April 2, 1968 W. E. HIDDING 3,375,949

CARRIER HANDLE

Filed March 20, 1964

Fig. 1.

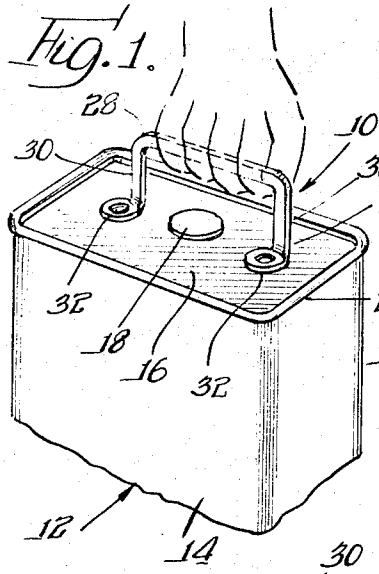


Fig. 2.

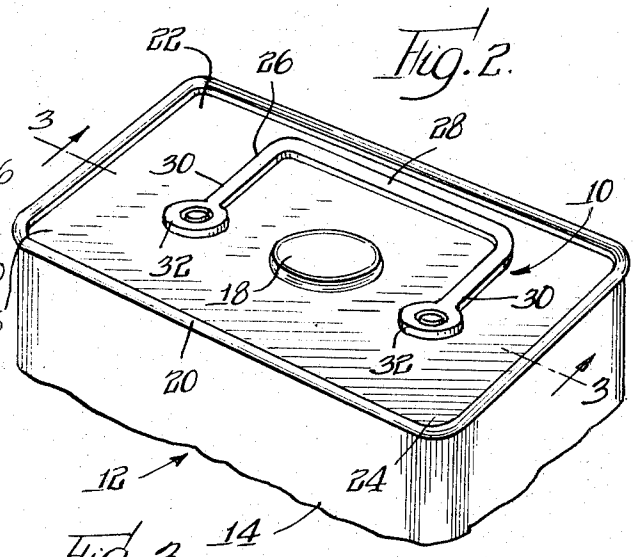


Fig. 3.

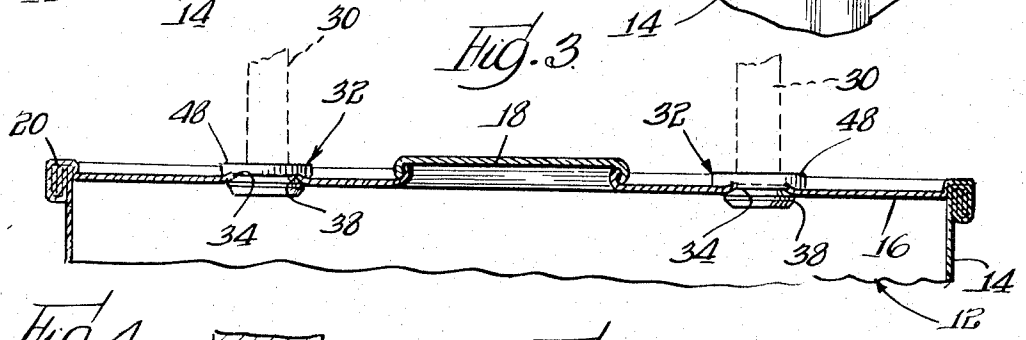


Fig. 4.

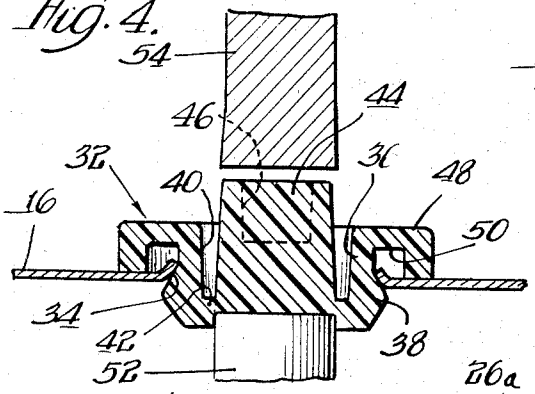


Fig. 5.

