April 22, 1958 A. D. STERGES ET AL 2,831,594

GLASS BOTTLE HANDLE STRUCTURES

Filed June 7, 1957

Fig. 1.

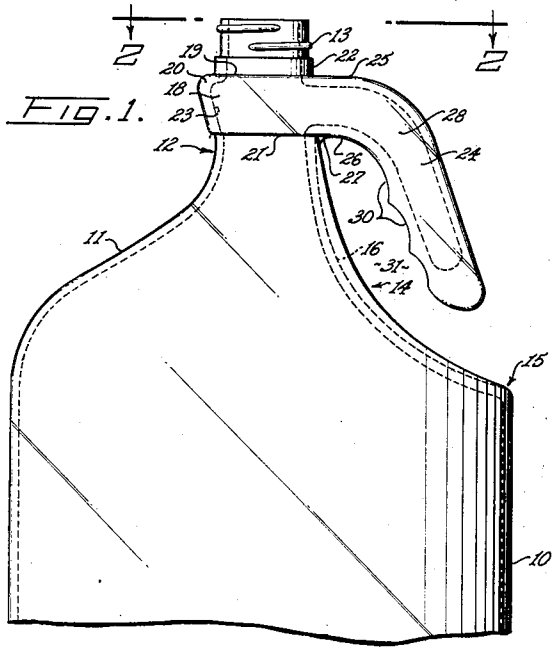


Fig. 2.

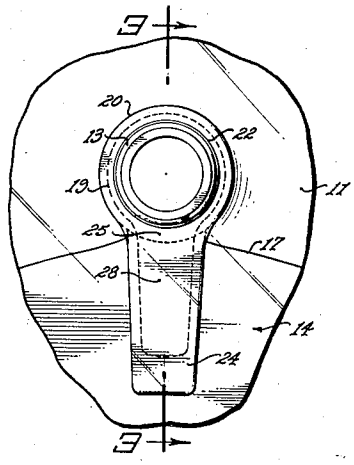


Fig. 4.

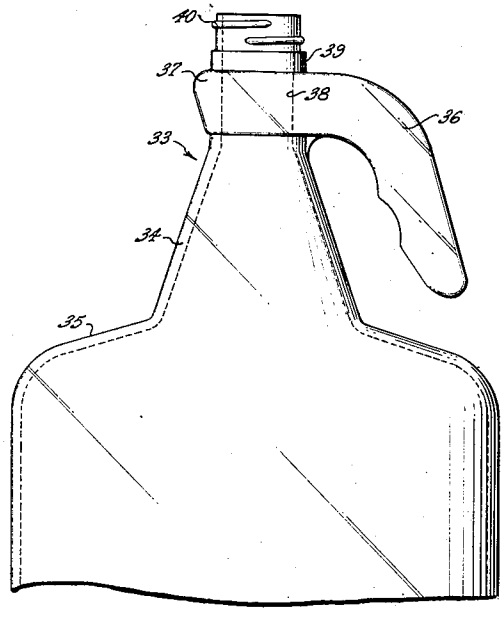
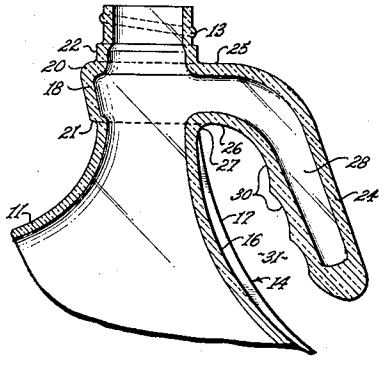


Fig. 3.



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GLASS BOTTLE HANDLE STRUCTURES

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3 Claims. (Cl. 215—1)

This invention relates to improved handle structures for fused vitreous containers, and particularly glass bottles whose size or filled weight are such as to impose considerable load on the handle and its connection with the bottle. Especially desirable are greater strength and convenience of use, in handles for relatively larger bottles containing liquid hypochlorite bleach or other liquids capable of causing damage by the handle and bottle breakage.

