

April 18, 1967

J. G. BRUBAKER

3,314,714

ARTICLE HOLDER

Filed July 31, 1964

FIG. 1

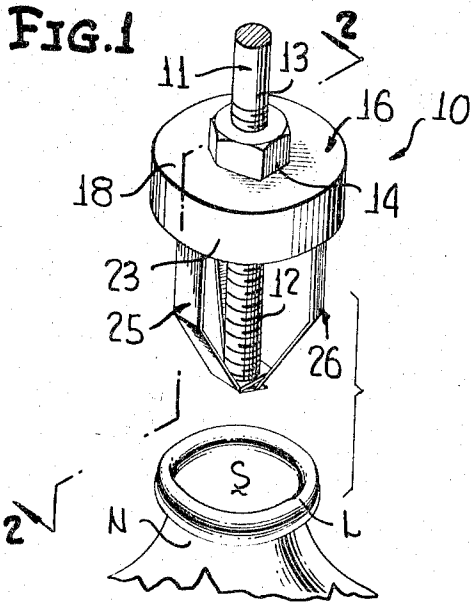


FIG. 2

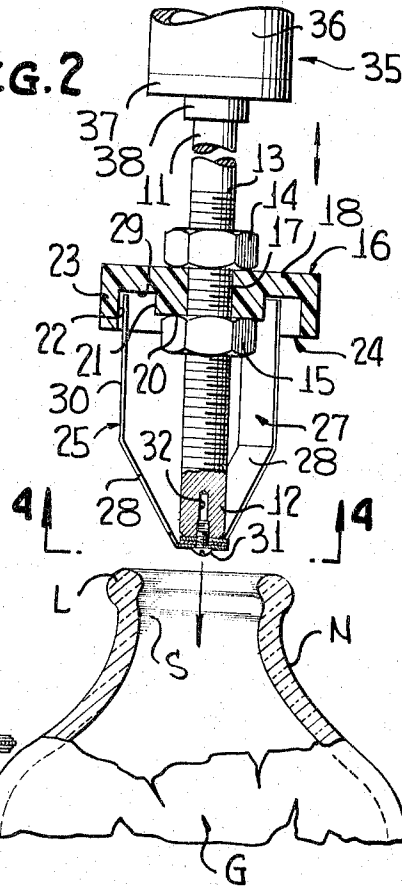


FIG. 5

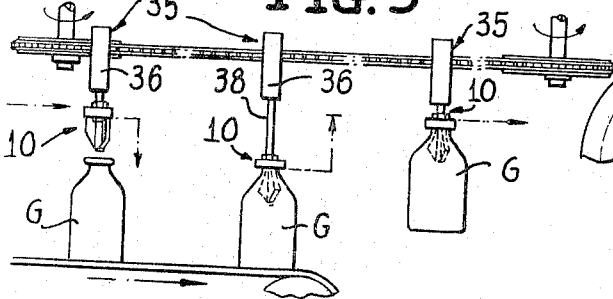


FIG. 3

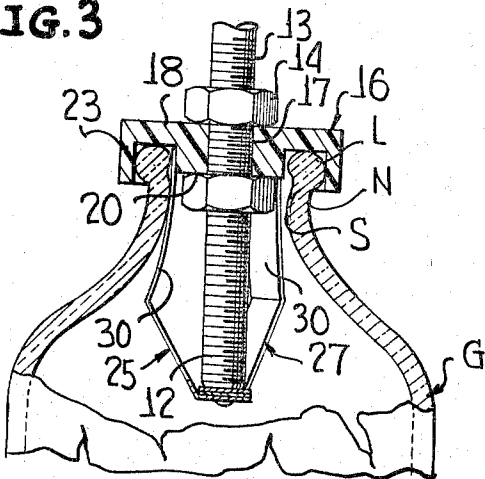
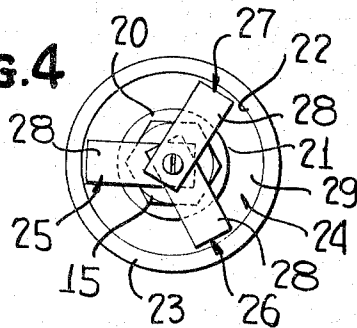


