United States Patent [19]

Rooke et al.

[11] **3,732,909**

[45] **May 15, 1973**

[54] **THERMPOLASTIC CONTAINER AND COVER**

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[22] Filed: **Feb. 16, 1971**

[21] Appl. No.: **115,342**

[52] **U.S. Cl.**.....**150/0.5,** 215/41, 220/42 C, 220/60 R

[51] **Int. Cl.** .....**B65d /00**

[58] **Field of Search**.....150/0.5; 220/60 R, 220/42 C, 42 D, 42 E, 42 F; 215/41; D9/220, 219, 216; D44/1

[56] **References Cited**

UNITED STATES PATENTS

3,128,903	4/1964	Crisci	220/60 R
3,360,119	12/1967	Mullinix	220/60 R X
2,802,499	8/1957	Tupper	150/0.5

FOREIGN PATENTS OR APPLICATIONS

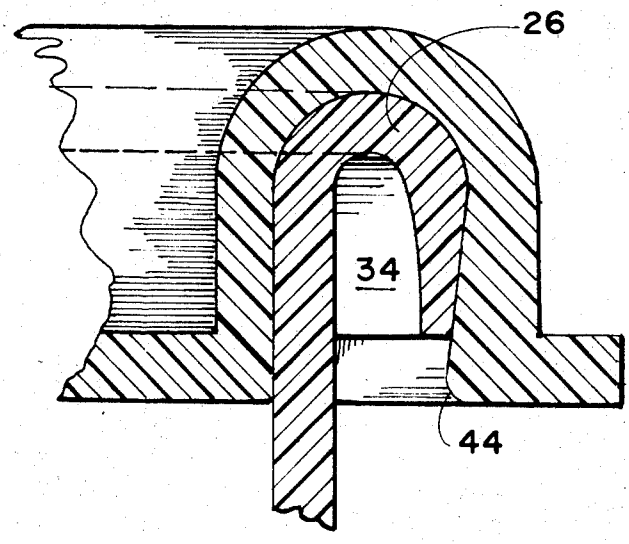
13,750	6/1904	Great Britain	220/42 C

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[57] **ABSTRACT**

A container and a hermetically sealable and removable cover therefor each formed of locally deformable thermoplastic material and each having depending skirts. The container skirt forms part of a rim flange with a semi-circular upper portion and the skirt is of decreasing thickness viewed downwardly. The closure skirt forms an outer wall of a downwardly open groove for receiving the container rim flange and which has a complementary semi-circular top groove wall. The cover skirt increases gradually in thickness viewed downwardly and serves to flex the container skirt inwardly on engagement of the cover whereby to provide a resilient gripping engagement of the cover and container.

