# United States Patent [19]

**Hodges**

[11] **3,785,794**

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[54] **METHOD FOR FORMING A DRINKING RECEPTACLE**


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**Related U.S. Application Data**

[62] Division of Ser. No. 48,162, June 22, 1970, Pat. No. 3,666,110.

[52] **U.S. Cl.** ..... **65/108,** 65/275, 65/277, 65/282, 65/296, 65/362, 164/295, 164/339

[51] **Int. Cl.** ..... **C03b 21/00**

[58] **Field of Search** ..... 65/108, 109, 275, 65/277, 282, 296, 297, 298, 362; 164/295, 339



[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 201,589 | 3/1878 | Blair | 65/109 |
| R12,934 | 4/1909 | Locke | 65/362 X |
| 1,445,641 | 2/1923 | Nowak | 65/108 |
| 1,390,626 | 9/1921 | Lindahl | 65/109 X |
| 1,721,983 | 7/1929 | Bailey | 65/109 X |
| 1,816,280 | 7/1931 | Dawson et al. | 65/297 |
| 411,043 | 9/1889 | Leng | 65/108 |
| 176,449 | 4/1876 | Stoehr | 65/109 |
| 3,360,352 | 12/1967 | Sundstrom et al. | 65/109 |
| 580,716 | 4/1897 | Proeger | 65/277 |
| 920,550 | 5/1909 | Dorman | 65/296 |



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[57] **ABSTRACT**

A method for forming a drinking receptacle having means for maintaining ice, fruit, and the like within the receptacle and spaced from the rim thereof during use including the steps of forming the receptacle with the guard in a first position, and then, moving the guard into a second position in which it is used.