Heretofore such bottles commonly have been made with handles in the form of loops fused to the neck position of the bottles, the loops being of such size and formation that the heavy weight of the bottle and its contents is taken by a finger inserted through the loop. Such concentration of the weight renders the bottles tiresome and inconvenient to carry as well as to manipulate in household use. Also, handles with such loop configuration can impose structural weaknesses, particularly at their junctures with the bottle necks, especially unless sharp or abrupt angularities or irregularities (at which strain concentrations can occur) are avoided.

Our primary object is to provide a new form of associated handle and bottle neck, having important structure and functional advantages over all prior structures of which I am aware. In accordance with the invention such association of the handle and neck involves forming the neck portion of the bottle with a projecting rim molded and fused integrally with the neck and handle. As will appear, the handle projects laterally from the neck ring, and preferably has a free grip length extending downwardly and in overlying spaced relation to the shoulder of the bottle below. It has been found that by so forming the handle and in the later described and illustrated shape and dimensional relation to the neck ring, it is possible to give the handle, notwithstanding its free extent, greater strength, load carrying capacity and resistance to break-off from shock or impact, than many of the conventional loop handles heretofore used.

As indicated, added to this structural advantage are the functional benefits of enabling the bottle to be more easily and conveniently carried and handled by reason of the permissible grasp and the handle angularity which contributes to better balance of the bottle both while being carried and tilted for pouring.

This invention contemplates various additional objects and innovations, including such features as internal recessing of the neck ring, and forming the handle with a hollow interior opening from the neck recess.

All these, together with the aforementioned features and objects, will be understood most readily from the following detailed description of certain illustrative embodiments of the invention shown by the accompanying drawing, in which:

Fig. 1 is a view showing in side elevation the upper portion of a glass bottle embodying the invention;

Fig. 2 is a fragmentary plan of Fig. 1;

Fig. 3 is a cross-section on line 3—3 of Fig. 2; and

Fig. 4 is a view similar to Fig. 1 illustrating a variational form of the invention.

Referring first to Fig. 1, the circular cross-section body **10** of the bottle is shown to have, except for the later described recess, a usual shoulder formation **11** tapering upwardly to the neck portion **12**, the top of which is threaded at **13** for reception of a cap, not shown. In this form of the invention the shoulder area **11** of the bottle is shown to contain a recess **14** extending downwardly from the neck **12** to a location near the full diameter surface of the bottle at **15**, the recess and specifically its base surface **16** being vertically concave in the axial plane of the bottle coincident with the section line **3—3** of Fig. 2, and also being transversely concave in horizontal planes of the bottle shoulder, as represented by the convergent spacing of lines **16** and **17**, the latter representing the bottle surface at the transverse limits of the recess at which the surface of the recess has gradual and smooth mergence with the shoulder **11**.

The neck portion **12** is molded with an integrally fused externally projecting annulus or ring **18**, the latter being shown to be defined between a top surface or shoulder **19** preferably curved at **20**, and a lower shoulder or line **21**, the ring preferably having a downward taper substantially as illustrated. Between the ring **18** and threads **13**, the neck has a short straight extent **22** which may be overlapped by the cap skirt. In Figs. 1 to 3, the ring is shown to have an internal annular recess **23**.

Formed integrally with the ring **18** is a handle **24** which preferably is shaped substantially as illustrated to have a free downwardly and outwardly inclined extent directly overlying and spaced from the surface of the recess **14**, the handle being centrally and symmetrically aligned with the recess, see Fig. 2. The handle is shown to correspond in thickness at its juncture with the bottle neck, with the width or vertical dimension of the ring **18**, and to be so related to the ring that the top surface **25** of the handle is substantially a continuation of the shoulder **19**. The undersurface of the handle at **26** is in substantial alignment with the bottom shoulder or extent **21** of the ring, and at its transverse center, the handle has a curved strain minimizing juncture **27** with the bottle neck. The handle may be molded or otherwise formed with a hollow interior **28** in open communication or merger with the neck ring recess **23**. Weight-carrying and shock tests have proven that although of hollow formation, the handle by reason of its described and illustrated shape characteristics and integrally fused relation with the ring **18**, is capable of safely carrying the loaded weight of the bottle, and of withstanding all shocks normally to be encountered even under bottle load.

