Aug. 20, 1968 R. W. MELTON 3,397,803

EASY OPENING CLOSURE FOR TAPERED CONTAINERS

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FIG.1

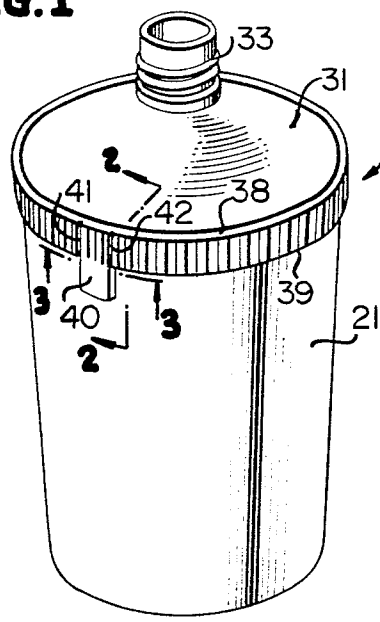


FIG.4

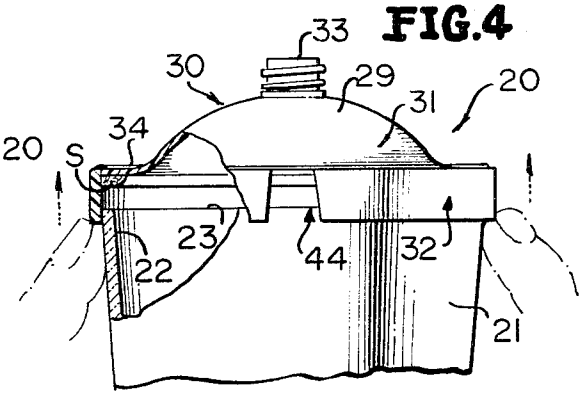


FIG.5

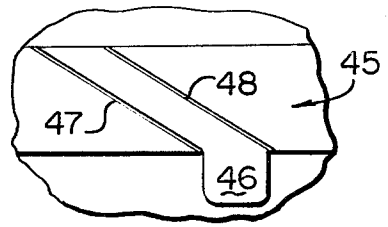


FIG.2

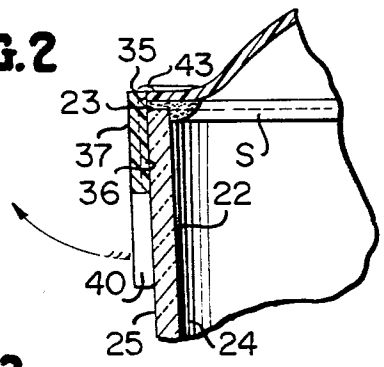


FIG.6

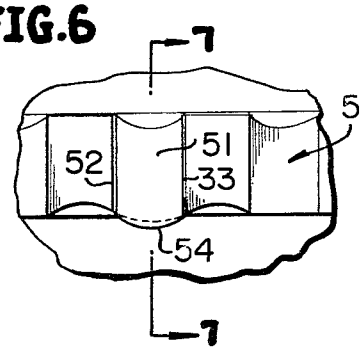


FIG.7

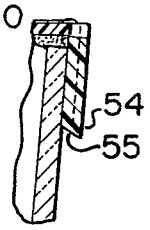


FIG.3

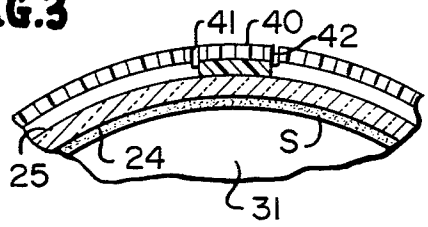


FIG.8

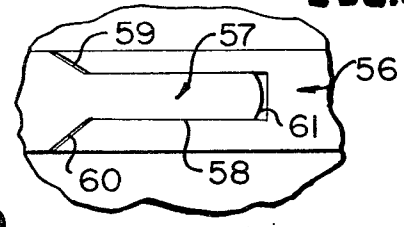
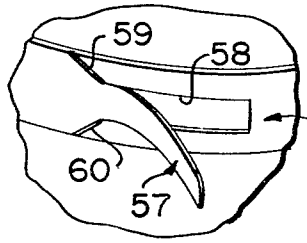