**6 Claims, 7 Drawing Figures**

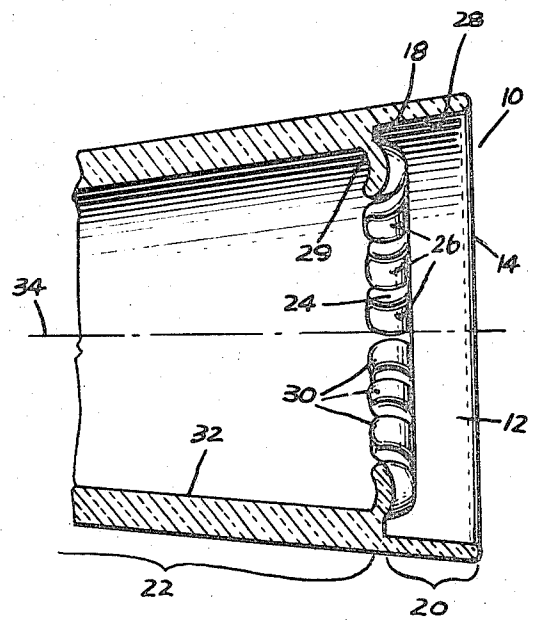


FIG. 1

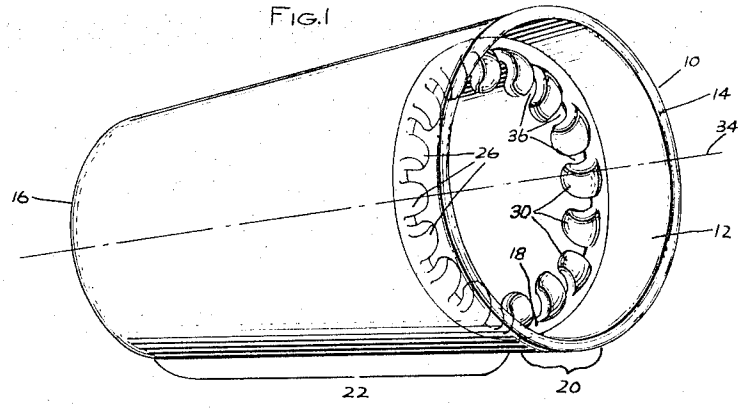



FIG. 2

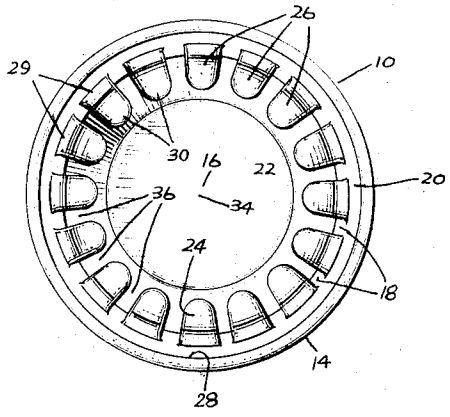



FIG. 3

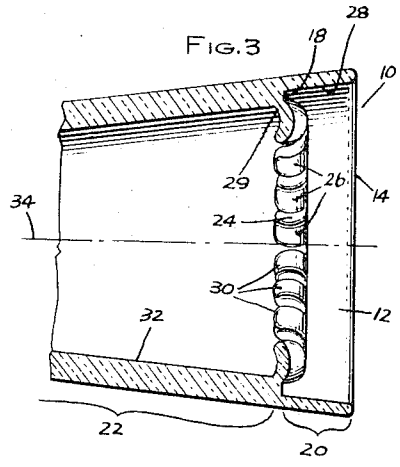



FIG. 4

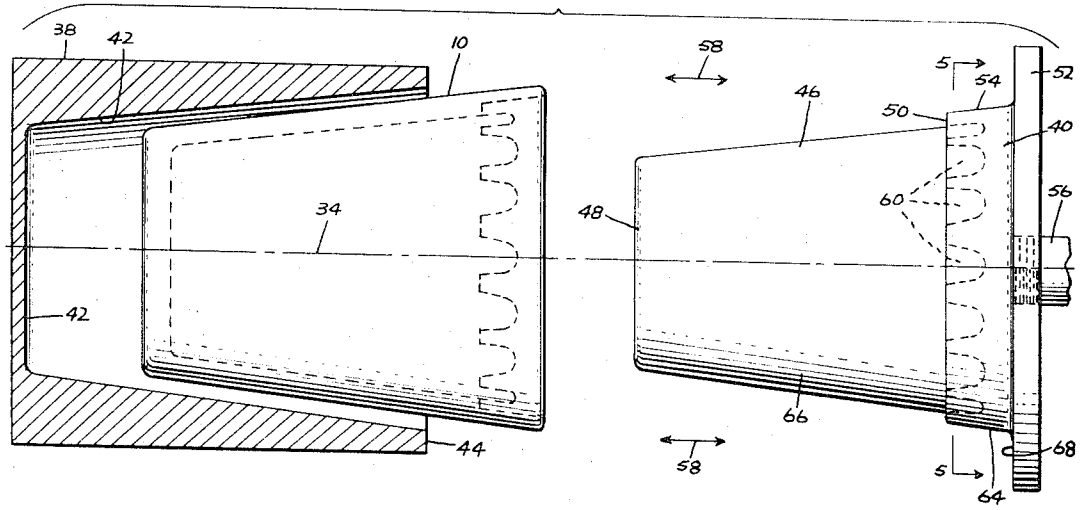


FIG. 5

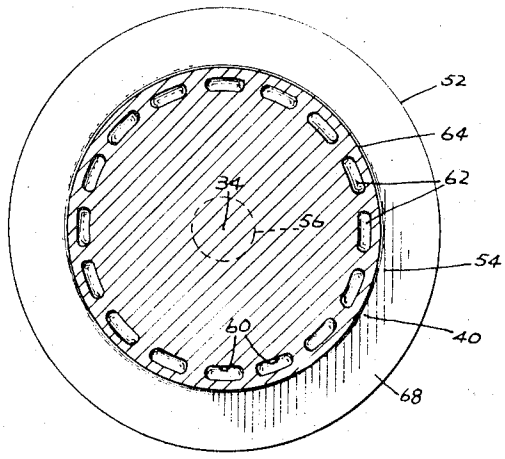



FIG. 7

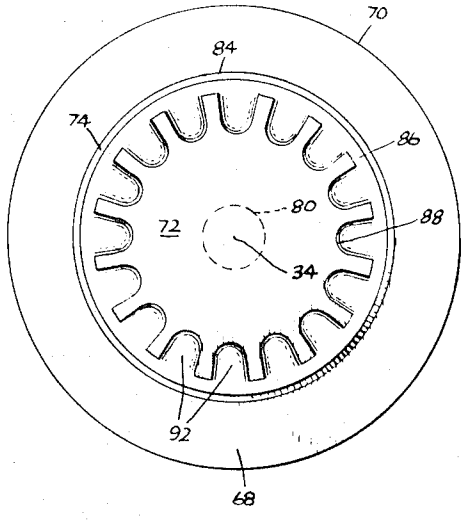
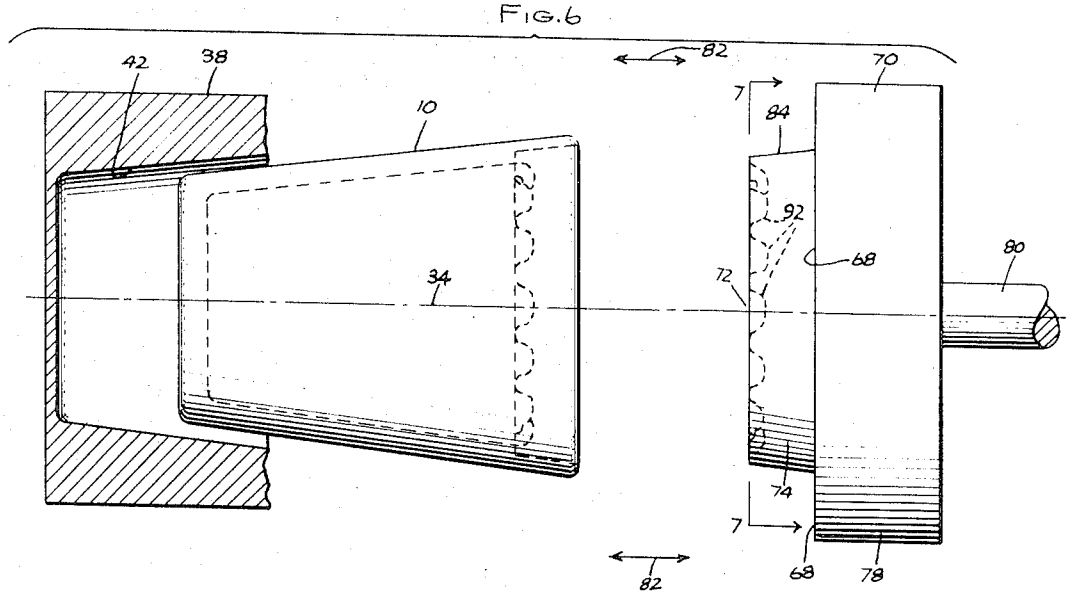



FIG. 6



# METHOD FOR FORMING A DRINKING RECEPTACLE

## CROSS REFERENCE TO RELATED APPLICATIONS

This application is a division of U.S. Pat. application Ser. No. 48,162, filed June 22, 1970 now U.S. Pat. No. 3,666,110 issued May 30, 1973.

## BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a drinking receptacle having means for maintaining ice, fruit, and the like within the receptacle and spaced from the rim of the receptacle during use; and more specifically, relates to a drinking glass having a guard spaced from the rim of the glass for retaining ice, fruit, and the like within the glass and spaced from a person's lips while the person is drinking from the glass.

2. Description of the Prior Art

Devices for retaining ice, fruit, and the like, in drinking glasses have heretofore been proposed. For the most part, these devices have been provided as attachments to drinking glasses and the like whereby they can be removed from the glass when desired. These devices are fabricated from materials which are different from the material of the receptacle with which they are used. These devices require the assembly of the device on the drinking glass prior to use, and, in general, possess the inconveniences of such devices, including the tendency to become loose after several uses, and to become dislodged from its desired position during use. It is therefore desirable to provide an improved drinking receptacle having means for maintaining ice, fruit, and the like, within the receptacle and spaced from the rim of the receptacle and a person's lips while the person is drinking from the receptacle and apparatus and method for forming the same integrally, as a single piece, out of a material such as glass.

