United States Patent [19]

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[11] **3,717,277**

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[54] HANDLE FOR SUSPENDING INTRAVENOUS SOLUTION BOTTLES

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[73] Assignee: **Owens-Illinois, Inc.**

[22] Filed: **Nov. 23, 1970**

[21] Appl. No.: **91,955**

[52] **U.S. Cl.** .....**215/100 A**, 220/94 R, 294/31.2

[51] **Int. Cl.**.....**B65d 23/60**, B65d 25/32

[58] **Field of Search** .....215/100 A; 220/94 R, 94 A; 294/31.2; 248/318; 206/56 AB

[56] **References Cited**

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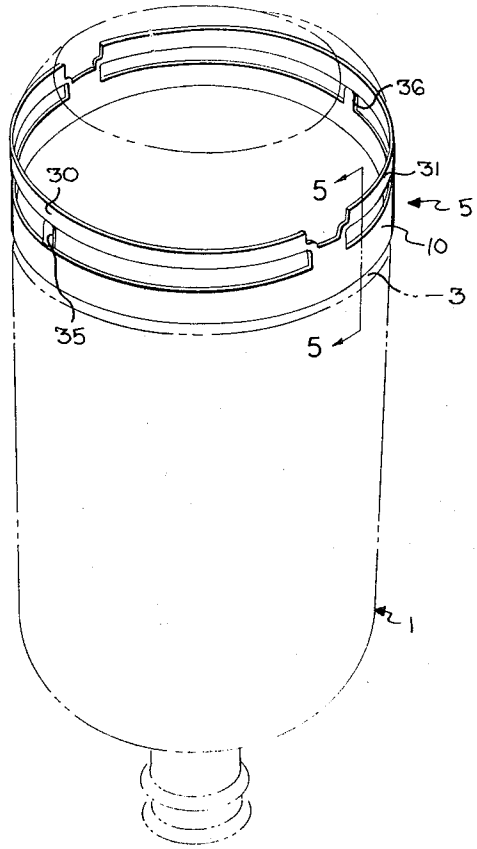
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[57] **ABSTRACT**

A plastic handle for bottles which allows the bottle to be suspended neck down from a suitable support device for administering the contents of the bottle. The handle has two bails attached to it, thereby providing an additional measure of safety while the bottle is thus suspended. In addition, severable lugs hold the bails in position until such time as they are required to support the bottle. The entire device, including a band which is attached to the bottle and the supporting bails, is formed as an integral unit by an injection molding process. The device is made of a thermoplastic material having high temperature resistance properties, which thus allows assembly of the handle device to the bottle immediately after manufacture and subsequent auto-claving of the completed package after filling with a suitable pharmaceutical material.