FIG.9



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EASY OPENING CLOSURE FOR TAPERED CONTAINERS

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FIG. 10

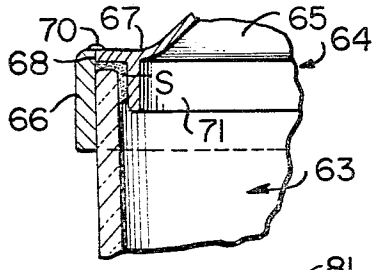


FIG. 11

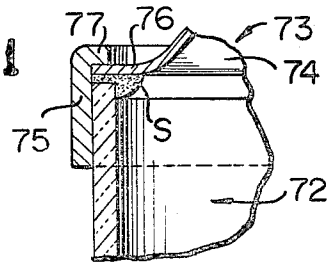


FIG. 12

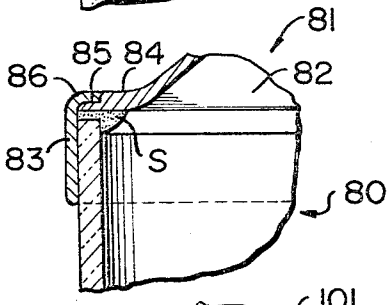


FIG. 13

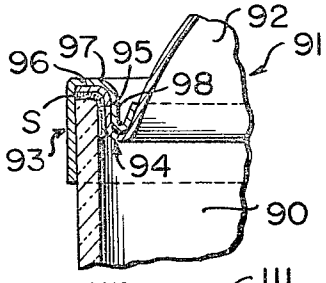


FIG. 14

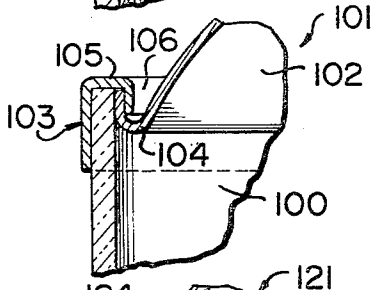


FIG. 15

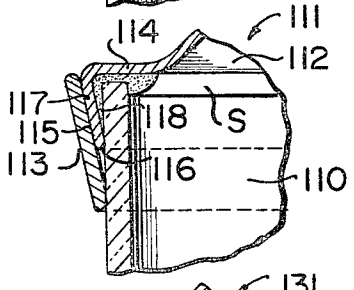


FIG. 16

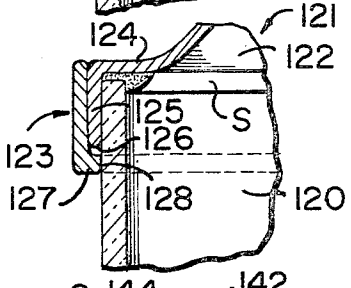


FIG. 17

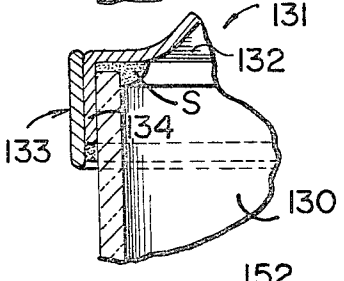


FIG. 18

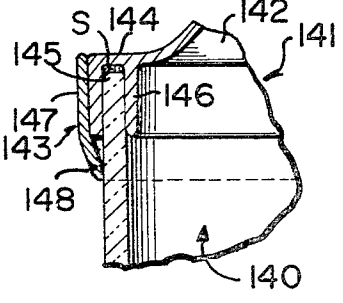
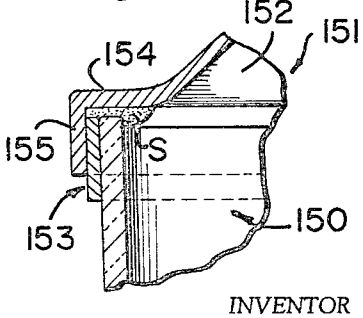


FIG. 19



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3,397,803

EASY OPENING CLOSURE FOR TAPERED CONTAINERS

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Filed Mar. 18, 1966, Ser. No. 535,445
19 Claims. (Cl. 215—95)

ABSTRACT OF THE DISCLOSURE

A container having an upwardly flaring upper rim has a closure overlying the rim. A retaining ring is telescoped upwardly over the container into wedging engagement with the rim. The ring is secured to the closure by means which may be ruptured to enable removal of the closure from the container.

This invention relates in general to new and useful improvements in closures for containers, and more particularly to a novel easy opening closure which is specifically adapted for use in closing the upper end of a tapered container body.

It is well known that in sealing an open end of a container, a closure member is applied thereto and retained in place by interlocking the closure member either directly with the container or by means of a retaining ring. However, when the container presents only a tapered outer surface it has been very difficult to permanently retain a closure in place on such a tapered container. In view of this, it is the primary object of this invention to provide a novel retaining ring which utilizes the taper of the container for retaining the retaining ring in place on the container.

Another object of this invention is to provide a novel closure assembly for a container which has an upwardly flaring outer rim portion, the closure including a closure disc adapted to seat on the upper end of the container and a retaining ring which is wedgeable on the rim portion of the container and has an upper portion which is crimpable over the closure disc.

Another object of this invention is to provide a novel closure assembly for a container which has an upwardly flaring outer rim portion, the closure including a closure disc adapted to seat on the upper end of the container, the closure disc including a peripheral portion which is either solely in overlying relationship to the container outer rim portion, is in internal telescopic relationship to the rim portion, is in outer telescopic relationship to the rim portion, or is in both inner and outer telescopic relationship to the outer rim portion, and in each case a retaining ring is provided which is wedgeable on the container or the peripheral portion of the closure for retaining the closure disc and container in assembled relationship.

A further object of this invention is to provide a novel method of securing a closure disc to a tapered container of the tumbler type, the method including the steps of applying the closure disc to a container, upwardly wedging a retaining ring around the upper portion of the container, and then crimping an upstanding portion of the retaining ring into overlying relation with respect to the closure disc so as to interlock the closure disc with the tumbler.

