or shoulders adjacent the neck portion engages the adjacent inner surface of the container. The container may then be lifted by the handle with the weight of the container resting on the shoulders. It is desirable

to provide the panel at the end of the handle with an end tab wider than the neck portion and wider than the narrow portion of the slot, which end tab is effective to limit the movement of the handle inwardly of the container.

In one modification of the invention described herein, two opposed slots are provided along the opposite edges of one wall of the container, the two slots having a broad T-shape with the stems of the T's extending toward each other. The handle for that modification comprises a single strip of paperboard bent in the form of a U, with two legs and panels which lock in their respective slots. According to a further modification, the tab ends of the panel may be provided with cooperating locking means to hold the sides of the handle together. When such locking means is used with the handle on the openable side of a hinged container, the locking means is effective to hold the container closed.

In another modification of the invention, the slots are cross-shaped, instead of T-shaped, and the handle is of the well known luggage type, having two legs on each end of the handle, each pair of legs being inserted in one of the slots.

According to another modification of the invention, a paperboard closure is fastened to the end of a bag of more flexible material, the handle being thereafter applied to the paperboard closure.

Other objects and advantages of the invention will become apparent from a consideration of the following description, taken together with the accompanying drawings.

In the drawings:

Fig. 1 is a perspective drawing of a complete box provided with special slots and a handle in accordance with the present invention;

Fig. 1*a* is a plan view of a blank for forming the handle of Fig. 1;

Fig. 2 is a perspective view of the box of Fig. 1 partially open to show more clearly the shape and relative positions of the slots and cutouts;

Fig. 3 is a fragmentary cross-sectional view taken on the line III—III of Fig. 1;

Fig. 4 is a perspective view of a modified form of box and handle embodying the invention including a novel box-locking feature;

Fig. 5 is a fragmentary cross-sectional view taken on the line V—V of Fig. 4;

Fig. 6 is a plan view of a blank for forming the handle of Figs. 4 and 5;

Fig. 7 is a perspective fragmentary view of a modified form of hinged cover retail box and handle embodying the invention;

Fig. 8 is a fragmentary sectional view taken on the line VIII—VIII of Fig. 7;

Fig. 9 is a perspective view of the handle of Fig. 7 folded and ready for insertion;

Fig. 9*a* is a plan view, on a reduced scale, of a blank for making the handle of Fig. 7;

Fig. 10 is a fragmentary plan view showing the shape of slot used in Fig. 7;

Fig. 11 is a plan view of a blank of a paper shoebag embodying the invention;

Fig. 12 shows a perspective view of a shoebag formed from the blank of Fig. 11, ready for closing;

Fig. 13 is a fragmentary perspective view of the shoebag of Fig. 12, with the top folded and closed; and

Fig. 14 is a perspective view of the shoebag with the handle inserted.

Figs. 1 to 3

These figures illustrate a paperboard container 15 of a type known in the art as a hinged cover retail box, having a handle 20 constructed in accordance with the present invention.

As shown in Fig. 2, the container **15** has two walls **15***a* and **15***b* which overlap each other in a registering relationship when the box is closed. Two opposed slots **16** and **17** are provided in the walls **15***a* and **15***b*, preferably at the middle of the longer edges of those walls. The slots **16** and **17** are generally T-shaped, with the cross-bars of the T's adjacent the respective edges of the box wall, and with the stems of the T's extending toward one another. The cross-bars of the T-shaped slots are hereinafter referred to as the wide portions of the slots and the stem portions are hereinafter referred to as the narrow portions. The slots **16** are formed by cutouts in the edges of the blank from which the container **15** is constructed. The slots **17**, on the other hand, are formed by slits in the box walls **15***a* and **15***b*. Both ends of these slits terminate at fold scores **18** which define the corners of the box, and the scores **18** are interrupted between the ends of the slits, so that when the box is folded there is provided along each upper edge an inverted T-shaped projection **19**.

When the box is closed, the slot **16** in the wall **15***a* moves into registry with the slot **17** in wall **15***b*, and the slot **17** in wall **15***a* moves into registry with the slot **16** in wall **15***b*.

