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METHOD AND APPARATUS FOR APPLYING CLOSURE TO CONTAINERS

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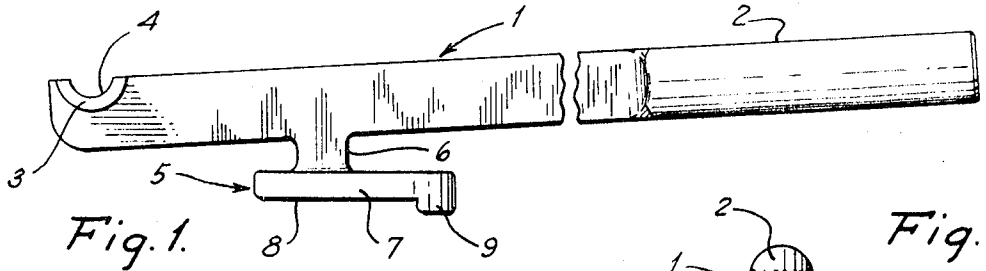


Fig. 1.

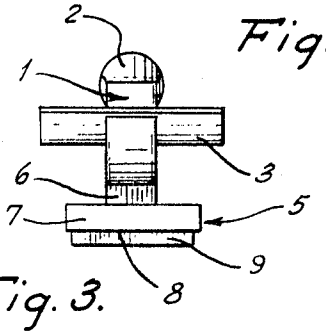


Fig. 2.

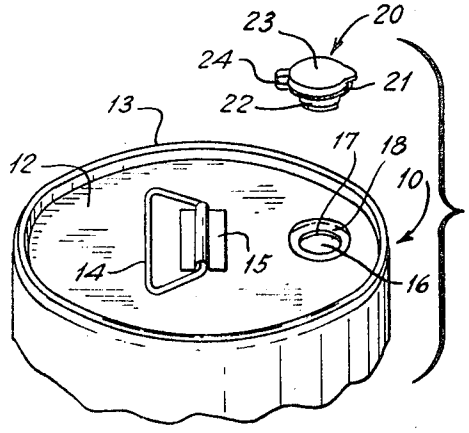


Fig. 3.

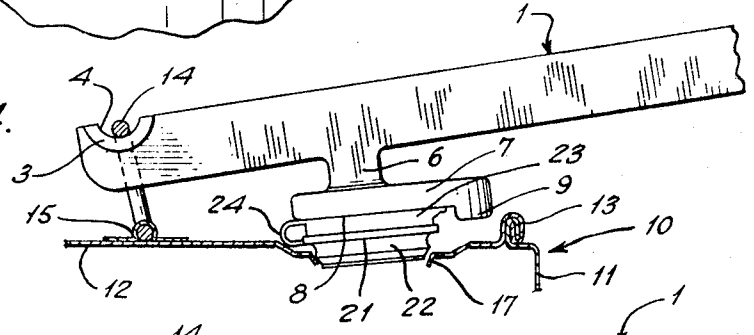


Fig. 4.

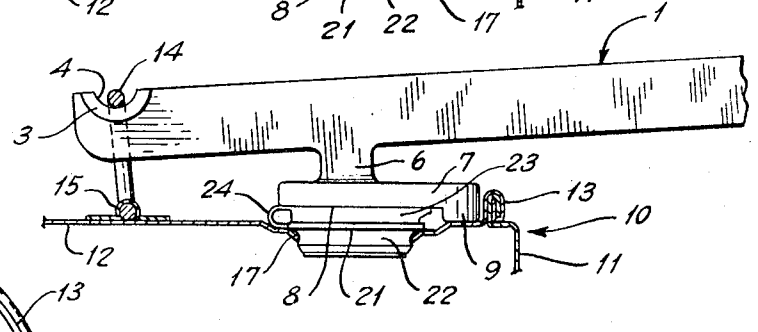


Fig. 5.

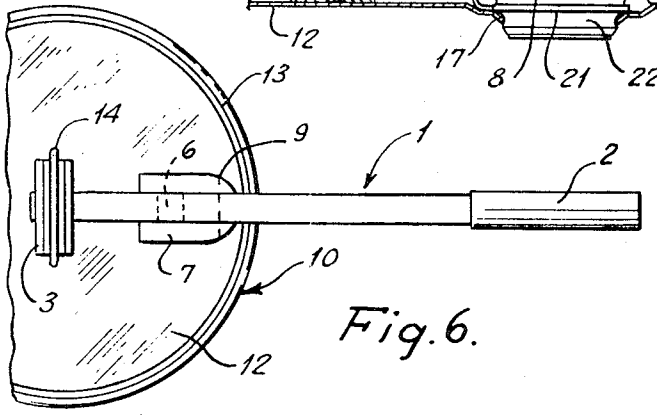


Fig. 6.