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 drawings:

In the drawings:

FIGURE 1 is a top perspective view of a container formed in accordance with this invention, and illustrates a retaining ring wedgeably secured to an upper end portion of a container body and a closure disc secured thereto.

FIGURE 2 is an enlarged fragmentary sectional view taken generally along line 2—2 of FIGURE 1, and illustrates an axially depending tab of the retaining ring which is removable to release the wedging engagement between the retaining ring and the container body.

FIGURE 3 is an enlarged sectional view taken generally along line 3—3 of FIGURE 1, and more clearly illustrates the depending tab and lines of weakening formed in the retaining ring.

FIGURE 4 is a fragmentary side elevational view with parts broken away for clarity of the container of FIGURE 1, and illustrates the removal of the closure and retaining ring upon the removal of the depending tab.

FIGURE 5 is a fragmentary side elevational view of a portion of a container similar to the container of FIGURE 1, and illustrates a retaining ring provided with a removable portion for releasing the retaining ring and an associated closure from the wedging engagement thereof with a container body.

FIGURE 6 is a fragmentary side elevational view of another container constructed in accordance with this invention, and illustrates a retaining ring thereof provided with a removable tab for releasing the wedging engagement between the retaining ring and an upper portion of the container.

FIGURE 7 is a sectional view taken generally along line 7—7 of FIGURE 6, and more clearly illustrates the construction of the removable tab.

FIGURE 8 is a fragmentary side elevational view of another container constructed in accordance with this invention, and illustrates a tear-tab formed in a retaining ring for rupturing the retaining ring incident to an opening operation.

FIGURE 9 is a fragmentary perspective view of the container of FIGURE 8, and illustrates the pull tab bent away from the plane of the retaining ring just prior to an opening operation.

FIGURE 10 is a fragmentary sectional view taken through another container of this invention generally along a line corresponding to the line 2—2 of FIGURE 1, and illustrates a modified form of closure which includes a depending internal skirt in spaced relationship to the periphery of the closure disk.

FIGURE 11 is a fragmentary sectional view similar to FIGURE 10, and illustrates another container provided with a retaining ring having a portion crimped into overlying relationship to a closure.

FIGURE 12 is a fragmentary sectional view similar to FIGURES 10 and 11, and illustrates another container which includes a retaining ring having a crimped portion received in a peripheral slot of a closure.

FIGURE 13 is a fragmentary sectional view similar to FIGURES 10 through 12, and illustrates another container which includes a retaining ring in overying relationship to a closure which is both in internally telescopic and axially overlying relationship to an upper rim of the container.

FIGURE 14 is a fragmentary sectional view similar to FIGURES 10 through 13, and illustrates a peripheral portion of a closure sandwiched between an upper rim of a container body and a crimped portion of a retaining ring.

FIGURE 15 is a fragmentary sectional view similar to FIGURES 10 through 14, and illustrates another container in which both a peripheral skirt of a closure and a retaining ring are in downwardly converging relationship relative to the container axis.

FIGURE 16 is a fragmentary sectional view similar to

FIGURES 10 through 15, and illustrates a peripheral skirt of a closure in sandwiched relationship to a container body and a retaining ring, with a lower edge of the retaining ring being directed radially inwardly.

FIGURE 17 is a fragmentary sectional view similar to FIGURES 10 through 16, and illustrates a peripheral closure skirt in sandwiched relationship to a container body upper rim and a retaining ring.

FIGURE 18 is a fragmentary sectional view similar to FIGURES 10 through 17, and illustrates another container having a closure provided with a pair of depending peripheral skirts receiving the rim of a container body and a retaining ring in external telescopic relationship thereto.

FIGURE 19 is a fragmentary sectional view similar to FIGURES 10 through 18, and illustrates another container having a retaining ring sandwiched between an upper rim of a container body and a depending peripheral skirt of a closure.

A novel container constructed in accordance with this invention is illustrated in FIGURES 1 through 4 of the drawings, and is generally designated by the reference numeral **20**. The container **20** includes a container body **21** which is illustrated as being in the form of a tumbler, but which may be any type of container body which has an upwardly flaring upper rim portion or upper end portion **22**. The upper end portion **22** of the container body **21** terminates in a lip **23** which gradually merges with respective inner and outer surfaces **24**, **25** of the container body **21** (FIGURE 2). The container body **21** is closed at a lower end portion thereof by a bottom wall (not shown), while the upper rim portion or upper end portion **22** is closed by a closure or closure assembly which is generally designated by the reference numeral **30**.

The closure assembly **30** is of a two-part construction which includes a closure disc **31** and a retaining ring **32**.

The closure disc **31** includes a central portion **29** from which rises a threaded neck **33** to which may be secured a closure cap (not shown). The closure disc **31** is generally dome-shaped in configuration and a peripheral edge portion **34** thereof flares generally radially outwardly and terminates in a terminal edge **35** (FIGURE 2). The closure disc **31** is preferably constructed from plastic material, such as polyethylene, and may be formed by conventional molding operations, such as an injection molding operation. If desired, the closure **31** may also be constructed from metallic or paperstock material, depending primarily upon the use to which the container **20** is intended and the particular type of product (not shown) which is intended to be dispensed therefrom.