8 Claims, 5 Drawing Figures



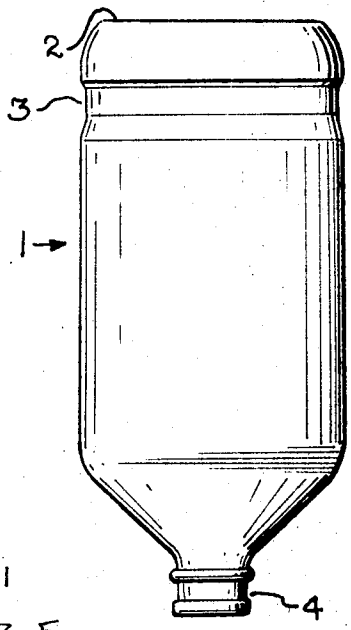


FIG. 1

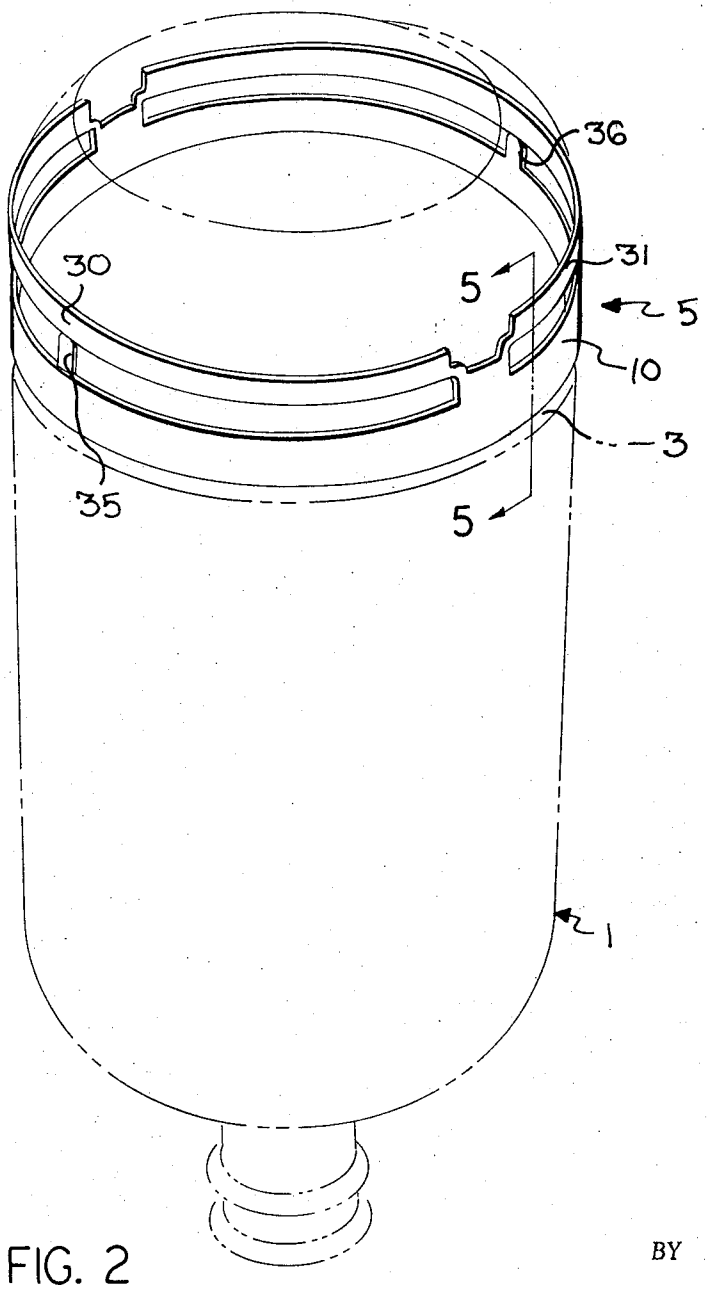


FIG. 2

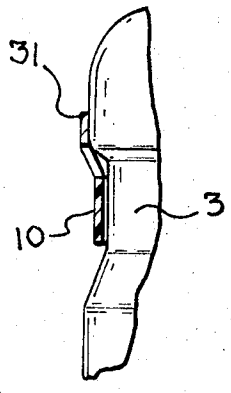


FIG. 5

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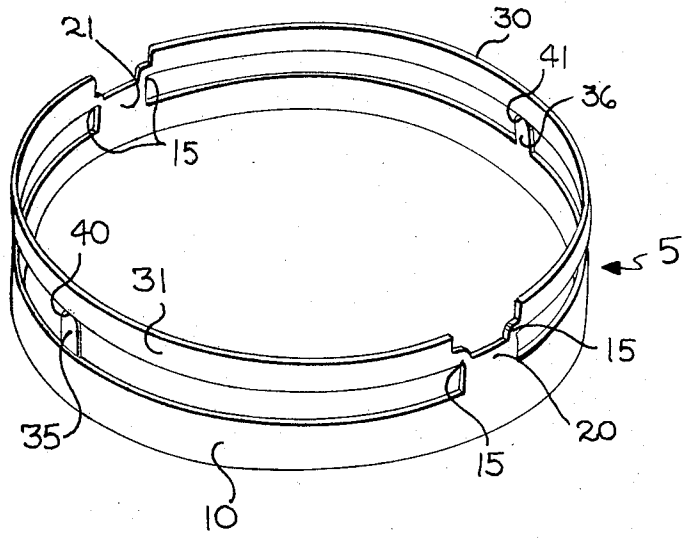