FIG. 4



INVENTOR
JOHN G. BRUBAKER

BY
Mason, Porter, Wenz, Stewart
ATTORNEYS

3,314,714

ARTICLE HOLDER

John G. Brubaker, Park Forest, Ill., assignor, by mesne assignments, to Brockway Glass Company, Inc., Brockway, Pa., a corporation of New York
Filed July 31, 1964, Ser. No. 386,615
11 Claims. (Cl. 294-93)

This invention relates to a novel device for holding articles, and is particularly directed to a holder for gripping glassware or other types of open mouthed containers during the transport thereof through various stages of manufacture.

It is conventional under present day practices to transport glassware and other open mouthed containers during the manufacture thereof by internally or externally gripping the finishes of the bottles with different types of holders. Holders of the type which grip the exterior finish of glassware are generally undesirable because the glassware exteriors are readily marred, chipped or defaced, particularly at the glassware lips. Furthermore, the exterior gripping type holders cannot accommodate glassware whose exterior finishes vary in shape, size, lip configuration, etc., but whose interior surfaces are substantially similar.

While conventional internal gripping-type holders overcome many of the disadvantages noted above, such type holders similarly include many inherent disadvantages. Exemplary of many such disadvantages is the inability of conventional internal gripping-type ware holders to prevent coating material being sprayed or otherwise applied to the exterior of containers from inadvertently entering the containers through the open mouths thereof.

In keeping with the above it is a primary object of this invention to provide a novel article holder or support of the type particularly adapted to grip internal surface portions of open mouthed articles, such as glassware, in a manner which overcomes many of the above-noted disadvantages of conventional holders.

A further object of this invention is to provide a novel holder for articles, the holder including a body member, a plurality of article gripping fingers carried by the body member, each of the fingers having an upwardly directed terminal portion, the body member including a cover, a means forming a portion of the cover for sealing an opening in an article supported by the holder to prevent the inadvertent or accidental entry of material into the interior of the article.

A further object of this invention is to provide a novel article support or holder of the type including a body member, a plurality of article gripping fingers carried by a lower portion of the body member, each of the fingers having an upwardly directed terminal portion, the body member including a cover, and means forming a portion of the cover for confiningly receiving the terminal portions of the gripping fingers to limit movement thereof in directions toward and away from the body member.

Still another object of this invention is to provide a novel article holder, and particularly a glassware holder of the internal gripping-type which includes an elongated body member having a lower first end portion and an upper second end portion, a plurality of resilient gripping fingers having first terminal portions secured to the first end portion of the body member and second terminal portions directed toward and terminating adjacent the upper end portion of the body member, a cover, the cover including a recess opening toward the body member first end portion and receiving the second terminal finger portions, and means partially defining the recess for limiting the movement of the second terminal finger

portions toward the upper end portion of the body member when the body member and gripping fingers are inserted into open mouths of glassware.

A further object of this invention is to provide a novel holder of the type just described in which means are provided for adjusting the cover axially with respect to the body member to vary the position of the cover relative to the gripping fingers for accommodating glassware of diverse shapes, sizes and configurations.

Yet another object of this invention is to provide a novel holder of the type described in which means are provided for limiting the outward movement of the second terminal portions of each of the gripping fingers relative to the body member when the holder is withdrawn from open mouths of glassware.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing:

In the drawing:

FIGURE 1 is a fragmentary top perspective view of a novel article support or holder constructed in accordance with this invention, and illustrates the holder prior to the insertion of a portion thereof into an open mouthed container.

FIGURE 2 is a sectional view taken along line 2-2 of FIGURE 1 with portions of the container broken away for clarity, and illustrates structural details of the holder.