The handle **20** is formed from a blank shown in Fig. 1*a* and consisting of a single die cut or stamped material, preferably paperboard, in which the grain runs the long way, i. e., from top to bottom as the blank is shown in Fig. 1*a*. The central portion of the blank **20** is provided with a plurality of parallel fold scores **21** to facilitate bending of that central portion so that the handle assumes a U-shaped configuration having two legs **24**, as seen in Figs. 1 to 3. Each leg **24** is narrower than the wide portion of the slot and wider than the narrow portion. Two additional transverse fold scores **22** are provided, somewhat nearer the ends of the handle-forming strip than the fold scores **21**. These fold scores **22** define panels **23** between them and the ends of the strip **20**. The strip **20** is bent backwardly along the scores **22**, so that when the handle **20** is turned with its legs **24** downwardly, as shown for example in Fig. 2, then the panels **23** extend upwardly. The opposite sides of the panels **23** are provided with notches **23***a* defining between them a neck **23***b* and shoulders **23***c* at the sides of the notches **23***a* toward the fold scores **22**. Beyond the notches **23***a*, the panel **23** widens out again to form a tab **25**.

After the handle is folded along the central scores **21** to form it in a general U-shaped configuration and along the fold scores **22** to turn the panels **23** backwardly along the legs **24**, then the folds **22** between the legs **24** and panels **23** are inserted through the wide portions of the registering slots **16** and **17**, and the legs **24** of the handle **20** are pushed downwardly. As each leg **24** moves downwardly, the neck **23***b* comes opposite the narrow portion of the associated slot. Since the neck is narrower than the narrow slot portions, the natural resilience of the freshly folded paperboard tends to spring the upper ends of the panels **23** from their associated legs, moving the necks **23***b* into the narrow portions of the slots. The tabs **25** are then effective to prevent further downward movement of the legs **24** into the container. Upon lifting the handle **20**, the shoulders **23***c* engage the inner side of the wall **15***b* and support the weight of the container.

It should be noted that the weight of the container is supported on the full width of the shoulders **23***c* and is transmitted through them and the panel **23** to the fold **22** where it passes the full width of the handle strip **20** to the leg **24** and thence upwardly to the central U-shaped portion of the handle. The shoulders **23***c* and panels **23** are stressed in compression, the load being limited by the buckling strength of the material. The legs **24** are stressed in tension. The only part of the handle which is stressed in shear is at the folds **22**. The stress is there distributed along the full length of the folds and the concentration of material at the folds aids in resisting that stress. Furthermore, the legs **24** at and adjacent that location are backed up by the outer walls of the container and by the T-shaped projections **19**, so that any tendency of the panels **23** or of the lower ends of legs **24** to deform outwardly under the stress of the load is thereby resisted. The gravitational pull of container and its contents is counteracted by the two triangles of forces formed on either side of the container, the only limitations being the inherent tensile and buckling strength of the materials of which both the handle and the container are manufactured.

The load of the container on the panels **23** tends to move their upper ends inwardly of the container, rather than outwardly, and thereby prevents any movement of the panels in a direction which would release the shoulders into the wide portions of the slots so that the handle might pull out.

The box **15** may be held closed by means of glue tape strips **26** (see Fig. 1). Alternatively, it may be closed by stitching, stapling, tying or in any other suitable manner.

Figs. 4 to 6

In these figures, a box **15** which is structurally the same as the box **15** of Figs. 1 to 3 is provided with a handle **27** which differs from the handle **20** of Figs. 1 to 3 only in the structure of the tabs **28** provided at its ends. The handle **27**, like the handle **20**, is formed from a single strip of paperboard or similar material. There is provided on the handle blank **27** at the outer ends of the notches **23***c* another set of fold scores **29**, so that the tabs **28** may be readily bent over toward one another after the handle is inserted in the box. The tabs **28** are provided with any conventional locking means, such as the Arthur locks **30**.

After the handle **27** is assembled with the container **15**, the tabs **20** are bent toward one another and the Arthur lock slits **30** are engaged. The locking tabs **28** then hold the two legs of the handle **27** together and hold the two overlapping walls of the box against separation, thereby locking the box closed.

Figs. 7 to 10

The container **31** of these figures is similar to the container **15** of the previous figures, except that the handle is applied to the hinge wall **31***a* of the container rather than to the overlapping walls at the openable side of the container. The container **31** may be held closed by glue tape **32** or any other suitable means.

The wall **31***a* of the container is provided with two slots **33**, one of which is shown in detail in Fig. 10. These slots **33** are generally cross-shaped, having a wide portion extending parallel to the long side wall **31***a* and two opposed narrow portions extending in opposite directions from the central portions of the slots.