FIG. 3

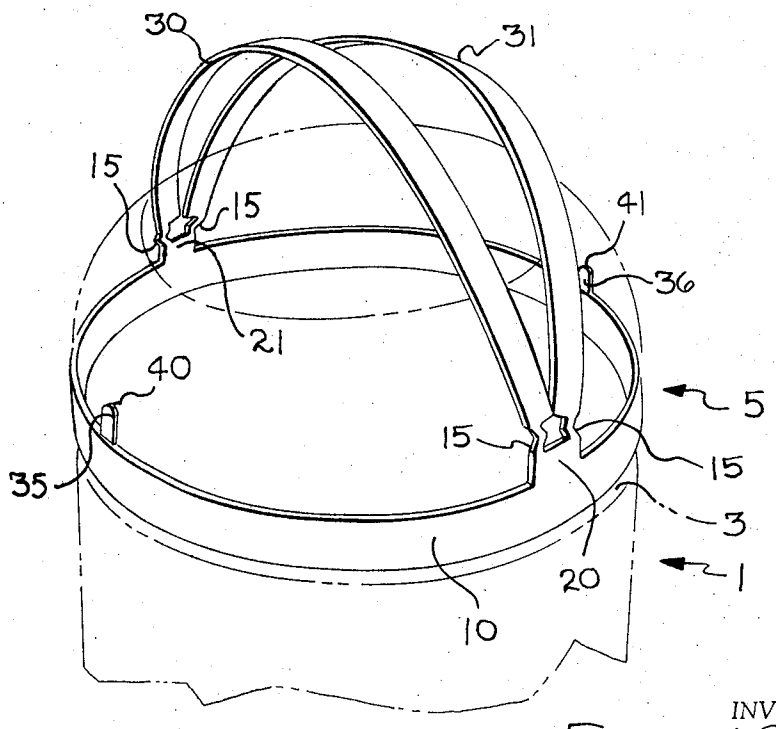


FIG. 4

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HANDLE FOR SUSPENDING INTRAVENOUS SOLUTION BOTTLES

BACKGROUND OF THE INVENTION

This invention relates to the art of handles and, more particularly, to a handle for bottles. More particularly, the invention is adaptable for use with pharmaceutical bottles used in the administering of intravenous solutions.

The support of bottles for the administering of intravenous solutions has been a continuing problem. A common device to allow suspension of these types of bottles has been a two-piece assembly. The bail of the device has been fashioned from wire and the collar by which the bail is attached to the bottle has been fashioned from a strip of sheet metal and secured to the bottle by various means. Such devices are shown in U.S. Pat. Nos. 3,195,228 and 3,195,759. These devices are inconvenient to use and have also led to problems during the administering of the solutions. The bails may pull from the supporting collar and thereby lead to interruptions in administering the solution. Furthermore, such two-piece assemblies are expensive to manufacture and difficult to assemble.

One-piece molded plastic handles for such containers, similar to those disclosed in the U.S. Pat. Nos. 2,982,434 and 3,220,591, have eliminated many of the problems associated with the older two-piece metal assemblies. However, these plastic handles still have but a single bail to support the bottle and are commonly held onto the bottle by a mechanical wedging action. Thus, it is possible for the entire handle device to be pulled from the bottle, or it is possible for the single bail to break during the administering process. The result in either case is an undesirable interruption in the administering process.

The handles of the prior art have commonly been made from plastic materials which do not have high temperature stability. Thus, it has been necessary to place the handle on the container as the final step in the process, after the filled container has been auto-claved.