The retaining ring or locking ring **32** is an annular band of metallic, plastic or paperstock material and includes an inner surface **36**, an outer surface **37**, an uppermost edge **38** (FIGURE 1) and a lower edge **39**. The outer surface **37** is preferably knurled or roughened (FIGURE 1) while the inner surface **36** is smooth and unbroken. A finger-gripping tab **40** projects axially downwardly from the lower edge **39** of the retaining ring **32**. The tab **40** is an integral portion of the retaining ring **32** and functions to facilitate the removal of the closure assembly **30** from the container body **21** in a manner which will be more apparent hereafter. A pair of weakening or score lines **41**, **42** (FIGURE 1) are formed in the outer surface **37** of the retaining ring **32** along each side of the tab **40** between the edges **38**, **39**. As is best illustrated in FIGURE 2 of the drawings, the terminal edge **35** of the closure disc **31** is in contact with the inner surface **36** of the retaining band **32** and a peripheral bead of adhesive or similar bonding material **43** secures the outer edge of the peripheral edge portion **34** to the inner surface **36** of the retaining band **32**.

As is best illustrated in FIGURES 2 and 4 of the drawings, sealing compound S is positioned between the lip **23** of the container body **21** and the peripheral portion **34** of the closure disc **31**. While sealing compound S is so positioned in a preferred form of the invention, it is to be understood that the sealing compound S can, if desired, be eliminated.

The container **20** of FIGURE 1 is assembled by first applying the sealing compound S upon the lip **23** of the container body **21** or to the under surface of the peripheral portion **34** of the closure disc **31** after which the latter is seated upon the lip **23**. Thereafter the retaining ring **32** is slipped upwardly on the container body **21** until the surface **36** is in binding wedging engagement with the outer surface **25** of the container body **21** adjacent the upper end portion **22**. The surface **36** of the retaining ring **32** is illustrated as being tapered, but it is to be understood that the surface **36** can be a right cylindrical surface and still effect a wedging action with the upper rim portion **22**. The retaining ring **32** and the upper rim portion **22** of the container body **21** are so dimensioned that the retaining ring **32** is wedged in place after a portion thereof has projected upwardly beyond the lip **23**, as is best illustrated in FIGURE 2 of the drawings. In this position the peripheral edge **35** of the closure disc **31** is in abutting relationship to the inner surface **36** of the retaining ring **32**. Thereafter, the closure **31** is secured to the retaining ring **32** by the adhesive **43**. The line of adhesive **43** is preferably a weld which is capable of progressively rupturing along the line of abutment between the peripheral edge **35** of the closure **31** and the inner surface **36** of the retaining ring **32**.

The closure assembly **30** is removed from the container body **21** by grasping the tab **40** and lifting the same away from the body **21** in the direction of the unnumbered headed arrow in FIGURE 2 of the drawings. This action causes the retaining ring **32** to sever along the weakened lines **41**, **42** and the entire tab **40** is removed causing the formation of a slot or gap **44** (FIGURE 4) in the retaining ring **32**. The retaining ring **32** is now free to deflect radially outwardly and does so upon being urged upwardly by a person's fingers in the manner diagrammatically illustrated in FIGURE 4 of the drawings. Since only the tab **40** is removed during the opening of the container **20**, the closure assembly **30** may be reapplied to the container body **21** and retained in position by the retaining ring **32** exteriorly gripping the upper end portion **22**.

In addition to removing only the tab **40** the entire retaining ring **32** can be removed from the closure disc **31** by merely grasping the retaining ring **32** adjacent the slot **44** and tearing the same about the periphery of the closure disc to cause the progressive rupture of the bond or weld **43**. In this case one of the weakened lines **41**, **42** is preferably eliminated and the removal of the retaining ring **32** is accomplished in one motion by merely grasping the tab **40**, lifting the same in the manner shown in FIGURE 2 of the drawing, and pulling the tab **40** to progressively remove the retaining ring **32** as the weld **43** progressively ruptures.

A modification of the retaining ring **32** is illustrated in FIGURE 5 of the drawings, and is generally designated by the reference numeral **45**. The retaining ring **45** is similar to the retaining ring **32** and includes a downwardly directed projecting tab **46**. However, in lieu of the weakening or score lines **41**, **42** which are generally parallel to the axis of the container **20**, the retaining ring **45** includes a pair of angularly disposed parallel score lines **47**, **48**. The score lines **47**, **48** extend between upper and lower edges (unnumbered) of the retaining ring **45** and, upon the tearing or removal of the tab **46** a generally inclined slot or gap (not shown) is formed to facilitate the removal of a closure from a container with which the retaining ring **45** is associated. The weakening line **47** may be eliminated in accordance with this invention to permit the unified progressive removal of the retaining ring **45** along a weld (not shown) corresponding to the weld **43** in the manner heretofore described.

Another retaining ring constructed in accordance with this invention is illustrated in FIGURES 6 and 7 of the drawings, and is generally referred to by the reference

numeral **50**. The retaining ring **50** includes a section **51** between a pair of parallel axially extending weakening or score lines **52, 53**. A terminal portion **54** of the tab **51** is curved convexly downwardly and undercut, as indicated at **55** in FIGURE 7. The undercutting and curvature permits the tab **51** to be readily grasped, torn and removed by a single finger of an operator.