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METHOD AND APPARATUS FOR APPLYING CLOSURE TO CONTAINERS

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U.S. Cl. 27—451 11 Claims

ABSTRACT OF THE DISCLOSURE

A method and apparatus for applying plug like closure members formed of resilient plastic material to pail heads which heads have a centrally positioned carrying handle secured thereto. The container handle is employed to effect a force fit engagement of the closure member within an opening adjacent the periphery of the pail head.

This invention relates to a method and apparatus for applying plastic closures to containers and is particularly concerned with the force fit application of such closures to containers by means of a unique lever arrangement.

In the can industry the manufacture of certain containers in large volume such as the five gallon pail has become quite standardized. One particular such standard design embodies a pail head which is seamed onto the container body during the manufacturing process. The head, itself, prior to assembly with the container body has a fill opening formed in it and is also provided with a centrally located handle secured by means of a spot welded clip. The filler to whom the finished can or pail is then supplied pours his product through the relatively large opening provided and subsequently applies a closure assembly to the opening of the filled can.

One type of closure assembly so applied is a synthetic plastic construction comprising a stopper like nozzle member and a snap-on captive cap. This closure is applied to the container as a unit and permanently secured thereto by means of a force fit between the nozzle body and the edge of the fill opening. A number of arrangements have been devised in an attempt to aid the filler in making the above described closure insertions. Striking the closure with a mallet is unsatisfactory as it results in the closure becoming cocked and also the likelihood of damage to either the closure or the container. Simply pressing the closure into the opening is a cumbersome and time consuming operation and is difficult to accurately perform with a hand manipulatable tool.

This invention effectively overcomes these and other objections in providing a novel arrangement for inserting plug like closures formed of resilient material into container openings. This arrangement includes a method and tool for performing that method, wherein a lever action is employed using the container handle as a fulcrum. The mechanical advantage thus gained permits quick and accurate insertion of the closure member with a nominal hand applied force.

It is accordingly a primary object of this invention to provide a novel method for inserting closure members in container wall openings.

Another object is to provide apparatus for carrying out that method.

A further object is to provide a novel method and apparatus for effecting a force fit engagement within container wall openings of plug type closure members formed of synthetic plastic material.

A still further object is to provide a method of inserting such closure members utilizing mechanical advantage gained by a simple lever.

A more detailed object is to provide a method of inserting such closure members by means of a lever action employing the container handle as a fulcrum.

Still further and more detailed objects of the invention will in part be obvious and in part pointed out as the description of the invention taken in conjunction with the accompanying drawing proceeds.

In that drawing:

FIG. 1 is a side elevational view of the closure inserting tool of the invention and for carrying out the method thereof;

FIG. 2 is an end elevational view thereof;

FIG. 3 is a perspective view of a closure member and container upon which the method of the invention is performed;

FIG. 4 is a part sectional part elevational view showing the performance of an initial step of the invention method;

FIG. 5 is a view similar to FIG. 4 and showing a final step of the invention method; and

FIG. 6 is a top plan view of the tool and container in the position of FIG. 5.

In FIG. 1 the entire tool is shown comprising an elongated lever **1** having at one end a handle portion **2** and at the other end a transversely extending fulcrum seat **3** provided with an upwardly opening concave surface **4**. A closure inserting foot generally indicated at **5** is formed on the lower side of the lever **1** and spaced along the lever a short distance from the fulcrum seat **3**. The foot **5** is connected to the lever **1** by a short neck **6** and comprises a plate **7** disposed at a slight angle to the lever **1** and having a flat lower surface **8**. The plate is also provided with a rounded heel portion **9** which extends slightly below the surface **8**.

In FIG. 3 is shown a container **10** comprising a body **11** having a head **12** permanently seamed thereto which seam forms the chime **13**. A handle **14** is secured to the container **10** by means of an elongated clip member **15** which is spot welded to the center portion of the head **12**, so that the handle can be pivoted from a flat stored position to a raised carrying position. An opening **16** is formed in the container head **12** closely adjacent the chime **13** and at a position opposite either side of the elongated clip **15**. The opening **16** is bordered by a short downwardly extending neck **17** which is in turn surrounded by a shallow pocket **18**. A plug type closure member formed of synthetic plastic material is also shown in FIG. 3 and generally indicated at numeral **20**. This particular closure member, which the invention is by no means limited to, comprises a nozzle surrounded by a peripheral flange **21** below which extends an opening neck engaging portion **22**. The nozzle is closed with a captive cap **23** integrally connected to the flange **21** by a flexible strap **24**.