SUMMARY OF THE INVENTION

This invention relates generally to handle devices and, more specifically, to a handle device for a pharmaceutical bottle used for administering intravenous solutions.

The invention is one-piece molded thermoplastic handle device adapted for use on pharmaceutical bottles. The handle is molded in one piece and includes four primary elements: (1) — a band to grip the pharmaceutical bottle; (2) — four hinges; (3) — two bails or handles to support the bottle; and (4) — attachment lugs to hold the bails in a fixed position relative to the band prior to use. The lugs have molded in score lines, which allow the bails to be easily severed from the lugs without the necessity of cutting the bails free from the lugs. Pharmaceutical bottles of the type for which this handle device is designed commonly have a circumferential groove adjacent to the bottom of the container to accept some sort of handle device. The band of the present invention would normally have an axial dimension slightly less than the axial dimension of the circumferential groove. The circumference of the band would be equal to or slightly greater than the circumference of the groove. Thus, the band would be assembled to the container by heating the band, the expansion of the band thereby allowing it to be slipped into position over the ledge defined by the edge of the circumferential groove in the bottle. Upon cooling of the band, it would grip the pharmaceutical bottle, making removal of the handle extremely difficult. Thus, while the band can be removed from the bottle only with great difficulty, the band may allow the bottle to be rotated relative to the band to align the bottle graduations in a desired location. The radius of each bail is preferably slightly more than the radius of the band. Thus, the bails protrude beyond the side wall of the container and thereby act as a bumper, preventing abrasion from bottle to bottle contact during handling. Both bails and the band are coaxial rather than coplanar. Thus, to use the handle device the bails are torn loose from the prescored lugs, and rotated approximately 90°, at which point the bails are substantially perpendicular to the band. The bottle may now be suspended from a suitable hanger for administering the contents. It is desirable that the band be assembled to the pharmaceutical bottle prior to filling of the container. It is necessary that the band material be able to withstand an autoclave cycle with its attendant high temperatures on the order of 250° F. Such a material is a rubber modified polypropylene. In addition to the advantage of the high temperature resistance, rubber modified polypropylene is also an excellent hinge material, thereby providing an extremely strong hinge between the band and the bails.

IN THE DRAWINGS

FIG. 1 is an elevation view of a pharmaceutical bottle of the type used to contain intravenous solutions.

FIG. 2 is a perspective view, showing the handle assembled onto the bottle.

FIG. 3 is a perspective view of the plastic handle for the bottle.

FIG. 4 is a perspective view of the bottle-handle combination with the bails of the handle raised into position for suspension of the bottle.

FIG. 5 is a partial cross section taken along line 5—5 in FIG. 2.

AS SHOWN IN THE DRAWINGS

FIG. 1 shows a pharmaceutical bottle of the type with which the handle device herein disclosed is particularly adapted for use. The bottle is generally designated as 1 and includes a substantially flat end portion 2, a circumferential groove 3, adjacent to the substantially flat end portion 2, and a finish 4.

In FIG. 3, the entire handle device is generally designated as 5. The handle device 5 is an integrally molded plastic part which comprises several coacting elements. A band 10, defining a closed loop, is adapted to fit into the circumferential groove 3 of the bottle 1. Attached to the band 10 are two tabs, 20 and 21. Bails 30, 31 are attached to the tabs 20, 21 at two diametrically opposed hinge points 15. The bails 30, 31 are further held in a fixed position relative to the band 10 by means of severable lugs 35, 36. As shown, each bail 30 or 31 has one lug 35 or 36 centrally positioned between the respective hinge points 15; however, additional lugs with adjusted spacing may be provided as desired. These lugs have molded in score lines 40, 41,

which allow the bails 30, 31 to be separated from the lugs 35, 36.