Another novel retaining ring constructed in accordance with this invention is illustrated in FIGURES 8 and 9 of the drawings, and is generally referred to by the reference numeral **56**. The retaining ring **56** is generally identical to the retaining rings **32, 45** except for the particular formation of a tab or pull tab element **57** thereof. The tab **57** is defined by a generally reversed C-shaped line of severance **58** which passes completely through the material of the retaining ring **56**. The severance line **58** terminates at diverging score lines **59, 60**. If desired, a recess or slot **61** may be formed in the retaining ring **56** to facilitate the grasping of the pull tab **57** and the movement thereof to the position illustrated in FIGURE 9 after which subsequent pulling or drawing to the left in this figure causes the retaining ring **56** to rupture along the weakening lines **59, 60**. Progressive removal of the retaining ring from a closure (unnumbered) can be effected in the manner heretofore described, and a further description thereof is believed unnecessary for a full understanding of this invention.

Referring now to FIGURE 10 of the drawings, a container is generally referred to by the reference numeral **63** and includes a closure assembly **64** defined by a closure disc **65** and a retaining ring **66**. The container **63** differs from the container **20** only in the particular construction of a peripheral portion **67** of the closure disc **65**. The peripheral portion **67** flares radially outwardly and terminates at a terminal edge **68** in abutment with an inner surface (unnumbered) of the retaining ring **66**, in much the same manner as the peripheral portion **34** of the closure disc **31**. A peripheral weld or similar bond **70** is employed to maintain the closure disc **65** and the retaining ring **66** in assembled relationship. A downwardly depending peripheral skirt **71** forms an integral part of the peripheral portion **67** and is received in internal telescopic relationship within the upper end portion (unnumbered) of the container **63**. Sealing compound S is disposed between the peripheral skirt **71** and the upper rim (unnumbered) of the container **63** in the manner clearly illustrated in FIGURE 10 of the drawings.

The closure assembly **64** is secured to the container **63** in the manner heretofore described, and the retaining ring **66** is also removed in the manner heretofore described. However, it should be noted that upon the removal of the retaining ring **66**, the closure disc **65** can be reapplied to the container **63** with the peripheral skirt **71** serving to locate the closure disc **65** upon the upper end of the container. Inadvertent or accidental disassembly of the closure disc **65** and the container **63** is thereby avoided after the retaining ring **66** has been once removed.

Referring now to FIGURE 11 of the drawings, a container body **72** is closed by a closure assembly **73** which includes a closure disc **74** and the retaining ring **75**. The container body **72** and the closure disc **74** correspond to the respective components **21, 31** of the container **20**. Sealing compound S is also disposed between a peripheral edge portion **76** of the closure disc **74** and an upper rim (unnumbered) of the container body **72**. The retaining ring **75** is provided with an upper radially inwardly turned or crimped portion **77** which initially projects upwardly beyond the peripheral portion **76** of the closure disc **74**. However, upon the assembly of the components **74, 75** the axially upwardly projecting portion **77** is crimped or folded radially inwardly to the position illustrated in FIGURE 11 to maintain the closure disc **74** and the retaining ring **75** in assembled relationship. This avoids the necessity of providing adhesive or similar weld material between the components **74, 75** although this may, if desired, be provided between the turned portion **77** of the retaining ring **75** and the peripheral portion **76** of the closure disc **74**.

The method of removing the retaining ring **75** is identical to that heretofore described, and a further description thereof is deemed unnecessary.

Another container **80** is illustrated in FIGURE 12 of the drawings, and includes a closure assembly **81** defined by a closure disc **82** and a retaining ring **83**. The closure disc **82** corresponds somewhat to the closure disc **31** of the container **20**. However, a peripheral portion **84** is provided with a peripheral groove which opens both peripherally outwardly and axially upwardly, and is generally designated by the reference numeral **85**. Seated within the groove **85** is an inwardly directed peripheral portion **86** of the retaining ring **83**. This construction provides a smooth uninterrupted surface between the retaining ring portion **86** and the peripheral portion **84**, as opposed to the broken or stepped junction between the portion **77** (FIGURE 11), of the retaining ring **75** and the peripheral portion **76** of the closure disc **74**. Sealing compound S is also disposed between the various components of the container **80** and the retaining ring **83** is assembled and removed in the manner heretofore fully discussed relative to the description of the container **20** of FIGURES 1 through 4.

Referring now to FIGURE 13 of the drawings, a container body **90** is illustrated being closed by a closure assembly **91** which includes a closure disc **92** and a retaining ring **93**. The closure disc **92** includes a peripheral portion **94** which includes an annular wall **95** in internal telescopic relationship relative to the container body **90** and a radial wall **96** in overlying relationship to a lip (unnumbered) of the container body. The retaining ring **93** includes portions **97, 98** which are crimped or folded radially inwardly and downwardly respectively, into overlying clamping relationship to the respective walls **96, 95** of the closure disc **92**. In this manner, the retaining ring **93** maintains the closure disc **92** in assembled relationship upon the container body **90** in the absence of a line of weld, adhesive or similar conventional bonding means, although the latter may be provided between the retaining ring **93** and the closure disc **92**. Sealing compound S is disposed between the container body and the peripheral portion **94** of the closure disc **92** in the manner clearly illustrated in FIGURE 13.