10 Claims, 4 Drawing Figures



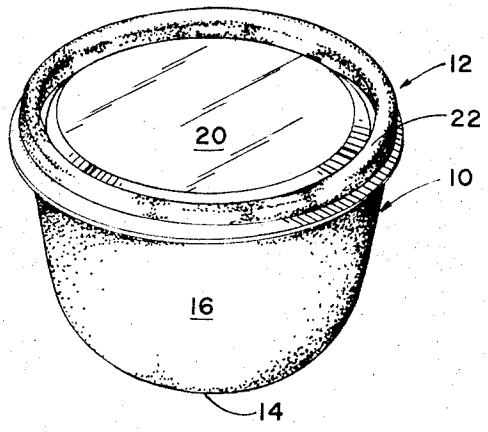


FIG. 1

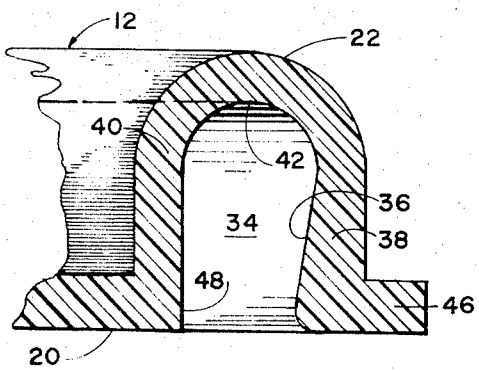


FIG. 2

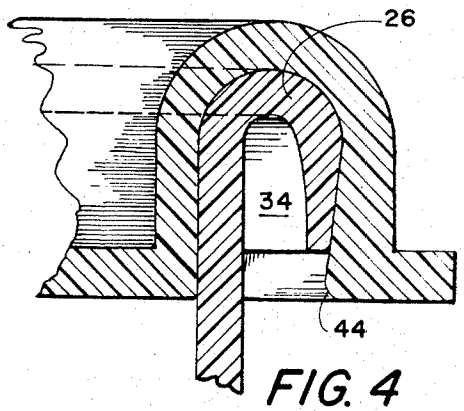


FIG. 4

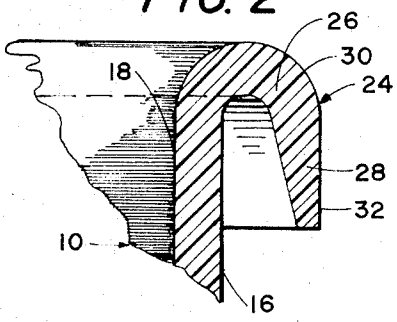


FIG. 3

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THERMPOLASTIC CONTAINER AND COVER

BACKGROUND OF THE INVENTION

A multitude of thermoplastic container and cover designs exist in the prior art. One or more features such as positive hermetic sealing engagement, ease of manufacture, ease and convenience of use, etc. characterizes the various designs.

SUMMARY OF THE INVENTION

It is the general object of the present invention to provide an improved container and closure design which will reflect a judicious compromise of the best of several features such as positive sealing engagement, ease of manufacture, ease and convenience in use, etc.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the container and cover of the present invention.

FIG. 2 is an enlarged fragmentary sectional view through a peripheral groove portion of a cover constructed in accordance with the present invention.

FIG. 3 is an enlarged fragmentary sectional view through a peripheral rim flange portion of a container constructed in accordance with the present invention.

FIG. 4 is an enlarged fragmentary sectional view through the peripheral cover and container portions of FIGS. 2 and 3 with the cover and container in sealing engagement.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring particularly to FIG. 1, it will be observed that a container and cover assembly therein comprises a container **10** and a cover **12.** The container and cover are constructed of resilient and locally deformable thermoplastic material material such as polyethylene and may vary widely in form. As shown, the container **10** takes the form of a mixing bowl or the like with a generally flat and horizontal bottom wall **14** and an integral upstanding peripheral side wall **16** which defines a mouth **18,** FIG. **3,** which is open upwardly. The cover **12** has a central or body portion **20** which is generally flat and which extends in a generally horizontal plane to an integral peripheral groove portion **22.** As will be seen, the groove portion **22** engages with the rim or mouth portion of the container **10** in frictional and hermetically sealing engagement.

In FIG. **3,** the container **10** is illustrated with an upper or mouth portion **18** of the side wall **16** and adjacent the mouth **18** and outwardly disposed therefrom, there is formed an integral peripheral rim flange **24.** The rim flange **24** includes a generally horizontally outwardly projecting upper portion **26** and a depending peripheral skirt or skirt portion **28** spaced outwardly from but flexible inwardly toward the side wall **16.** Preferably, and as shown, the generally horizontal upper portion **26** is provided with an arcuate and semicircular upper surface **30.** The peripheral skirt or skirt portion **28** may vary in form but preferably has a vertical outer wall or surface **32** and the thickness of the skirt gradually decreases as the skirt is viewed downwardly.

In FIG. **2,** the groove portion **22** of the cover **12** is shown with a peripheral groove **34** which opens downwardly and which is adapted to receive the rim flange **24** of the container **10.** The groove **34** has its outer wall

36 defined by an inner surface of a depending peripheral skirt **38** and, in accordance with the invention, said outer wall or inner surface **36** is inclined inwardly and downwardly from the vertical. The skirt **38** is preferably of gradually increasing thickness viewed downwardly and is in any event of greater thickness than the aforementioned container skirt **28** whereby to flex the latter inwardly during container and cover engagement.

The vertical relationship of the body portion **20** of the cover **12** with respect to the groove **34** may vary, but preferably and as shown, the said body portion is adjacent the lower or mouth portion of the groove. That is, an integral upright peripheral portion **40** extends from the body portion **20** to an upper generally horizontal and laterally outwardly projecting portion of the cover groove portion **22.** As shown, the said generally horizontal portion has an arcuate configuration with an arcuate top wall **42** in the groove **34.** More particularly, the top wall **42** of the groove **34** is semicircular in cross section and is complementary to the aforementioned semi-circular upper surface **30** of the container rim flange **26.** Further, the aforementioned downwardly and inwardly inclined outer groove wall or inner skirt surface **36** lies in a plane which depends from and which is tangent to said semi-circular wall **42.** Thus, when the rim flange **24** is entered in the groove **34** in hermetically sealing engagement, the container skirt **28** is flexed inwardly as indicated in FIG. **4** and a resilient gripping engagement of the cover and the rim flange **24** is provided for.

