June 19, 1973 D. G. CARL ET AL 3,740,259

MASKING THE CLOSEABLE AREA OF A CONTAINER DURING THE COATING OF THE CONTAINER

Filed Sept. 7, 1971

2 Sheets-Sheet 1

FIG. 1

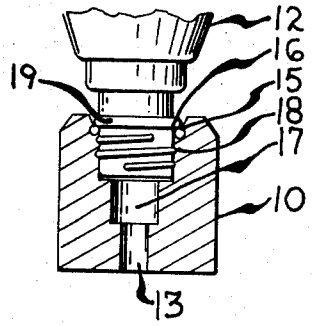


FIG. 2

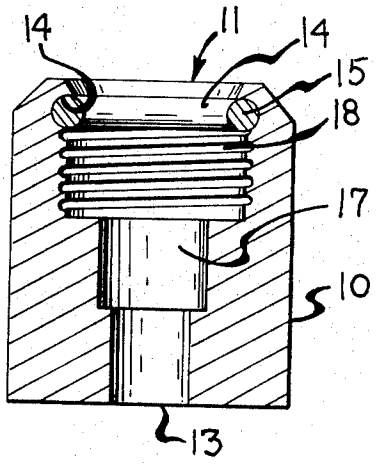
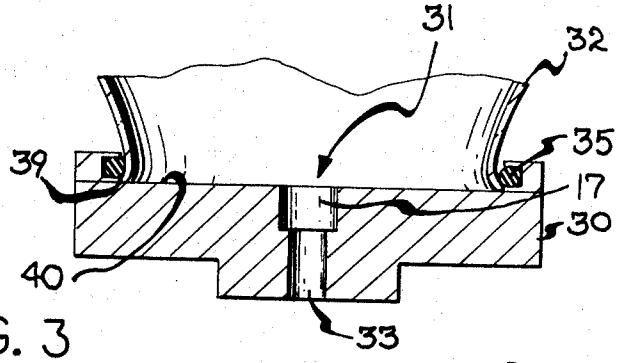


FIG. 3



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FIG. 4

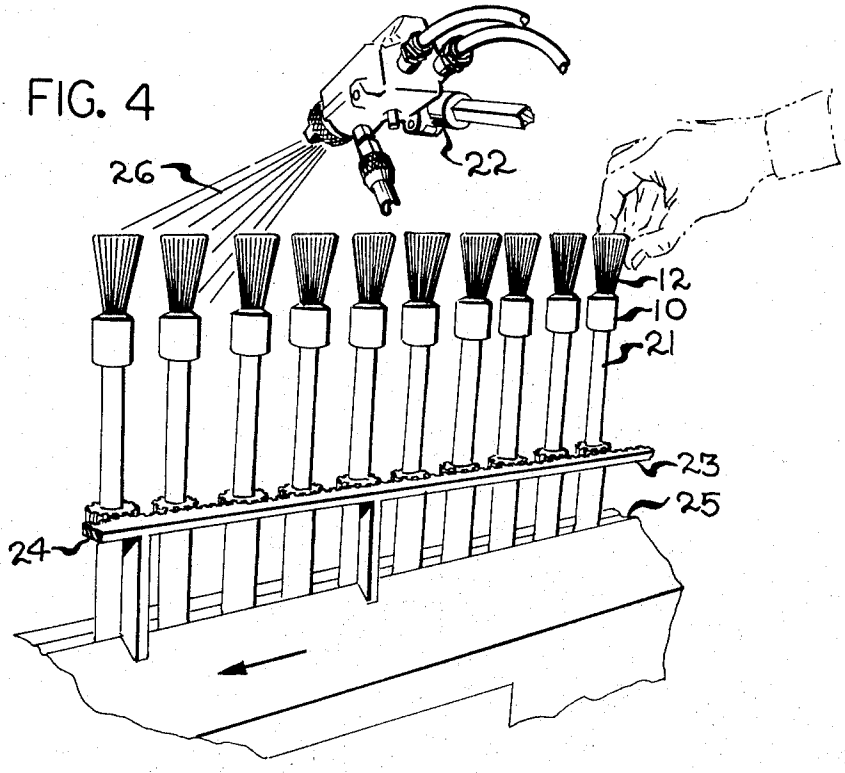
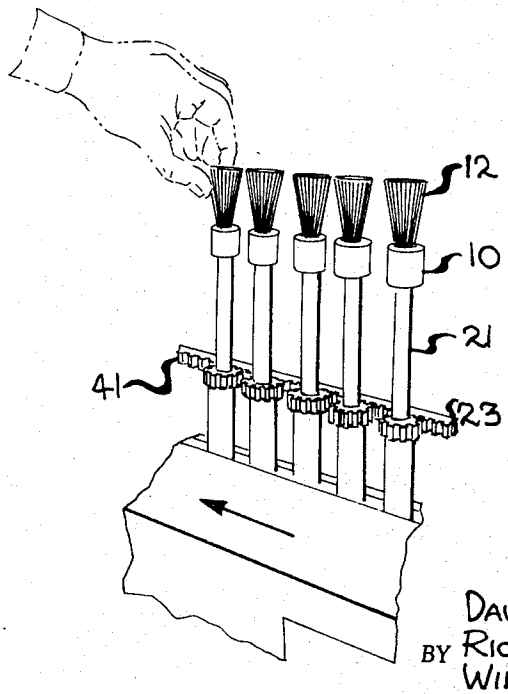