The retaining ring **93** is preferably provided with a tab for effecting the easy removal thereof, such as any one of the tabs **40, 46, 51** and **57** and the associated weakening lines. However, in the case of the retaining ring **93** it is preferable but not necessary that the weakening lines not only are formed in the portion of the retaining ring **93** externally of the outer surface of the container body **90**, but are also continued across the portion **97** and the portion **98** to assure an exceptionally easy removal of the retaining ring **93**.

Another container body is shown in FIGURE 14 of the drawings, and is generally referred to by the reference numeral **100**. The container body **100** is closed by a closure assembly **101** which includes a closure disc **102** and a retaining ring **103**. The closure disc **102** includes a central portion (unnumbered) and a peripheral portion **104** which is directed axially upwardly and is in internal telescopic relationship with respect to the container body **100**. The retaining ring **103** is first curled or turned radially inwardly at **105** and thereafter axially downwardly at **106** to clamp the peripheral portion **104** of the closure disc **102** between the portion **106** and the upper rim portion (unnumbered) of the container body **100**. Here again, a weld or similar bonding material may be employed to fixedly secure the portion **106** of the retaining ring **103** to the peripheral portion **104** of the closure disc **102**. In addition, the container of FIGURE 14 has been illustrated in the absence of sealing compound to clearly illustrate the adaptability of each of the various embodiments of the invention for use in the absence of such

sealing compound. However, should it be desired to include sealing compound in the container of FIGURE 14, the same would underlie the portion **105** of the retaining ring **103**.

The retaining ring **103** is also preferably provided with easy opening means of the type heretofore described in which score lines may or may not extend across the portion **105** and down the portion **106**, as desired.

A container body **110** is illustrated in FIGURE 15 of the drawings, and is closed by a closure assembly **111** which includes a closure disc **112** and a retaining ring **113**. The closure assembly **11** differs from the closure assemblies heretofore described in two ways. First, a peripheral portion **114** of the closure disc **112** is directed downwardly and radially inwardly to define a generally frusto-conical depending peripheral skirt **115** terminating at a peripheral edge **116**. The retaining ring **113** is also generally frusto-conical in configuration and an inner surface **117** thereof is slidable upon a complementary contoured outer surface **118** of the peripheral skirt **115**. Sealing compound S is positioned between the peripheral portion **114**, the peripheral skirt **115** and the container body **110**.

The closure assembly **111** is secured to the container body **110** by, for example, first applying the sealing compound S to a lip (unnumbered) of the container body **110** after which the closure disc **112** is seated upon the container with the skirt **115** in external telescopic relationship thereto. Suitable means are provided for temporarily holding the closure disc **112** seated upon the container body **110** while the retaining ring **113** is slipped upwardly toward, upon and into wedging engagement with the peripheral skirt **115** of the closure disc **112**, as well as with the container body **110**, it being noted that the inner surface **117** of the retaining ring **113** bears against both the external surface **118** of the peripheral skirt **115** and the external surface (unnumbered) of the container body **110**.

The retaining ring **113** may be removed in the manner heretofore described and provided with means for effecting the easy removal thereof. In addition, while no welding or bonding has been shown in FIGURE 15, it is to be understood that a peripheral weld or similar bonding may be provided.

Another container constructed in accordance with this invention is shown in FIGURE 16 of the drawings, and includes a container body **120** closed by a closure assembly **121** which includes a closure disc **122** and a retaining ring **123**. The closure disc **122** includes a peripheral portion **124** terminating in an axially downwardly directed peripheral skirt **125** terminating in a peripheral edge **126**.

The retaining ring **123** includes a radially inwardly directed preformed portion **127** terminating in an edge **128** in bearing engagement with an outer surface (unnumbered) of the container body **120**. Sealing compound S is disposed between the peripheral portion **124** of the closure disc **122** and a lip (unnumbered) of the container body **120**.

The container **120** and closure assembly **121** are assembled by first applying the sealing compound S to either the lip or the peripheral portion **124** and telescoping the peripheral wall or skirt **125** about the exterior of the container body **120**. Thereafter the retaining ring **123** is slipped upwardly along the container body **120** with the edge **128** of the portion **127** in guiding engagement with the outer surface of the container body **120**. The portion **127** thereby serves to locate the retaining ring **123** in exact spaced relationship to the container body **120** as the former is slipped upwardly into wedging clamping contact with the peripheral skirt **125**. If desired, a peripheral weld or similar bond may be formed between the retaining ring **123** and the peripheral portion **124** of the closure disc **122**.

The retaining ring **123** is provided with means for facilitating the rapid and easy removal thereof in the manner heretofore described relative to the container **20**.