Into the slots **33** there is inserted a handle **34** folded as shown in Fig. 9, from a blank illustrated in Fig. 9*a*. The handle blank **34** comprises a central panel **35** joined along its long edges to a pair of U-shaped leg panels **36**. To the central portion of one of the U-shaped leg panels **36** are attached two additional panels **37** and **38**. The panel **37** folds under the panel **35** to close the gap between the U-shaped leg panels, and the panel **38** is adapted for attachment to the opposite leg panel **36**, thereby forming a luggage type handle including a central bridge of a hollow square cross-section, in a manner well known in the art.

Each U-shaped leg panel **36** is provided at both its ends with a panel **39** having notches, shoulders and locking tabs generally similar to those provided in the panels **23** in Figs. 1 to 3.

The panels **39** are folded back along the outer sides of the legs of the U-shaped panels **36**, the folds being inserted in the wide portions of the slots **33**. The resilience of the paperboard at the folds of the panels **39** is then effective to move the respective necks into the

narrow portions of the slots **33** as the handle moves inwardly of the container. The handle then takes up the position illustrated in Figs. 7 and 8, where the legs of the U-shaped members converge toward one another and at least at their lower ends are effective to back up and reinforce each other. Panel **37** (see Fig. 9*a*) is somewhat narrower than the top panel **35** to allow the convergence of the side panels **36** when the handle is folded. Panel **38** is approximately as wide as the central portion of the U-shaped panel **36**. The purpose of panel **38** is to prevent panel **37** from caving into the inside of the handle when the handle is folded.

Figs. 11 to 14

These figures illustrate the invention as applied to a closure for a shoebag. The bag is made from a blank shown in Fig. 11 and consisting of a bag portion **40** formed of kraft paper or the like and having closure members **41** and **42** glued to opposite ends. The bag may be folded along the crease lines **43**, in a manner well known in the art, and has glued tabs **44** sealable to hold the sides of the bag together. The end closure members **41** and **42** are provided with flaps **45**, **46**, **47** and **48**, which may be folded together in an interlocking manner as illustrated in Fig. 13. Flaps **45** and **47** are provided with slits **45***a* and **47***a*, each adjacent an interruption in the fold scores **45***b* and **47***b* which define the flaps **45** and **47**. When the flaps are folded, as shown in Fig. 13, there are left two T-shaped slots **50** in the closure of the bag, and the two T-shaped projections **49** extending upwardly from the sides of the bag. A handle **20** similar in all respects to the handle **20** of Figs. 1 to 3, may then be inserted in the slots **50** just as the handle **20** is inserted in the slots **16** and **17** of Fig. 1.

Although the slots for receiving the handle ends have been shown and described as either T-shaped or cross-shaped, other slot contours, for example, L-shaped, may be employed, as long as the slots have narrow and wide portions arranged to perform the respective functions of the narrow and wide portions in the slots disclosed herein.

While I have shown and described certain preferred embodiments of my invention, other modifications thereof will readily occur to those skilled in the art, and I therefore intend my invention to be limited only by the appended claim.

I claim:

A handle for a container which is rectangular in cross section and has two spaced T-shaped slots with the stems of the T-shaped slots alined and extending toward one another and each slot having a wide portion and an adjacent narrow portion and said slots located adjacent the opposite edges of one side of said container, a pair of legs and a pair of panels, one for each said leg, one of said legs being receivable in each of said slots with the panel on each leg extending upwardly from the lower end of the leg and inwardly toward the other leg so that the legs projecting through said slots are reinforced by the adjacent sides of the container, said handle comprising legs narrower than said wide portion and wider than said narrow portion and panels substantially as wide as said legs, means resiliently connecting a panel to the lower end of each leg, said leg and corresponding panel being insertable through said wide portion with said panel extending upwardly from the lower end of said companion leg, said connecting means being effective to bias the upper end of said panel away from said leg, said panel including a neck narrower than the narrow portion of the slot and movable into said narrow portion by the bias of said connecting means as said leg and panel are inserted through said wide portion, said panel having at least one shoulder below said neck and adapted to engage the inner side of the top of the container so that the weight of the container is supported on said shoulder and is transmitted through said panel and said connecting means to the lower end of the leg.

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