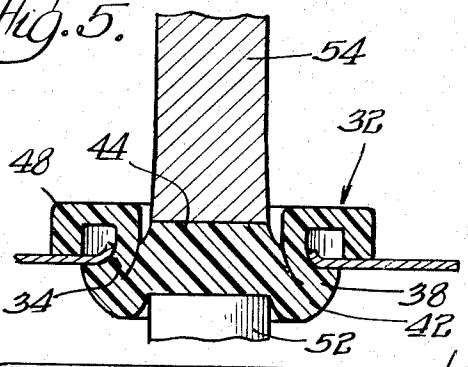


Fig. 6.

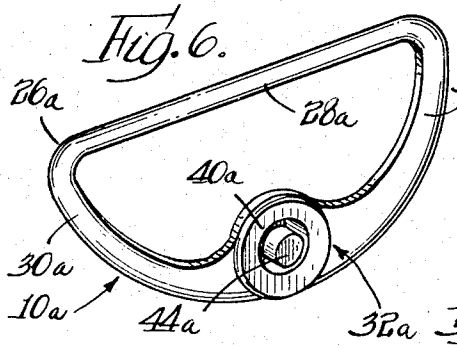
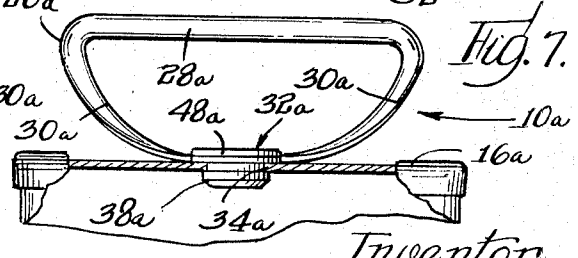


Fig. 7.



Inventor
Walter E. Hidding
By Olson, Trexler, Wolters & Bushnell
attys.

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CARRIER HANDLE

Walter E. Hidding, 505 Banbury Road, Addison, Ill. 60101

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6 Claims. (Cl. 220—94)

This invention relates generally to the packaging arts and relates especially to handle devices that are to be assembled to containers for particular use in transporting the containers and in manipulating the same during pouring therefrom.

It has been proposed heretofore that container handles be fabricated from resinous plastic materials so as to provide a safe comfortable grip. However, plastic handles present a problem when considered for use with metal containers because of the substantial difference in the character of the two materials. This dissimilarity of materials eliminates the possibility of using a fusion joint for attaching the handle to the container. As a consequence, problems have arisen with weakness in the attachment of prior art plastic handles to a metal container and with creating an effective seal at the attachment sites.

Therefore, an important object of the present invention is to provide a handle device having a mounting arrangement which achieves a strong attachment to a cooperating container.

Another object of the invention is to provide a handle device having a mounting arrangement which establishes an effective liquid seal with a cooperative container.

A more general object of the invention is to provide a new and improved handle device for assembling to a container whereby to facilitate transport thereof and pouring therefrom.

A further object of the invention is to provide a resinous plastic handle device of unitary construction whereby to simplify handling and assembly operations.

A still further object of the invention is to provide a handle device including a mounting arrangement that permits alignment of the grip portion across the minor diameter of an oblong or oval container.

These and other objects and features of the invention will become more apparent from a consideration of the following descriptions.

A handle device in accord with the invention includes a handle having a grippable portion and a connective portion secured to the grippable portion. One or more mounting arrangements are provided at the connective portion for coaction with a corresponding number of attachment sites on a container. Each of these mounting arrangements includes a tubular, radially resilient formation having a central bore and a peripheral portion adapted to engage the edges of a hole formed in the container as an attachment site. Each of the mounting arrangements also includes an annular web and a locking member of deformable material connected to the tubular formation by the web. This locking member is provided for deformable expansion into radial engagement with the tubular formation whereby to lock the peripheral portion of the tubular formation in place with respect to the attachment hole in the container.