Turning to the novel method steps of the invention, attention is directed particularly to FIGS. 4 and 5. After filling the container the closure member **20** is loosely placed within the opening **16** and the handle **14** raised up away from the head **12**. The fulcrum seat **3** of the lever **1** is then inserted within the handle **14** with the handle cradled within the concave surface **4**. The lower surface **8** of the plate **7** is placed against the top of the closure member cap **23** with the plate heel **9** positioned between the cap **23** and the container chime **13**. Upon exertion of a hand applied force to the handle **2** in a downward direction the closure member **20** is forced into the container opening **16** employing the handle **14** as a fulcrum. The resulting lever action requires only a very moderate force at the handle **2** to cause the nozzle portion **22** to pop into the opening **16** in tight sealing engagement with the opening neck **17**. The slight cocking of the closure member **20** as it is forced into the opening due to the arcuate movement of the plate **7** has been found to have

no detrimental effect on the engagement of the closure member with the container wall and in fact seems to make the insertion somewhat easier than forcing the closure in a straight axial direction. The final positioning of the closure member **20** within the opening **16** causes the nozzle flange **21** to seat firmly on the pocket wall **18** surrounding the opening. In this position the plate heel **9** contacts the periphery of the head **12** just inside the chime **13** and thus limits further movement of the closure member. As seen in FIG. 5 the plate **7** assumes a horizontal position when the heel **9** contacts the head. This assures complete sealing of the closure member all around the opening. It can also be seen here that the slight angle between the plate **7** and the lever **1** makes the operation somewhat easier to perform. The tool is then easily disengaged by lifting the handle **2** so that the heel **9** raises above the chime **13** and withdrawing the fulcrum seat **3** out of the container handle **14**.

From the foregoing description it can be seen that the closing of containers in accordance with this invention can be very quickly and accurately carried out with a minimum amount of effort. Moreover the tool for carrying out this method, though quite effective, is simple and economical to manufacture.

Other and different variations of the invention may well suggest themselves to those skilled in the art without departing from the scope and spirit of the invention. For example, different closures could be inserted in differently designed containers. It is accordingly to be understood that the structures and relationships, shown in the accompanying drawing and described in the foregoing description are to be considered as illustrative of and are not to be considered as being set forth in a limiting sense.

Having described my invention what we claim as new and desire to secure by Letters Patent is:

1. The method of applying closures to containers, such containers having a top wall, a handle secured to a central portion of said wall and an opening for reception of a closure formed in said wall adjacent the outer edge thereof, comprising the steps of loosely placing a plug type closure member over said opening, exerting a downwardly directed force on said closure through the application of a force remote from said closure, employing said container handle to gain a mechanical advantage with said force on said closure relative to said remote force, and

forcing said closure into said opening so as to form a liquid tight seal therearound.

2. The method as in claim **1** and employing said handle as a fixed fulcrum point.

3. The method as in claim **1** and employing a lever action to gain said mechanical advantage.

4. The method as in claim **1** and applying said remote force in a downward direction.

5. The method as in claim **1** and applying said remote force in a substantially vertical direction remote from said container.

6. A tool for inserting plug type closures in container wall openings such container walls having a carrying handle secured thereto comprising, an elongated lever, container handle engaging means on said lever, closure engaging means on said lever for applying a downward force directly to said closure, said handle engaging means and said closure engaging means being longitudinally spaced apart on said lever and a hand grip portion at one end of said lever.

7. A tool as in claim **6**, and said handle engaging means being positioned at the other end of said lever remote from said hand grip portion.

8. A tool as in claim **6**, and said handle engaging means including an upwardly opening cradle portion extending transversely of said lever.

9. A tool as in claim **6**, wherein said handle engaging means and said closure engaging means are positioned to one side of the mid-point of said lever.

10. A tool as in claim **6**, and said closure engaging means including a flat downwardly facing surface adapted to bear against the top surface of a closure.

11. A tool as in claim **6**, and said closure engaging means including a stop portion adapted to contact the container wall upon full seating of the closure within the container wall opening.

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U.S. Cl. X.R.

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