## SUMMARY OF THE INVENTION

It is therefore the primary object of this invention to provide an improved drinking receptacle.

Another object of this invention is to provide an apparatus for forming a drinking receptacle having means integrally formed of the material of the receptacle for maintaining ice, fruit, and the like within the receptacle and spaced from the rim of the receptacle and a person's lips while the person is drinking from the receptacle.

A further object of this invention is to provide a method of forming a drinking receptacle having means integrally formed of the material of the receptacle for maintaining ice, fruit and the like within the receptacle and spaced from the rim of the receptacle and a person's lips while the person is drinking from the receptacle.

In the broader aspects of this invention there is provided a drinking receptacle having a guard extending from the interior surface of the receptacle and inwardly thereof. The apparatus of the invention comprises a plunger for use in combination with a mold for forming the drinking receptacle above-described. The plunger has an exterior surface with a configuration which is complementary to the guard of the receptacle in a first position which is different from the position in which the guard is used. The method of the invention comprises the steps of forming the receptacle and guard together, with the guard in the aforementioned first position, and then, moving the guard into the position in which it is used.



## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the improved drinking receptacle of the invention;

FIG. 2 is a view of the open end thereof;

FIG. 3 is a fragmentary cross-sectional view of the portion of the receptacle adjacent to the rim thereof illustrated in FIGS. 1 and 2;

FIG. 4 is a side view, partly in cross-section, of the improved receptacle and apparatus of this invention, the apparatus including a mold and plunger for performing a first part of the method of the invention;

FIG. 5 is a cross-sectional view of the plunger illustrated in FIG. 4 taken substantially along the section line 5—5 of FIG. 4;

FIG. 6 is a fragmentary, partially in cross-section, side view of the improved receptacle and apparatus of this invention for performing a second part of the method of the invention; and

FIG. 7 is an end view of the plunger illustrated in FIG. 6 taken substantially along the line 7—7 of FIG. 6.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, and more specifically to FIGS. 1 through 3, there is shown one embodiment 10 of the improved drinking receptacle of the invention. Embodiment 10 is a drinking glass having an open end 12 defined by a rim 14 and a closed end 16. Adjacent to but spaced from the rim 14 is a lip 18. Lip 18, in part, defines a portion 20 and a portion 22 of the glass of embodiment 10. Portion 20 extends between lip 18 and rim 14. Portion 22 extends between lip 18 and closed end 16.

In the specific embodiment illustrated, the interior surface 28 of portion 20, the interior surface 32 of portion 22 and the exterior surface of embodiment 10 are conically shaped, and more specifically, shaped like a frustum of a cone. In other embodiments, however, the exterior and interior surfaces of portion 22 may be shaped in a variety of ways. Preferably, the exterior and interior surfaces of portion 20 remain substantially the same.

In the specific embodiment illustrated, the glass thickness of the portion 20 is less than the glass thickness of the portion 22. The glass thickness in part is a result of the shape of the exterior and interior surfaces above-mentioned. The thickness of glass in the portion 22 can be reduced by shaping the portion 22 differently. In all embodiments, the glass thickness of portion 20 is conventional.

Referring specifically to FIG. 3 and the structure of portion 20 adjacent to lip 18, there is shown a guard 24. Guard 24 comprises a plutality of spaced-apart projections 26. Projections 26 extend from the lip 18 both toward the rim 14 and diametrically inwardly of the receptacle 10. Projections 26 are also spaced from the interior surface 28 of portion 20. Each of the projections 26 has a base 29 and a distal end 30. Base 29 is connected to lip 18 at a position spaced from interior surface 28. In contrast, the interior surface 32 of portion 22 smoothly merges with a surface of each projec-

tion 26. Each of the distal ends 30 and the exterior surfaces of each of the projections 26 are smoothly rounded. The projections 26 are generally flat with rounded edges. Descriptively, projections 26 may be said to be "tongue-shaped" as they are shaped like a human tongue.