In order that the principles of the invention may be readily understood, two embodiments thereof, but to which the application is not to be restricted, are shown in the accompanying drawing wherein:

FIG. 1 is a perspective view of an oblong metal container having a handle device constructed in compliance with the invention assembled therewith, the handle device being illustrated in carrying position;

FIG. 2 is an enlarged perspective view of the assembled container and handle device of FIG. 1, showing the handle device in its normal position parallel with and closely hugging the top of the container;

FIG. 3 is an enlarged elevational view taken substantially along the line 3—3 of FIG. 2, the carrying and can-manipulating position of the handle being illustrated in broken outline;

FIG. 4 is an enlarged, central cross-sectional view of one of the mounting arrangements used in the handle device of FIGS. 1–3, the mounting arrangement being shown assembled to a metal can cover and situated in position between a ram or plunger and a cooperating anvil which are used in deformably expanding the locking member of the mounting arrangement;

FIG. 5 is a view similar to the showing of FIG. 4 but illustrating the action of the plunger and anvil in deformably expanding the locking member;

FIG. 6 is a perspective view of a modified embodiment of the handle device of the invention which employs a single mounting arrangement; and

FIG. 7 is a perspective view in somewhat reduced scale showing the handle device of FIG. 6 assembled to a container.

Referring now in detail to the drawings, specifically to FIGS. 1 and 2, a handle device indicated generally by the numeral **10** is seen to be assembled, for purposes of illustration, with an oblong metal can **12** of the type customarily used in packaging automotive anti-freeze. The can **12** includes a body **14** and a lid or cover **16**, the cover **16** having a central filling port which is closed by a crimp-and-expand type cap **18**. In addition, the cover **16** is secured to the body **14** by means of a conventional double seam **20**. In use, the cover **16** is punctured with a vent-hole in a corner region **22** and is cut open with a pouring aperture at a diagonally opposite corner region **24**.

The handle device **10** comprises a generally U-shaped handle **26** which includes a grippable, generally horizontally disposed central portion **28** and legs or end portions **30**. The handle device **10** additionally includes a mounting arrangement or attachment fitting **32** at the terminus of each of the end portions **30**, the mounting arrangements **32** cooperating with suitable attachment sites provided in the cover **16** for use in assembling and affixing the handle device **10** to the container. Considering FIG. 3 for the moment, the can cover **16** is seen to be fashioned with spaced attachment sites that are defined by circular holes **34**. Moreover, each of the mounting arrangements **32** includes a tubular formation **36**, best shown in FIG. 4, each formation **36** having a peripheral portion or ring-like formation **38** that is adapted to be disposed beneath the cover **16** and extending somewhat radially beyond the edges of the cooperating hole **34** to resist extraction therethrough. Continuing with reference to FIG. 4, the tubular formation **36** is seen to be fashioned with a centrally disposed bore **40**.

Each mounting arrangement **32** also includes both an annular web **42** that is located adjacent the lower end of the bore **40** and a plug-like locking member **44** which is connected to the tubular formation **36** by the web **42**. The web **42** is situated in peripheral relationship relative to the locking member **44** and is fabricated to be a relatively thin element in order to permit distortion of the tubular formation **36** in inserting the same in the hole **34**. The locking member **44** is situated within the ring-like formation **38**, confluent therewith through the web **42** and is intended to be deformably expanded to resist radial contraction of the ring-like formation for preventing extraction of the tubular formation **40** from the hole **34**. While the locking member **44** is shown to be fabricated as a solid element, it may, if desired, be fashioned with a central recess, such as the recess indicated in broken outline at **46**, in order to reduce the amount of material required in fabricating the handle device. Recessing of the

locking member in this manner is of advantage when a large diameter locking member is contemplated; and in such circumstances, this recessing of the locking member facilitates its deformable expansion.

Each of the mounting arrangements **32** also includes a flange **48** that is adapted to be disposed above the cover **16** opposed to the ring-like formation **38** in order to trap and retain the plate-like cover therebetween. For additional facility in assembly the mounting arrangement **32** to a can cover **16** with the formation **38** disposed beneath the edges of a hole **34**, the flange member **48** is arranged with an annular recess **50** which permits a moderate amount of swinging or hinging of the outer edge of the flange member relative to its point of connection at the tubular formation **36**.