FIGURE 3 is a sectional view taken along a line similar to line 2-2 of FIGURE 1 after the holder has been inserted through an open mouth of the container and illustrates a plurality of fingers internally gripping the container and a cover closing the mouth of the container.

FIGURE 4 is a bottom plan view taken along line 4-4 of FIGURE 2, and illustrates three equally circumferentially spaced gripping fingers of the holder.

FIGURE 5 is a highly diagrammatic view of a conveyor from which is suspended a plurality of article holders, and illustrates the article holders both free of and suspendingly supporting glassware.

A novel article support or glassware holder constructed in accordance with this invention is generally designated by the reference numeral 10 and comprises a generally elongated, cylindrical body member 11 having a first lower end portion 12 and a second upper end portion 13. The portions 12 and 13 of the body member 11 are externally threaded to receive a pair of nuts 14, 15 between which is positioned a cover 16 having an axial bore 17 in an end wall 18 through which the body member 11 projects.

The cover 16 is preferably constructed from Teflon or similar plastic material which is capable of withstanding temperatures of approximately 500 degrees F. The end wall 18 of the cover 16 includes an integral, central, depending, axial boss 20 defined by a peripheral surface portion or wall 21. The peripheral wall portion 21 opposes and is spaced from a similar peripheral wall portion or surface 22 of a peripheral skirt 23 directed downwardly toward the lower end portion 12 of the body member 11. The peripheral portions 21 and 22 define a downwardly opening annular recess or housing 24 closed at an uppermost portion thereof by a generally annular wall or surface 29.

Three identical flexible gripping fingers 25 through 27 are carried by the lower end portion 12 of the body member 11. Each of the gripping fingers 25-27 includes a first terminal end portion 28 adjacent the lower end portion 12 of the body member 11 and an integral second terminal end portion 30 directed upwardly toward and

terminating adjacent the upper end portion 13 of the body member 11. The terminal end portions 28 of the gripping fingers 25-27 are each apertured (unnumbered) and a screw 31 (FIGURE 2) passed through these apertures and threaded into an internally threaded axial bore 32 in the lower end portion 12 of the body member 11 secures the fingers to the body member 11 in the manner clearly illustrated in FIGURE 2.

The fingers 25-27 are preferably equally circumferentially spaced relative to the cover 16 and the body member 11, as is best illustrated in FIGURE 4 of the drawing. The upper terminal portions 30 of each of the gripping fingers 25 through 27 are received in the housing 24 between the peripheral surface portions 21, 22 and terminate short of the annular surface 29 (FIGURE 2).

The wareholder 10 is particularly adapted for gripping open mouthed articles G, such as containers, glass bottles or other glassware having necks or finishes N terminating in peripheral portions or lips L. Such glassware G is subjected to various processes during the manufacture thereof, and the wareholder 10 grips such glassware and supports the same during such manufacture. A plurality of wareholders 10 are preferably carried by an overhead conveyor (not shown) beneath which are supported a plurality of stationary or moving glass bottles. At a particular time the wareholders 10 are reciprocated or moved downwardly relative to the bottles from the position illustrated in FIGURE 2 to the position shown in FIGURE 3 of the drawing. This movement of the illustrated wareholder 10 can be accomplished in various ways, and means 35 (FIGURE 2) is illustrated for so moving the wareholder 10. The means 35 is preferably a hydraulic or pneumatic cylinder 36 having a plate 37 through which projects a piston rod 38. The body member 11 is secured to a lowermost end portion (unnumbered) of the piston rod 38 by, for example, a conventional screw thread connection (not shown) or welding. An opposite end of the piston rod 38 carries a piston (not shown) and by introducing fluid into the cylinder 36 in a manner well known in the prior art, the piston rod 38 and the wareholder 10 is reciprocated between the positions illustrated in FIGURES 2 and 3.