The projections 26 are curved between bases 29 and distal ends 30. The curvature of the projections 26 is such that the distal ends 30 and the portions adjacent thereto extend inwardly past the innermost boundary of lip 18. Because of the curvature of projections 26, the dimensions of the projections 26 taken in the direction of the axis 34 of the receptacle 10 are less than the dimensions of the projections 26 taken in a direction transversely of the afore-mentioned axial direction. The largest dimension of the projections 26 is that dimension measured along the curvature between the distal ends 30 and the bases 28.

As afore-mentioned, projections 26 are spaced apart. Thus, projections 26 define, in part, openings 36 therebetween.

Preferably, guard 24 is positioned as close to rim 14 as possible but out of the reach of the lips of a person drinking from the receptacle 10. In a specific embodiment, the axial length of portion 20 is about ½ inch.

Referring now to FIGS. 4 through 7, the apparatus of the invention includes a mold 38 and a plunger 40. Mold 38 is illustrated to have an interior surface 42. This surface defines the exterior shape of receptacle 10. Surface 42 of mold 38 thus is the complement of the exterior surface of receptacle 10. Mold 38 has an open end defined by an annular surface 44 against which the plunger 40 is urged when the mold 38 is closed.

Plunger 40 has three differently shaped portions. Portion 46 extends from distal end 48 of the plunger 40 to an annular lip 50. Portion 46 and end 48 have an exterior surface 66 of a shape which is the complement of the interior surface 32 of portion 22. Lip 50 has a shape which is the complement of lip 18.

Portion 52 is spaced from portion 46 by portion 54. Portion 52 is shown to be disc-shaped and connected to a rod 56. Rod 56 provides means whereby the plunger 40 may be moved relative to the mold 38 as diagrammatically illustrated by the arrows 58.

Portion 54 of the plunger 40 has a plurality of cavities 60 and an exterior surface 64. Surface 64 has a shape complementary to the surface 28 of the portion 20. The cavities 60 have a shape complementary to the projections 26 in a straight condition in which the projections 26 between the bases 28 and the distal ends 30 are straight and upstand from the lip 18 toward the rim 14 as shown in FIG. 4, and are not curved as shown in FIG. 3. The projections 26 formed by the cavities 60 extend toward the rim 14 generally parallel to the surface 28. It is in this position that projections 26 are first formed. Each of the cavities 60 has an opening 62 in the surface 50. The cavities 60 and their respective openings 62 are spaced-apart from each other and are spaced from the conical surface 64 of the portion 54. The cavities 60 and the openings 62 are adjacent to the conical surface 66 of the portion 46 of the plunger 40. Both the cavities 60 and the openings 62 define a circle having a center on axis 34 when extended. The axis 34 when extended is coincident with the axes of the plunger, the conical portions 46, 52 and 54, and the surface 42 of the mold 38.

Portion 52 has an annular surface 68 surrounding portion 54 which engages the surface 44 when the plunger is fitted into the mold 38 and the mold 38 is closed. Surfaces 44 and 68 are engaged in a manner to prevent leakage from the mold 38 when closed, in a manner which is conventional.

Referring to FIGS. 6 and 7, there is shown the remaining apparatus of the invention. This apparatus consists of a plunger 70. Plunger 70 comprises a distal end 72, a portion 74, a portion 78, and a rod 80. Portion 74 is adjacent to and extends between distal end 72 and portion 78. Portion 78 is adjacent to and extends between portion 74 and rod 80.

Portion 78 is disc-shaped and may be identical to portion 52 of plunger 40. Like portion 52 of plunger 40, portion 78 has surface 68 thereon which cooperates with surface 44 of mold 38 to seal the mold in a closed position.

Rod 80 provides means by which the plunger 70 and the mold 38 can be moved relative to each other as diagrammatically illustrated by the arrow 82.

Portion 74 has an exterior conical surface 84 which is complementary to the surface 28. The peripheral portion 86 of the distal end 72 is complementary to the shape of the annular lip 18. Concentric with the annular surface 86 is a second annular surface 88 and an inner surface portion 90. The inner surface portion 90 corresponds in size to the circular space defined by and located within the projections 26. Surface portion 90 is separated from surface portion 86 by surface portion 88.