The handle is given sufficient downward and outward extent to permit its being grasped at the grip recesses **30** by a major width of the fingers, thus giving comfortable distribution to the bottle weight when it is being carried. The same characteristics of the handle render convenient any manipulations of the bottle for household use, as when pouring out its contents, by reason of both the handle angularity and extent. In further reference to the handle location and angularity, a balanced feel in carrying the bottle results from a comfortably acquirable alignment between the handle and the center of gravity of the bottle and its contents.

The recessed configuration of the bottle shoulder in the form of the invention shown in Figs. 1 to 3, affords a further advantage in that the spacing at **31** between the handle and the surface of the recess, while ample for free insertion of the fingers, is sufficiently limited to permit the back of the fingers to bear against the surface **16** and to give support for the fingers against both the handle

and the bottle proper. The recessed shoulder feature of the bottle is more specifically dealt with in a copending Sterges application, Serial Number 664,298, entitled Bottle Structure and filed on even date herewith.

Provision of the internal neck ring recess **23** has the functional advantage of rendering the bottle less likely to drip. As the bottle is being returned to an upright position after pouring, this recessed space provides a "pool" of liquid remaining in communication with the stream beng broken at the mouth of the bottle, and thus causes a surface tension effect tending to draw back into the bottle the last drops that break from the poured stream and do not fall away from the bottle.

The variational form of the invention shown in Fig. 4 is similar to the described embodiment except that here the handle is carried by the neck portion **33** of a differently shaped bottle, the latter in this instance having a relatively extended neck portion **34** more abruptly departing from or intersecting the shoulder **35**. The handle **36** is fused integrally with the ring **37** substantially as described before, and the free end of the handle overlies in spaced relation the neck extent **34** and shoulder **35**. In this instance the handle is shown to be formed solidly and the neck ring **37** to have its bore **38** running straight and through the portions **39** and **40** of the neck corresponding to **22** and **13** in Fig. 1.

We claim:

1. A bottle having a reduced neck portion including an integrally formed externally projecting ring, and a handle extending outwardly from the ring at one side of the neck and formed integrally with said ring so that the side of the handle are continuations of the side surface of the ring, and the vertical thickness of the handle near its juncture with the ring corresponds substantially to the vertical width of the ring, whereby the bulk of the bottle load to be assumed by the handle is transmitted to the enlarged diameter part of the neck formed by said ring, said handle extending generally straight outwardly and downwardly beyond its juncture with the ring to terminate at a free end spaced from the bottle, said ring having an internal annular recess in open communication with a hollow interior of the handle and the upper neck of the bottle above and adjacent said ring having an annular generally cylindrical surface below a relatively reduced diameter threaded surface.

2. A bottle having a reduced neck portion including an integrally formed externally projecting ring, and a handle extending outwardly from the ring at one side of the neck and formed integrally with said ring so that the sides of the handle are continuations of the side surface of the ring, and the vertical thickness of the handle near its juncture with the ring corresponds substantially to the vertical width of the ring, whereby the bulk of the bottle load to be assumed by the handle is transmitted to the enlarged diameter part of the neck formed by said ring, said handle extending generally straight outwardly and downwardly beyond its juncture with the ring to terminate at a free end spaced from the bottle, said ring having an internal annular recess and the upper neck of the bottle above and adjacent said ring having an annular generally cylindrical surface below a relatively reduced diameter threaded surface.

3. A bottle having a reduced neck portion including an integrally formed externally projecting ring, and a handle extending outwardly and downwardly from said ring at one side of the bottle and formed integrally with the ring so that the sides of the handle are continuations of the side surface of the ring, the vertical width of the ring being substantially as great as the vertical dimension of the handle at its juncture therewith so that the bulk of the bottle load to be assumed by the handle is transmitted to the enlarged diameter part of the neck formed by said ring, said ring having an internal annular recess communicating with a hollow interior of the handle.

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