Referring to FIGURE 17 of the drawings in particular, a container body **130** is illustrated being closed by a closure assembly **131** which includes a closure disc **132** and a retainer ring **133**. The closure disc **132** is identical to the closure disc **122** of the closure assembly **121**. The retaining ring **133** is substantially similar to the retaining ring **123** of the closure assembly **121**, but it is to be noted that the latter includes the projecting portion **127** whereas the retaining ring **133** is merely an annular band devoid of such a projection. Therefore, during the upward sliding action of the retaining ring **133** the latter must be accurately guided manually or automatically to the position illustrated in FIGURE 17 at which point the retaining ring **133** is in wedging locking relationship with a peripheral skirt **134** of the closure disc **132**. The peripheral skirt **132** is thereby clampingly secured between the retaining ring **133** and an upper lip portion (unnumbered) of the container body **130**. Sealing compound S is disposed between the container body lip (unnumbered) and the closure disc **132**.

The provision of tab means as well as an area of weld or bond may be provided in the closure assembly **131**, as desired.

Another container body is illustrated in FIGURE 18 of the drawings, and is generally designated by the reference numeral **140**. The container body **140** is closed by a closure assembly **141** which includes a closure disc **142** and a retaining ring **143**. The closure disc **142** includes a peripheral portion **144** having a pair of depending peripheral skirts **145**, **146**. The peripheral skirts **145**, **146** define an annular downwardly opening peripheral groove or slot (unnumbered) into which is received the upper rim portion (unnumbered) of the container body **140**. Sealing compound S is positioned in the slot, as is clearly illustrated in FIGURE 18.

The retaining ring **143** includes a tapered upper portion **147** which converges axially inwardly and downwardly and a lower tapered portion **148** which is more abruptly tapered radially inwardly and downwardly.

The retaining ring **143** is preferably provided with means corresponding to the means **40**, **41** and **42** to effect the rapid and easy removal thereof prior to the removal of the closure disc **142**. In addition, it should be noted that upon the reapplication of the closure disc **142** to the container body **140** an effective seal is achieved due to the staggering relationship of the peripheral skirts **145**, **146** and the upper rim portion of the container.

A final embodiment of the invention is illustrated in FIGURE 19 of the drawings, and includes a container **150** closed by a closure assembly **151** which includes a closure disc **152** and a retaining ring **153**. The assembly of FIGURE 19 differs from the various closure assemblies heretofore described in that a peripheral portion **154** of the closure disc **152** terminates in a downwardly depending, converging peripheral skirt **155** which is in external telescopic relationship to the retaining ring **153**. Sealing compound S is disposed between both the retaining ring **153**, the container **150** and the peripheral portion **154** of the closure disc **152**.

The container body **150**, closure disc **152** and retaining ring **153** are assembled in one of either two equally effective ways. The closure disc **152** can be first seated upon the container **150** and held thereon while the retaining ring **153** is slipped upwardly and forced between the peripheral skirt **155** and the container body **150** at which time the skirt **155** will deflect slightly radially outwardly to accommodate the retaining ring **153** and the latter will wedgingly engage the upper rim portion (unnumbered) of the container body.

As an alternative method of assembling the components, the retaining ring **153** can be first slipped upwardly to a position substantially midway of that illustrated prior to any binding engagement between the ring **153** and the container body **150**. Thereafter, the closure disc **152** is assembled on the container body **150** by placing the skirt

155 in external telescopic relationship to the retaining ring 153. The closure disc 152 is then forced downwardly while the retaining ring 153 is simultaneously forced upwardly causing the eventual wedging engagement between the retaining ring 153, the peripheral skirt 155 and the container body 150.

The retaining ring 153 is preferably provided with tab and weakening lines corresponding to the elements 40, 41 and 42 of the container 20. However, since the retaining ring 153 underlies the peripheral skirt 155, the latter is also preferably provided with score lines which overlie the score lines formed in the retaining ring 153. Thus, by tearing a portion of the retaining ring 153 an overlying and similarly weakened portion of the peripheral skirt 155 would also be torn, thereby permitting a section of the retaining ring 153 to be removed to facilitate the removal of the closure assembly 151.

While various preferred forms of the invention have been heretofore described, it is to be understood that various other modifications may be made to the disclosed structures and are considered to be within the scope of this invention. For example, it is possible to interchange many of the closure discs and many of the retaining rings of this invention. Furthermore, while each of the retaining rings are preferably tapered or frusto-conical in outline, each of the retaining rings can be perfectly cylindrical.

In each case it may or may not be desirable to fuse, weld or bond the retaining rings to the closure discs to form the various closure assemblies of this invention. Such welding or bonding is, however, in most cases desirable between the retaining rings and the closure discs. Additional bonding could, if desired, be provided between the retaining rings and the containers of FIGURES 2, 10, 11 12, 13, 14, 15, 16, 18 and 19 of the drawings. Adhesive bonding may also be provided between the closures and the containers of each of the illustrated embodiments as, for example, is readily apparent by substituting adhesive for the sealing compound S in each instance.

From the foregoing, it will be seen that novel and advantageous provisions have been made for 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. A container comprising a container body having an upwardly flaring upper rim portion, a closure closing the upper end of said container body, and a retaining ring telescoped over said container body rim portion and holding said closure in place, said retaining ring being in wedging engagement with said container body rim portion, and means permanently irremovably securing said closure to said retaining ring whereby said closure and retaining ring can not be separated without rupture of said means.