As the wareholder 10 is reciprocated downwardly by the means 35 to the position shown in FIGURE 3, the three flexible gripping fingers 25-27 pass through an open mouth (unnumbered) defined by the lip L of the glassware G, and the upper terminal end portions 30 are deflected or bowed to the position shown in FIGURE 3 in bearing gripping contact with an internal surface S of the neck or finish N. The lip L is received in and housed by the recess 24 with the end wall 18 of the cover 16 completely closing the opening defined by the lip L and the peripheral portion 23 completely shielding the lip L. When thus gripped by the wareholder 10 the glassware G can be transported by the conveyor (not shown) through various stages of manufacture such as spray painting, cooling operations, etc., without, for example, spray material or contaminants entering the interior of the glassware G or, in the case of spray painting, without the paint being applied to the glassware lip L because of the shielding action of the cover skirt 23. Furthermore, since the cover 16 is constructed of Teflon or other similar material as was heretofore noted, marring of the upper and outer circumferential surface portions of the lip L is generally precluded.

While no particular provision is made for preventing marring of the internal surface S of the glassware G, the flexible fingers 25-27, which are preferably formed of corrosion-resistive metallic material, can be coated with Teflon or similar plastic material.

A firmer grip between the wareholder 10 and the glassware G is achieved than has been heretofore possible with similar devices because of the contact between the upper terminal portions 30 of each of the gripping fingers 25 through 27 with the inner peripheral surface 21 of the

cover 16. This contact limits the radial inward movement of the terminal end portions 30 and permits these terminal end portions to bow to the general configuration of the internal surface portion S, as is best illustrated by the gripping finger 25 shown in FIGURE 3 of the drawing. Since the terminal portions 30 are bowed beyond the point of tangency relative to the internal surface S, planar contact, as opposed to line contact under conditions of tangency, is achieved by the wareholder 10 to effect extremely effective gripping action.

Due to the axial adjustment of the cover 16 relative to the gripping fingers 25-27 by selectively positioning and tightening the nuts 14, 15, the wareholder 10 can accommodate glassware differing somewhat in lip and neck configurations, as well as mouth dimensions.

Since the terminal end portions 30 of each of the fingers 25 through 27 are limited in their radially outwardly directed movement by abutment against the peripheral surface 22 of the cover 16, the gripping fingers 25-27 are at all times generally equally spaced from the axis of the body member 11 and thus exert equal pressure during the insertion of the fingers into the bottle G. This construction also prevents the terminal portions 30 from being accidentally or inadvertently bent outwardly beyond a point at which it would be impossible to insert the gripping fingers 25-27 into the bottle G.

While the particular material from which the body member 11 is constructed may vary in accordance with this invention, the body member 11 is constructed from electrically conductive material, as are the gripping fingers 25 through 27, to establish an electrically conductive path from the surface S of the bottle G to ground through the gripping fingers 25-27, the body member 11, the means 35 and an overhead conveyor (FIGURE 5). Upon such a construction the wareholder 10 can be used in conjunction with paint spray systems based upon well known electrostatic methods.

For the foregoing, it will be seen that novel and advantageous provisions have been made by carrying out the desired end. However, attention is again directed to the fact that additional variations may be made in this invention without departing from the spirit and scope thereof as defined in the appended claims.

I claim:

1. An article support particularly adapted for gripping open mouthed containers comprising an elongated body member, said elongated body member having first and second end portions, a plurality of gripping fingers, means securing the gripping fingers at the first end portion of the body member, said gripping fingers having terminal portions spaced from said body member adjacent said second end portions, a cover secured to said elongated body member at said second end portion, said cover including an outer peripheral portion directed toward said first end portion, and each of said finger terminal portions being at all times received between said peripheral portion and the second end portion of said body whereby outward movement of said finger terminal portions is limited by abutment thereof with said outer peripheral portion of said cover.