As may be seen in FIG. 2, the band 10 is adapted to fit into the groove 3 of the bottle 1 (shown in phantom lines), since the groove 3 is slightly wider than the band 10. However, the width of the groove 3 is less than the combined width of the band 10 and bails 30, 31; accordingly, as best seen in FIG. 5, the bails 30, 31 will rest on a ledge defined by the edge of the groove 3. The bails will be in the position shown in FIG. 2 until such time as the contents of the bottle are to be administered. As may be seen, the lugs 35, 36 hold the band 10 and the bails 30, 31 in a fixed relative position. Thus, the completed package may be safely conveyed without fear of the bails 30, 31 assuming a random position and thereby creating the possibility of entanglement of successive packages.

Furthermore, as shown in FIG. 5, the bails 30, 31 protrude beyond the sidewall of bottle 1 and thus serve as bumpers to protect the sidewalls of bottle 1 from abrasions caused by bottle to bottle contact during handling and conveying (during, for example, the autoclave operation) and shipping.

In FIG. 4, the combined package comprising the bottle 1 (shown in phantom lines) and the handle 5 is shown in the configuration suitable for administering the contents of the bottle 1. To achieve this configuration, the bails 30, 31 are separated from the lugs 35, 36 at the molded in score lines 40, 41. The bails 30, 31 are then rotated about the hinge points 15 from a position substantially parallel to the band 10 to a position substantially perpendicular to the band 10.

It has been found that the handle device may best be manufactured from a rubber modified polypropylene material. A material that has proven particularly successful for this purpose is Shell WM 610, manufactured by The Shell Chemical Co., Plastics and Resins Div., Box 700, Woodbury, N.J. The handle device is preferably injection molded, using such rubber modified polypropylene material.

What is claimed is:

1. In combination, a bottle having a substantially flat end portion and a sidewall with an external circumferential groove adjacent to said end, and a handle device to support said bottle while the contents thereof are administered, said handle device comprising an endless band of thermoplastic material, said band being received in said groove firmly gripping said bottle, said band having a pair of tabs extending from diametrically opposed portions thereof in a direction parallel to the longitudinal axis of said bottle, and two bails formed integrally with said tabs, each of said bails having opposite ends connected to the respective tabs at hinge points, said bails being rotatable about said hinge points from a position parallel to said bottle end to a position generally perpendicular to said bottle end, the axial width of said band being less than the axial width of said circumferential groove, and the axial width of said handle device being greater than the axial width of said circumferential groove.

2. A handle device as defined in claim 1 wherein the radial dimension of said bails is greater than the radial dimension of said band.

3. A handle device as defined in claim 1 further including attachment lugs positioned between the respective tabs, said lugs being joined to the band and the respective bails, said lugs being severable therefrom upon rotation of the bails.

4. In combination, a bottle having a substantially flat end portion and a sidewall with an external circumferential groove adjacent to said end, and a handle device to support said bottle while the contents thereof are administered, said handle device comprising an endless band of thermoplastic material, said band being received in said groove firmly gripping said bottle, said band having a pair of tabs extending from diametrically opposed portions thereof, and two bails formed integrally with said tabs, each of said bails having opposite ends connected to the respective tabs at hinge points, said bails being rotatable about said hinge points from a position parallel to said bottle end to a position generally perpendicular to said bottle end, the axial width of said band being less than the axial width of said circumferential groove, and the axial width of said handle device being greater than the axial width of said circumferential groove.

5. A handle device as defined in claim 4, further including attachment lugs positioned between the respective tabs, said lugs being joined to the band and the respective bails, said lugs being severable therefrom upon rotation of said bails.

6. A handle device as defined in claim 4, wherein the circumference of said band both before and after application to said bottle is at least equal to the circumference of the bottle at said groove.

7. A handle device as defined in claim 4, wherein said handle device is fabricated from rubber modified polypropylene.

8. A handle device as defined in claim 4, wherein the radial dimension of said bails is greater than the radial dimension of said band.

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