FIG. 5



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MASKING THE CLOSEABLE AREA OF A CONTAINER DURING THE COATING OF THE CONTAINER

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Int. Cl. B05b *13/02*

U.S. Cl. 117—94 3 Claims

ABSTRACT OF THE DISCLOSURE

Method for masking the closure attaching portion of a container to prevent the coating of said closure attaching portion while permitting the spreading of a coating material over the remaining surface of the container. The method comprises nesting the closure attaching portion of the container into a masking chuck, rotating the chuck about its vertical axis and laterally moving the chuck in a straight line through a coating spray.

CROSS-REFERENCE TO RELATED APPLICATION

This application is a division of application Ser. No. 879,081 filed Nov. 24, 1969, now Pat. No. 3,631,837, dated Jan. 4, 1972.

BACKGROUND OF THE INVENTION

The present invention relates generally to a novel method for effectively masking the reclosable portion of a container of narrow or wide mouth configuration from decorating and coating compositions of matter as conventionally applied to the remaining unmasked portion of said containers. More particularly, the invention pertains to a method for snugly positioning and masking the exterior closeable end of a container having threads, a rim, a bead or the like to produce a closable end surface essentially free of unwanted coatings and the like.

In the past, it has been the practice in the decorating and coating arts to apply decorating and coating compositions of matter to the entire, exterior, exposed surface area of a container formed from various compositions of matter such as ceramics, glasses, and polymers such as polyethylene, polypropylene, polyvinyl chloride and the like by conventional art techniques such as spraying, dipping and the like. The usual employment of these art known techniques for applying decorating and coatings to the exterior surface area of an open mouth container, often leads to serious difficulties, especially when an easy-open reclosable closure for said container is routinely used as an integral component in combination with said containers. One of the serious difficulties encountered is the unwanted coating of the closure attaching portion of the container, for example, the threads, rim or bead thereof. The closure attaching portion may be designed for using the snap-on type or the screw on type closure. The coating of the closure attaching portion is undesirable because it prevents the closure from tightly and snugly engaging the attaching portion of the container to effect

a good acceptable seal of said just coated container. In actual practice, when closures are fabricated with a limited degree of sizing freedom in respect to any given container, it is common to witness the complete failure of the closure to fit or to nest the closure attaching portion of the container because of the interfering applied coatings.

Thus, in the light of the above discussion, it is an object of the present invention to overcome the difficulties associated with the prior art.

It is a further object of the present invention to make available to the art a method for masking the closure attaching portion of a decorable or coatable container.

Yet it is still another object of the present invention to provide a masking means for maintaining the reclosable closure fitting area of a container essentially free of any type of over-coatings while simultaneously permitting the non-closure area of said container to be overcoated with coatings and the like.

