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QUICK OPENING DEVICE FOR SEALED CONTAINER

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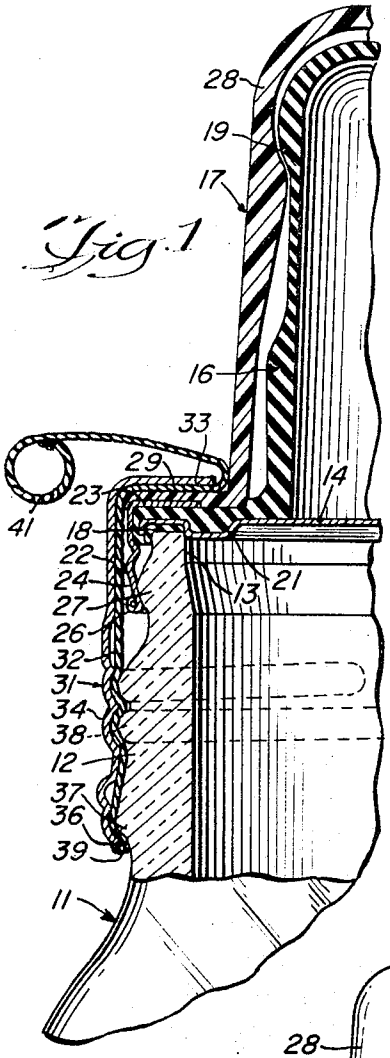