For ease and convenience in telescopically entering the rim flange **24** in the cover groove **34,** the cover skirt **38** is substantially longer than the container skirt **28** and the former has a rounded inner and lower edge **44.** Thus, inadvertent binding and/or marring of the outer surface **32** of the container skirt is avoided. Still further, there is preferably provided an integral and outwardly projecting peripheral rim **46** at a lower end portion of the skirt **38.** As will be apparent, the rim **46** provides for ease and convenience in manual manipulation during engagement and disengagement of the cover and container.

Referring to FIGS. **2, 3** and **4,** it should be noted that the diameter at the inner surface **48** of the groove **34** is somewhat greater than the diameter at the inner surface or mouth **18** of the side wall **16.** Thus, when the cover and container are engaged as shown in FIG. **4,** there is a slight outward flexing of the mouth portion of the container. Further and as mentioned above, there is a slight inward flexing of the skirt **28** and at least a slight bulging or balooning tendency also occurs at the semi-circular portion **26** of the rim flange. Thus, it will be apparent that the aggregate sealing engagement may be viewed as comprising a first peripheral line or area of sealing engagement between the mouth **18** and the inner groove surface **48,** a second peripheral line or area of sealing engagement between the surfaces **30** and **42,** and a third peripheral line or area of sealing engagement between the outer surface **32** of the skirt **28** and the inner surface **36** of the skirt **38.** Excellent hermetic sealing characteristics are thus achieved in combination with a design which exhibits a high degree of economic advantage and ease in manufacture and enhanced ease and convenience in use.

We claim:

1. A container and a hermetically sealable and removable cover therefor, said container and cover being formed of a resilient and locally deformable thermoplastic material and said container having a bottom and a generally vertical side wall and an upwardly open mouth, said side wall having adjacent said mouth and outwardly disposed therefrom an integral peripheral rim flange with a generally horizontally outwardly projecting portion and a depending skirt spaced outwardly from and flexible inwardly toward said side wall, said skirt having a generally vertical outer peripheral surface, said cover having a peripheral downwardly open groove with an outer wall thereof defined by an inner surface of a depending peripheral skirt and inclined inwardly and downwardly from the vertical, said skirt being of a somewhat greater thickness than said container skirt, said container rim flange being fully seated in said cover groove forming a frictional telescopic, and hermetical engagement with said container skirt, and said container skirt being flexed inwardly be said cover skirt thereby providing a resilient gripping engagement between said cover and flange.

2. A container and hermetically sealable and removable cover therefor as set forth in claim 1 wherein said container skirt is of gradually decreasing thickness viewed from top to bottom.

3. A container and hermetically sealable and removable cover therefor as set forth in claim 1 wherein said cover has an integral outwardly projecting peripheral rim at a lower end portion thereof, said rim providing for ease in manual manipulation during engagement and disengagement of said container and cover.

4. A container and hermetically sealable and removable cover therefor as set forth in claim 1 wherein said cover groove has an arcuate top wall and wherein said rim flange has an arcuate upper surface on said generally horizontal portion which is complementary to said arcuate top wall for hermetic sealing engagement therebetween.

5. A container and hermetically sealable and removable cover therefor as set forth in claim 4 wherein said arcuate groove top wall and said arcuate upper surface on said rim flange are each partially circular in cross section with the aforesaid downwardly and inwardly inclined outer groove wall lying in a plane depending from and tangent to said arcuate top wall.

6. A container and hermetically sealable and removable cover therefor as set forth in claim 5 wherein said arcuate groove top wall and said arcuate upper surface on said rim flange are each semi-circular in cross section.

7. A container and hermetically sealable and removable cover therefor as set forth in claim 6 wherein an integral upright peripheral portion is formed on a generally flat horizontal body portion of said cover to provide said inner wall of said groove.

8. A container and hermetically sealable and removable cover therefor as set forth in claim 7 wherein said container skirt is of gradually decreasing thickness viewed from top to bottom, and wherein said cover skirt is of gradually increasing thickness viewed from top to bottom.

9. A container and hermetically sealable and removable cover therefor as set forth in claim 8 wherein said cover skirt is substantially longer than said container skirt and has a rounded inner and lower edge portion for ease in engagement and disengagement with said container skirt.

10. A container and hermetically sealable and removable cover therefor as set forth in claim 9 wherein said cover has an integral outwardly projecting peripheral rim at a lower end portion thereof, said rim providing for ease in manual manipulation during engagement and disengagement of said container and cover.

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