The various elements of the handle device **10** are advantageously fabricated from a tough, resilient, chemically inert material which may be worked to a smooth, relatively soft surface. When the handle device is so fabricated, the tubular formation **40** and its ring-like appendage **38**, the web **42** and the locking member **44** are resistant to chemically active materials packaged in the can **12**. In addition, no galvanic corrosion is capable of developing between the parts of the metal can and the parts of the handle device. Also, the central portion **28** of the handle **26** defines a safe, comfortable grip. The desired toughness, resiliency, inertness and surface properties are provided in the handle device **10** by fabricating the same from a polyolefinic resinous material such as polyethylene; and in addition to the enumerated features and functions arising from such fabrication, manufacture of the handle device **10** from a tough, resilient material facilitates distortion of the ring-like formation **38** in assembly of a mounting arrangement **32** with a container. More importantly, such fabrication of the mounting arrangements, particularly the locking members **44** thereof, promotes a deformable expansion of the locking member radially into enlargeable engagement with the ring-like formation **38**. This deformable expansion of the member **44** locks the ring-like formation **38** in place relative to the hole **34**.

The assembly of a handle device **10** to a can **12** having a cover **16** which is perforated with apertures **34** and the fixed mounting of the arrangements **32** will become more apparent from a consideration of FIGS. 4 and 5 taken in that order. As has been described hereinabove, the first step in assembly of a handle device to the container cover involves distorting the tubular formation **40** for working the ring-like formation through the hole **34**. This can be achieved by pressing the locking member **44** downwardly; and ordinarily, this initial assembly of the handle device and the can cover **16** is accomplished before the cover is seamed on the body of the can. Thus, there is access to both sides of the mounting arrangement **32** after the first assembly step.

After the initial assembly operation has been completed, an anvil **52** is positioned beneath the locking member **44** and a ram or plunger **54** is aligned overlying the upper end of that member. As is shown in FIG. 5, the ram **54** and the anvil **52** are then brought forceably together for deformably expanding the locking member **44** against the inner sidewalls of the tubular formation **40**, especially in the vicinity of the ring-like formation **38**. This deformable expansion of the locking member **44** may proceed to the point where radial contraction of the ring-like formation **38** is rendered impossible; or alternatively, this deformable expansion may actually proceed to the point of radially enlarging the ring-like formation **38**. The latter procedure forms a better seal with the edges of the hole **34** and insures a stronger attachment. In either event, the web **42** remains intact whereby to establish a perfect liquid seal among the several elements of the mounting arrangement **32**. It is contemplated that sufficient force will be applied using the anvil **52** and the ram **54** for permanent deformation of the locking member **44**.

Moreover, the anvil **52** and the ram **54** may be heated to promote deformation of the locking member **44**.

While a particular embodiment of the invention has been thus far shown and described, it should be understood, of course, that the invention is not strictly limited thereto since many modifications may be made. Therefore and in order to enhance the understanding of the invention, a modified embodiment of the invention is shown in FIGS. 6 and 7. This modified embodiment incorporates certain elements which are similar to those found in the embodiment of FIGS. 1–5; and accordingly, like numerals have been used to designate like parts, the suffix letter "*a*" being employed to distinguish those elements associated with the embodiment of FIGS. 6 and 7.

In the embodiment of FIGS. 6 and 7, the modifications are concerned primarily with rearrangement of the handle device so as to provide a single mounting unit. The strong attachment which is achieved by means of the mounting units of the invention permits this use of a solitary fitting. More specifically, the handle device **10***a* includes a handle **26***a* comprising a substantially horizontal grippable central portion **28***a* and legs or end portions **30***a*, the legs **30***a* converging downwardly from the opposite ends of the central portion. At the confluence of the legs **30***a*, there is situated a single mounting arrangement **32***a* which is similar in construction to the mounting arrangements **32**. Advantageously, the single mounting arrangement **32***a* is situated underlying the midpoint of the grippable central portion **28***a* whereby to establish a balanced structure. As is indicated in FIG. 7, the handle device **10***a*, because of its single mounting arrangement, may be affixed to a can cover with the grippable portion **28***a* situated in alignment across the minor diameter of an oblong or oval cover. The single mounting arrangement **32***a* may also be disposed in the center of a round container.