2. The container as defined in claim 1 wherein an uppermost annular portion of said retaining ring projects completely axially about a terminal axial edge of said container body, and said securing means secures said closure to said annular portion.

3. The container as defined in claim 1 wherein said retaining ring is constructed from rupturable material, and means are provided for removing only a portion of said retaining ring to facilitate the simultaneous removal of said closure and the remaining portion of said retaining ring from said container body.

4. The container as defined in claim 1 wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, the peripheral portion terminates in a terminal edge, said peripheral portion being in overlying relationship to said upper end of the container body, said terminal edge being in abutment with an inner circumferential surface of said retaining ring, an uppermost surface of said peripheral portion being in generally co-planar relationship to an upper surface of said retaining ring, a peripheral weld bridging said last-mentioned surfaces and retaining said closure secured to said retaining ring, a downwardly depending peripheral skirt forming an integral portion of said peripheral portion, said peripheral skirt terminating at a free terminal end in downwardly axially spaced relationship relative to said peripheral portion, and an upper portion of said rim being sandwiched between said retaining ring and said peripheral skirt.

5. The container as defined in claim 1 wherein said retaining ring is provided with a projecting tab, said tab being joined to said retaining ring adjacent at least one weakened line traversing said retaining ring whereby deflection of said tab breaks the retaining ring at said weakened line.

6. The container as defined in claim 1 wherein said retaining ring is provided with means facilitating the manual rupturing thereof.

7. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion, said peripheral portion being in overlying relationship to an upper terminal edge of said rim portion, and said retaining ring being in overlying relationship to a portion of said peripheral portion.

8. The container as defined in claim 6 wherein said rupture facilitating means includes a pull element defined by a severance line, said severance line having terminal ends wholly located in said retaining ring, and weakened lines associated with each terminal severance line end whereby upon the bending and subsequent pulling of said pull element said retaining ring will fracture along said weakened lines.

9. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion, said peripheral portion defining a peripheral skirt in telescopic relationship relative to said upper rim portion, and said peripheral skirt being sandwiched between said upper rim portion and at least a portion of said retaining ring.

10. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, and said terminal edge being in circumferential abutment with an inner surface of said retaining ring.

11. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, a peripheral depending skirt integrally joined to said peripheral portion radially inwardly of said terminal edge, and said upper rim portion being sandwiched between said retaining ring and said peripheral skirt.

12. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, said peripheral portion being in overlying relationship to said upper end of the container body, said terminal edge being in abutment with an inner surface of said retainer ring, and a portion of said retaining ring being folded into overlying relationship to said peripheral portion whereby the latter is sandwiched between said upper rim portion and said retaining ring.

13. The container as defined in claim 6 wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge being in abutment with an inner surface of said retaining ring, an upper surface of said peripheral portion being provided with a peripheral slot, and a portion of said retaining ring being folded into said peripheral slot whereby the peripheral portion is sandwiched between the upper rim portion and said retaining ring.

14. The container as defined in claim 6 wherein said

closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, said peripheral portion being both in internal telescopic and axially overlying relationship to said upper rim portion, and a portion of said retaining ring being folded into overlying relationship to said peripheral portion whereby the latter is sandwiched between the upper rim portion and said retaining ring.

15. The container as defined in claim **6** wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said terminal portion termintes in a terminal edge, said peripheral portion being in internal telescopic relationship to said upper rim portion, and a portion of said retaining ring being folded radially inwardly and axially downwardly into overlying relationship to said peripheral portion whereby the latter is sandwiched between the upper rim portion and said retaining ring.

16. The container as defined in claim **6** wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, said peripheral portion including a depending peripheral skirt in external telescopic relationship to said upper rim portion, said retaining ring being in external telescopic relationship to said peripheral skirt whereby the latter is sandwiched between the upper rim portion and the retaining ring, and a lower portion of the retaining ring is turned radially inwardly into underlying relationship to the terminal edge of the peripheral portion.

17. The container as defined in claim **6** wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, said peripheral portion including a depending peripheral skirt in external telescopic relationship to said upper rim portion, said retaining ring being in external telescopic relationship to said peripheral skirt whereby the latter is sandwiched between the upper rim portion and the retaining ring, a lower portion of the retaining ring is turned radially inwardly into underlying relationship to the terminal edge of the peripheral portion, said peripheral portion includes another depending peripheral skirt spaced radially inwardly of said first-mentioned peripheral skirt, and said upper rim portion is sandwiched between said peripheral skirts.

18. The container as defined in claim **6** wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a terminal edge, said peripheral portion including a depending peripheral skirt in external telescopic relationship to said upper rim portion, said retaining ring being in external telescopic relationship to said peripheral skirt whereby the latter is sandwiched between the upper rim portion and the retaining ring, said peripheral portion includes another depending peripheral skirt spaced radially inwardly of said first-mentioned peripheral skirt, and said upper rim portion is sandwiched between said peripheral skirts.

19. The container as defined in claim **6** wherein said closure includes a central portion and a peripheral portion outwardly of said central portion, said peripheral portion terminates in a depending peripheral skirt, said skirt being in overlying external telescopic relationship to said retaining ring.

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