In the specific embodiment illustrated, surface portion 88 has a plurality of cavities 92 therein. Cavities 92 are spaced apart and arranged in a circle which has its center on axis 34 when extended. Cavities 92 are spaced apart from surface 84 of portion 74 and spaced apart from each other. There are the same number of cavities 92 in plunger 70 as there are cavities 60 in plunger 40. Further, the position of the cavities 92 with regard to axis 34 and each other is identical to the position of the cavities 60 with regard to axis 34 and each other so that the projections 26 formed by the cavities 60 will, upon proper positioning rotationally, be in registry with one of the cavities 92, there being one cavity 92 for each projection 26. The shape of the cavities 92 is complementary to the shape of the projections 26, in the curved condition illustrated in FIG. 3.

In operation, the improved drinking receptacle of the invention functions like any other drinking receptacle, with one exception. This exception is that any ice, fruit and the like in the drinking receptacle will be held away from the rim 14 of the receptacle and the lips of a person drinking from the receptacle by the guard 24 disclosed herein.

The apparatus of the invention functions in a manner to perform the method of the invention. As described hereinabove, the apparatus comprises a mold 38 and plungers 40 and 70. As is conventional, drinking receptacles are formed from either a parison or a gob of glass. In the former method, a parison is formed, and subsequently thereto, the parison is placed within a mold. The parison is then formed into the shape of the mold, cooled and extracted from the mold. In the latter method, the gob of glass is placed within a mold, and then formed into the shape of the mold, cooled, and extracted from the mold. The apparatus of the invention

includes the mold 38 in which either a parison or a gob of glass can be positioned and shaped.

The method of the invention comprises steps which are not conventional in the manufacture of drinking receptacles. Specifically, the method of the invention as it relates to forming drinking receptacles from a parison comprises the steps of: (1) forming a parison, the parison being hollow and having an open end and a closed end, (2) placing the parison within the mold 38, the closed end of the parison being within the mold 38 adjacent to the closed end of the mold 38 and the open end of the parison being adjacent to the open end of the mold 38, (3) inserting the plunger 40 within the open end of the parison, (4) closing the mold 38 by engaging the surfaces 44 and 68, the parison having sufficient glass to fill the space between the mold 38 and plunger 40.

The method of the invention, specifically, as it relates to forming drinking receptacles from a gob of glass, comprises the steps of: (1) providing a gob of glass, (2) placing the gob of glass within the mold 38, (3) inserting the plunger 40 within the open end of the mold 38, (4) closing the mold 38 by engaging the surfaces 44 and 68, the gob of glass having sufficient glass to fill the space between the mold 38 and the plunger 40.

These first four steps of the improved method of this invention result in the forming of a receptacle with the projections 26 of the guard 24 in a straight condition whereby each projection 26 extends toward the rim 14 generally parallel to the wall 28 of the portion 20 of the receptacle (see FIG. 4).

Continuing, the method of the invention includes the steps of (5) breaking the mold 38 and (6) removing the plunger 40 therefrom, while keeping the partially formed receptacle in the mold. As will be apparent to persons skilled in the art of forming receptacles such as 10 by a mold, each of the surfaces of the receptacle 10, and thus, each of the surfaces of the mold 38 and the plunger 40 must be tapered to some extend such that the mold can be broken apart after the receptacle 10 is formed. Thus, both the exterior surfaces and interior surfaces 28, 32 of the receptacle 10 must be tapered as afore-described. Further, each of the bases 29 of the projections 26 must be larger than the distal ends 30 so that each of the projections 26 will also be tapered.