The specific examples herein shown and described are to be considered as being primarily illustrative. Various changes beyond those described will, no doubt, occur to those skilled in the art; and such changes are to be understood as forming a part of this invention insofar as they fall within the spirit and scope of the appended claims.

The invention is claimed as follows:

1. As an article of manufacture, the combination comprising: means including plate means having an aperture; and handle means of polymeric material, having a grippable portion defined by a flexible band and mounting means secured to said plate means, said mounting means including a resilient, expanded ring-like formation of resilient material disposed beneath said plate means and extending radially beyond the edges of said aperture to resist extraction therethrough, said mounting means further including a locking member forcibly situated within said ring-like formation and permanently deformably expanded to resist radial contraction of said ring-like formation.

2. As an article of manufacture, the combination comprising: means including plate means having an aperture; and handle means of polymeric material, having a grippable portion defined by a flexible band and mounting means secured to said plate means, said mounting means including a resilient, expanded ring-like formation of resilient material disposed beneath said plate means and extending radially beyond the edges of said aperture to resist extraction therethrough, said mounting means further including a flange formation disposed above said plate means in opposition to said ring-like formation and a locking member forcibly situated within said ring-like formation, confluent therewith and permanently deformably expanded to resist radial contraction of said ring-like formation.

3. A handle device for assembly to a container having a top with spaced attachment holes, said handle device comprising: a flexible, inverted U-shaped handle of polymeric material including a grippable central portion and end portions secured to said central portion; and mounting means at each of the end portions of said handle for

cooperation with said attachment holes in assembling said handle device to said container, including a tubular, radially resilient formation integrally joined to the terminus of the corresponding end portion and having a central bore and a peripheral portion adapted to engage the edges of a said hole, said mounting means also including an annular web and a locking member of deformable material connected to said formation exclusively by said web for permanently deformable expansion into radial engagement with said formation whereby to lock said peripheral portion in place with respect to said hole.

4. A handle device for assembly to a container having a top with a single attachment site, said handle device comprising: a flexible handle of polymeric material including a grippable portion and a connective portion secured to said grippable portion and having inwardly converging legs; and mounting means at the confluence of said legs for coaction with said single attachment site in assembling said handle device to said container, said mounting means including a tubular, radially resilient formation integrally joined to the ends of said legs and having a central bore and a peripheral portion adapted to engage the edges of the attachment site, said mounting means further including a locking member of deformable material expandably situatable in said bore for permanently deformable expansion into radial engagement with said formation whereby to lock said peripheral portion in place with respect to the attachment site, said locking member being connected exclusively to the remainder of the handle device through said tubular formation.

5. A handle device according to claim 4 wherein said mounting means is situated underlying the midpoint of said grippable portion.

6. A handle device for assembly to a container having a top with an attachment site defined by a hole, said handle device comprising: a flexible handle of polymeric material including a grippable portion and a connective portion secured to said grippable portion; and mounting means at said connective portion for coaction with said attachment site in assembling said handle device to said container, said mounting means including a tubular, radially resilient formation integrally joined to the terminus of said connective portion and having a central bore and a peripheral portion adapted to engage the edges of said hole, said mounting means further including an annular web and a locking member of deformable material connected to said formation exclusively by said web for permanently deformable expansion into radial engagement with said formation whereby to lock said peripheral portion in place with respect to said hole.

References Cited

UNITED STATES PATENTS

2,086,489	7/1937	Bowersox	220—94
2,657,894	11/1953	Sklenar	220—91
2,697,539	12/1954	Warner	220—94
3,021,976	2/1962	Tracy	220—38.5
3,042,271	7/1962	Winstead.	
3,116,528	1/1964	Poe.	
3,162,086	12/1964	Wells et al.	85—82
3,248,002	4/1966	Song	220—94

FOREIGN PATENTS

247,974	6/1960	Australia.
901,632	1/1954	Germany.

RAPHAEL H. SCHWARTZ, *Primary Examiner.*