It is also an important object of this invention to provide a method for sealingly and concurrently engaging the exterior surfaces of the closure attaching portion of a container.

Numerous other objects and advantages of this invention will become apparent from the following description and the attached drawings.

SUMMARY OF THE INVENTION

In accordance with this invention, there is provided a novel, and efficient configuration for keeping preselect portion of a coatable surface to remain free of any applied coating while applying the coating to the preselect area where a coating is desired. Particularly, the invention is concerned with a method for masking the closure attachable portion or finish of a container so it will remain free of any contact with a coating solution.

DESCRIPTION OF THE DRAWINGS

Referring to the accompanying drawings:

FIG. 1 is a vertical, cross-sectional view of the cylindrical masking chuck of the invention in engagement with a container.

FIG. 2 is a vertical, cross-sectional view of the embodiment of the masking chuck of the invention adapted for receiving containers of the narrow mouth type.

FIG. 3 is a vertical, cross-sectional view of the second embodiment of the apparatus of the invention, illustrated in sealing relationship to a container of the wide mouth type.

FIG. 4 is a perspective view of the plural chuck supporting and rotating method of the invention and illustrating the hand loading of the chucks and, FIG. 5 is a perspective view similar to FIG. 4 illustrating the chuck moving method at the hand unloading position of the chucks.

Turning now to the drawings in detail, with reference to FIGS. 1–3, the chuck apparatus of the invention comprises a main body member **10**, which may have any predetermined geometric design such as circular (as shown), square, rectangular or the like.

The main body member may be fabricated from conventional materials such as, air-hardened tool steel, cast iron, bronze, beryllium-nickel alloy, fluorocarbons, plastic materials such as bakelite, high density polyethylene,

phenolic oxidative coupling polymers, and the like. The body member **10** is provided with an internal opening **11** adapted to receive and support a container **12** having either a narrow neck or a wide mouth. The end **13**, opposite to the container supporting opening **11**, is open to the atmosphere and to the interior of the container **12** by bore **17**, thus avoiding the possibility of forming a vacuum within a container **12** when carried by the chuck **10**.

The body member or chuck **10** of FIG. 2 is provided with an undercut portion forming an annular recess **14** extending circumferentially around the internal area of body member **10**. The annular recess **14**, which is semicircular in cross-section, serves as the seat for a composite, flexible and resilient member or O-ring **15**. The O-ring effectively serves as a sealing member for tightly engaging in intimate sealing contacting the outer container wall surface when said container is positioned within the internal opening **11** of the chuck **10**.

The flexible, resilient member is generally of a ring-shaped fitment construction and it is usually made from natural rubber, synthetic rubber, for example of the butadiene type, silicone or of flexible, resilient plastic. These properties are generally important because it is desirable that the ring member be able to firmly contact the container and the internal portion of the masking mold to effect an impermeable barrier for preventing coating compositions from coating the closure attaching portion of the engaged container. The resilient properties are also desirable because of the occasional need for the ring member to be able to deform sufficiently to accommodate normal manufacturing irregularities in the wall diameter of the container and to greatly facilitate the maintenance of the snug engagement with the container walls. Typical materials which are suitable for use in forming ring member **15** include polyolefins, for example low density polyethylene and polypropylene, plasticized vinyls, foamed plastics, copolymers of ethylene and vinyl esters, for example an ethylene vinyl acetate copolymer. These materials are included not by limitation but they are intended to be merely exemplary of the general types of materials which are suitable for the practice of this invention.

The ring member may be manufactured by any one of numerous methods known in the arts for forming plastic materials, such as injection molding, blow molding, rotational molding and vacuum forming. Additionally, these rings may be colored by the addition of suitable colorants in methods also well known in the arts.