Again continuing, the method of the invention includes the steps of (7) inserting the plunger 70 into the partially formed receptacle in mold 38 and (8) closing the mold 38 with the plunger 70 by engaging the surfaces 44 and 68. End 72 is thereby engaged with distal ends 30 of the projections 26 and the projections 26 are moved into the curved position afore-described and illustrated in FIG. 3. Projections 26 are moved into this curved position by the cavities 92 and end 72. The cavities 92 possess interior surfaces which are complementary to the desired shape of the projections 26. The method is terminated by (9) removing the finished receptacle 10 from the mold 38. This may be achieved by providing the mold 38 with a plunger which forms the closed end of the mold 38 whereby actuation of the plunger pushes the receptacle out of the mold 38. Molds with such plungers are conventional.

While the method of the invention as described hereinabove utilizes both a plunger 40 and a plunger 70, it should be understood that the method of the invention could be performed utilizing still other apparatus. For example, while they may be preferred, cavities 92 are not required to move the projections 26 from the straight position illustrated in FIG. 4 in which they are formed into the curved position, illustrated in FIG. 3. A flat end surface 72 could also perform this function. Further, a single plunger 40 and a mold 38 could be utilized to perform the method of this invention, and the entire plunger 70 could be eliminated. In this embodiment, instead of utilizing the plunger 70, the plunger 40 could be rotated about the axis 34 such that the projections 26 would not be in registry with a cavity 60, but in contrast, would be in registry with the flat surface 50 between the cavities 60. The plunger 40 could then perform the function of plunger 70 by partially inserting the plunger 40 into the partially formed receptacle in mold 38 thereby to move the projections 26 from the straight position in which they are formed (see FIG. 4) into their curved position illustrated in FIG. 3. These steps would be substituted for and take the place of steps (7) and (8) of the method above-described.

While there have been described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention.

What is claimed:

1. A method of forming a single piece drinking receptacle of a flowable and hardenable material having a rim and a bottom and a wall extending from said bottom to said rim comprising the steps of forming a lip of the material of said wall having a lip surface facing said rim and extending from said wall inwardly of said receptacle between said rim and said bottom, forming a guard of said lip and wall material extending from said lip surface toward said rim spaced from and generally parallel to said wall surface and having spaced portions thereof defining with said lip surface openings adjacent said lip surface, and subsequently moving said guard into a second position in which said guard extends inwardly of said receptacle past said lip.

2. The method of claim 1 wherein said forming steps include the steps of forming a parison, the parison being hollow and having an open end and a closed end, placing said parison in a first mold part, said first mold part having an open end and a closed end, said closed parison end being positioned adjacent to said closed mold end and said open mold end being positioned adjacent to said open parison end, inserting a second mold part having portions which are complements of said lip and guard into said parison through said open parison end, said parison having a sufficient volume of said material to fill the space between said first and second mold parts including said complemental portions, and filling said complemental portions and said mold space.

3. The method of claim 2 wherein said inserting step includes the step of inserting a plunger having a lip formed in its exterior surface separating a larger plunger portion adjacent a rim-forming portion and a smaller plunger portion adjacent a bottom-forming portion and a plurality of spaced cavities in said larger portion with openings arranged on said lip to be spaced apart and spaced from the exterior surface of said larger portion, and said filling step includes the filling of said cavities.

4. The method of claim 3 wherein said cavities are elongated and extend generally axially of said plunger, said openings being spaced and extending around said

small portion, said first mold part having an interior surface, said interior surface being complementary to the exterior surface of a drinking receptacle, said exterior surface of said second mold part being complementary to the interior surface of said receptacle.

5. The method of claim 2 wherein said moving step includes the steps of breaking said first and second mold parts apart, removing said second mold part from within said molded part without removing the molded part from said first mold part, inserting a third mold part into the molded part previously formed by said first and second mold parts, engaging said guard with said third mold part, and moving said guard so as to extend inwardly of said receptacle past said lip while maintaining the shape of the remainder of said receptacle.

6. The method of claim 2 wherein said moving steps include the step of breaking said first and second mold parts apart, spacing said second mold part from said first mold part without removing the molded part from said first mold part, rotating said second mold part to misalign said guard with its complemental portions of said second mold part engaging said guard with said second mold part portions which are complemental to said lip, and moving said guard so as to extend inwardly of said receptacle past said lip by partially closing said first and second mold parts while maintaining the shape of the remainder of said receptacle.

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