2. An article support particularly adapted for gripping open mouthed containers comprising an elongated body member, said elongated body member having first and second end portions, a plurality of gripping fingers, means securing the gripping fingers at the first end portion of the body member, said gripping fingers having terminal portions spaced from said body member adjacent said second end portion, a cover secured to said elongated body member at said second end portion, said cover including an inner peripheral portion directed toward said second end portion, and each of said finger terminal portions terminating adjacent said inner peripheral portion whereby inward movement of said finger terminal portions is limited by abutment thereof with said inner peripheral portion of said cover.

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3. An article support comprising a body member, a plurality of article gripping fingers carried by said body member, each of said fingers having an upwardly directed terminal portion, said body member including a cover, and means forming a portion of said cover for performing the combined function of limiting movement of said finger terminal portions toward and away from said body member and housing said finger terminal portions.

4. An article support particularly adapted for gripping open mouthed containers comprising an elongated body member, said elongated body member having first and second end portions, a plurality of gripping fingers, means securing the gripping fingers at the first end portion of the body member, said gripping fingers having terminal portions spaced from said body member adjacent said second end portion, a cover secured to said elongated body member at said second end portion, said cover including inner and outer peripheral portions spaced relative to each other to define therebetween a recess opening toward said first end portion, and each of said finger terminal portions being received in said recess whereby outward movement of said terminal portions is limited by the abutment thereof with said outer peripheral cover portion and inward movement of said terminal portions is limited by the abutment thereof with said inner peripheral cover portion.

5. The article support as defined in claim 4 wherein said recess is additionally defined by a wall portion of said cover between said peripheral portions.

6. The article support as defined in claim 5 wherein means are provided for adjusting said cover relative to said elongated body member in the direction of the axis of said body member.

7. The article support as defined in claim 6 wherein said adjusting means comprises an aperture in said cover, said body member being passed through said aperture, and fastening means securing said cover to said body member adjacent said aperture.

8. An article support comprising an elongated externally threaded generally cylindrical body member having a lower first end portion and an upper second end portion, at least three resilient gripping fingers, each gripping finger having first and second terminal portions in obtuse angular relationship relative to each other, the first terminal portion of each gripping finger being secured to the first end portion of said body member, said fingers being substantially equally circumferentially spaced from each other, said second terminal finger portions being directed upwardly relative to said first end portion toward said second end portion, a cover, said cover having an end wall normal to the axis of said body member, said cover further including inner and outer spaced continuous peripheral portions directed toward said first end portion, said peripheral portions defining a recessed housing opening toward said first end portion, the second terminal portions of said gripping fingers terminating in said recess in axial spaced relationship to said cover, said inner

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peripheral portions defining a stop to limit inward movement of said second terminal portions radially toward said body member, said outer peripheral portion defining a stop to limit outward movement of said second terminal portions radially away from said body member, an opening in said end wall receiving said body member, second end portion, and a nut at each side of said cover end wall for axially adjustably securing said cover to said body member.

9. An article support comprising a body member, a plurality of article gripping fingers carried by said body member, each of said fingers having an upwardly directed terminal portion, said body member including a cover, means forming a portion of said cover for at all times confiningly receiving the terminal portions of said fingers, said terminal finger portions being movable toward and away from said body member, and said last mentioned means including means for limiting the movement of said terminal finger portions toward and away from said body member.

10. An article support comprising a body member, a plurality of article gripping fingers carried by said body member, each of said fingers having an upwardly directed terminal portion, said body member including a cover, means forming a portion of said cover for at all times confiningly receiving the terminal portions of said fingers, said terminal finger portions being movable toward and away from said body member, said last mentioned means including means for limiting the movement of said terminal finger portions toward and away from said body member, and means for adjusting said body member axially relative to said cover.

11. An article support comprising a body member, a plurality of article gripping fingers carried by said body member, each of said fingers having an upwardly directed terminal portion, said body member including a cover, said cover including a portion overlying said terminal finger portions, means forming a portion of said cover for confiningly receiving the terminal portions of said fingers, and means for adjusting said body member axially relative to said cover to selectively vary the distance between the terminal portions of said fingers and said overlying corner portion.

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HUGO O. SCHULZ, *Primary Examiner.*