Returning now to the drawings in detail, with reference to FIGS. 1–3, FIGS. 1 and 2 depicts one of the embodiments of the invention, as can be used for a container having a threaded neck portion. As best shown in FIG. 2, there is provided in conjunction with internal opening **11**, an annular recess **14** within which the flexible, resilient ring member **15** is positioned. An internal female thread **18**, for receiving the externally threaded neck, of a container is provided below the ring **15**. In carrying out the method, the neck of the container is conveniently turned into the internal, threaded portion **18** of body member **10** until the annular bead **19** of the container **12** rests snugly against and in intimate contact with ring member **15**, as shown in FIG. 1. In FIG. 3 there is shown another embodiment of the invention utilized for masking a wide mouth container **32**, that has its opening terminating in a circular bead or annular rim type configuration. In the method here, the external, exposed rim **39** of wide mouth container **32** is snugly and firmly positioned into body masking member **30** resting on internal shoulder **40** and with the outermost rim of container **32** in intimate and sealing engagement with ring member **35**. When container **32** rests on internal shoulder **40**, its internal area is open to the atmosphere through openings **31** and **33**.

Referring to FIGS. 4–5, the method of the invention comprises a chuck moving means, not shown, of a conventional endless conveyor **25** or chain-on-edge conveyor type. The conveyor is adapted to convey chucks and containers, snugly engaged within the threaded chucks of FIGS. 1 and 2 or by the rim engaging method of FIG. 3 and as sketched in FIGS. 4 and 5 as body member **10**, through a coating area **26**. The body member **10** is supported or mounted to a support means **21**, in the form of a hollow shaft or hollow spindle. The plural support means **21** is fixed to the conveyor **25** at spaced points therealong. Each support means **21** is equipped with a spur gear **23** or the like, located beneath the body member **10** and in position such that gears **23** will engage a stationary rack **24** to turn the spindle **21** and containers **12** a full 360° while said containers are being coated, for example by a spray gun **22** at the coating area **26** to insure a complete coating of all the exposed surface of container **12** except for the portion of container **12** which is masked by housing check **10**. The rack **24** is generally of sufficient length so that it extends through the container loading area so that in practice the container self screws itself into the internally threaded female chuck. Of course, if a snap-on closure container is being coated, a different chuck is employed, FIG. 3, and the container is merely pushed axially into the chuck.

In the coating method, the operator at the feed position of the spray system loads the containers into the masking chuck in an inverted position so that the container is firmly screwed or firmly nested into the masking chuck with the container in sealing engagement with the O-ring seal. Next, the container is conveyed into the coating area wherein it is sprayed with various solutions to accomplish the desired coating. In the coating area, no coating solution will penetrate above the bead, or the rim on the finish of the container due to the preventive action of the sealing ring positioned in the chuck. Thus, the closure attaching portion of the container is essentially free of any coating reagent. After the container is coated, it can be easily removed from the chuck by manual rotation or by the spindle gears **23** engaging a rack **41** (see FIG. 5) to reversely rotate the spindle so that the operator merely holds the container and the container unscrews itself from the chuck. Of course, if the container is of the non-threaded type the operator manually removes it from the masking chuck. In actual operation, containers were coated with various solutions, such as aqueous silver nitrate, aqueous, emulsified polyethylene and the like and the closure attaching portion of the container was observed to be free of any undesired coating in said area.

While embodiments of the disclosure have been described in detail, it will be readily apparent to those skilled in the art that the embodiments may be modified in the light of the present application and that foregoing description is not to be construed as limiting the true scope of the invention.

What is claimed is:

1. The method of spray coating glass containers wherein an excess of coating solution is applied to the container, comprising the steps of firmly nesting the closure attaching portion of the container into a masking chuck, rotating the chuck about its vertical axis and laterally moving the chuck in a straight line through a coating spray, removing the sprayed container from the chuck whereby the container is fully coated without coating the closure attaching portion of the container.

2. The method of claim **1**, wherein the closure attaching portion of said container is threaded and the step of firmly nesting the attaching portion of the container into a masking chuck comprising rotating the chuck relative to the container while restraining the container against rotation to thereby thread the closure attaching portion of the container into the chuck.

3. The method of claim **2**, wherein the step of removing the sprayed container from the chuck comprises ro-

tating the chuck in the opposite direction to that used in masking the container while arresting the rotation of the container to thereby unthread the container from the masking chuck.

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117—38, 124 B, 124 E, 105.4; 118—320, 504