Fig. 1

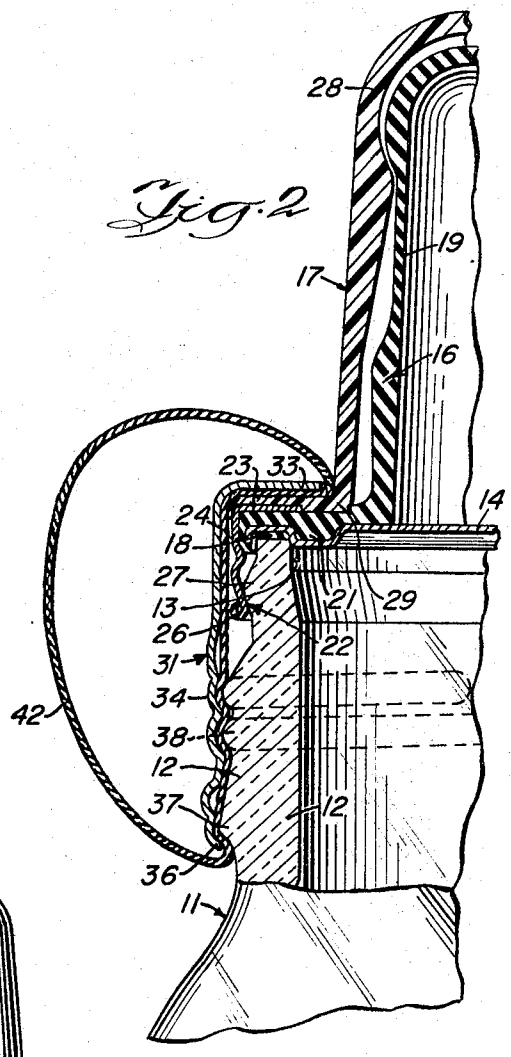


Fig. 2

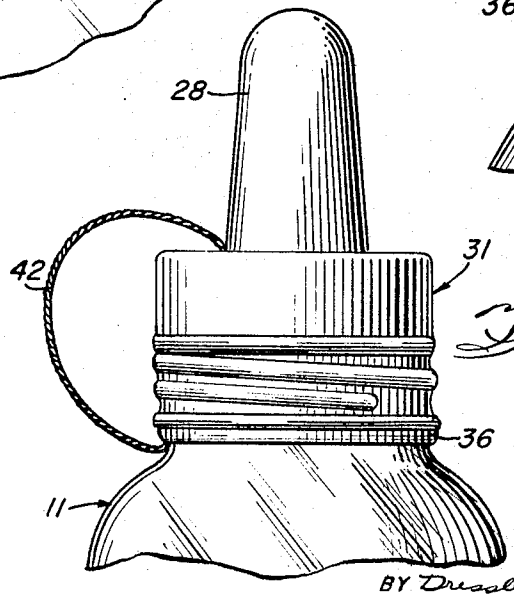


Fig. 3

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QUICK OPENING DEVICE FOR SEALED CONTAINER

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ABSTRACT OF THE DISCLOSURE

A feeding bottle assembly having closure means comprising a sealing disk, a nipple seated on the open end of a bottle, and an inner ferrule holding the sealing disk and the nipple against the open end of the bottle, an outer, ferrule of thin frangible material clamping the closure means in sealing engagement with the open end of the bottle and a tear member between the outer ferrule and the closure means. The tear member, which may be a thin nylon cord or a fine wire, is adapted to rupture the outer ferrule by an outward pull to break the seal and permit use of the bottle assembly.

This invention relates to a quick opening means for a sealed container, and is particularly concerned with a separate tear member that is assembled with the closure sealing a feeding bottle assembly containing an individual serving of water, a liquid milk product, or other liquid food, etc., in a sterile condition.

Although, for convenience, the invention will be described with particular reference to a specific type of bottle assembly, it will be understood that its advantages may be utilized in connection with any container having a closure member held in place by a member capable of being ruptured by a tear member of the type hereinafter described.

In the illustrated arrangement, the feeding bottle assembly comprises a bottle having a finish terminating in an open end, closure means seated on the open end, and an outer ferrule holding the closure in sealing engagement with the bottle. The ferrule is preferably made of light gauge aluminum, but may be made of any suitable frangible material. A tear member has a portion thereof positioned between the outer ferrule and the inner components of the closure and glass finish at the time the ferrule is secured to the bottle.

The tear member is thin enough to permit the ferrule to be rolled into sealing engagement with the finish, and is tough enough to withstand the rolling operation without being cut thereby. The tear member may comprise a thin nylon cord or a fine wire of stainless steel, tungsten, etc. The tear member may be in the form of a single length of material having one end anchored at one edge of the ferrule and having gripping means at the other end, or may be in the form of a closed loop having sufficient slack outside the ferrule to provide gripping means.

Suitable structure by means of which the above mentioned and other advantages of the invention are attained will be fully described in the following specification, taken in conjunction with the accompanying drawings showing illustrative embodiments of the invention, in which:

FIGURE 1 is a fragmentary cross-sectional view of a sealed container assembly showing a tear member embodying the invention;

FIGURE 2 is a view similar to FIGURE 1 showing another embodiment of the tear member; and

FIGURE 3 is a fragmentary elevational view, on a reduced scale, of the structure shown in FIGURE 2.

In the drawings, a bottle **11**, which may be made of glass, plastic, or any other suitable material, is provided

with a suitable finish **12** that terminates in an open end **13**. Closure means provided for the open end comprise a sealing disk **14**, a nipple **16**, and an outer shroud **17**. A sealing gasket **18** is interposed between the top of the finish and the outer edge portion of the sealing disk that is seated on the gasket. The nipple comprises a teat portion **19** and a laterally extending flange **21** adapted to seat on the outer edge portion of the sealing disk. This portion of the closure means is secured to the top of the bottle by an inner ferrule **22** that has an annular flange **23** overlying the outer edge portion of the nipple flange **21**. The inner ferrule also has a tubular skirt portion **24** depending from the outer edge of the flange **23**. The lower edge **26** of the skirt **24** is crimped under an upper bead **27** projecting outwardly from the outer surface of the finish **12**. The inner ferrule **22** holds the outer edge portions of the flange **21** and the disk **14** tightly against the gasket **18** and the upper end of the finish to provide a primary seal.

The outer shroud **17** is preferably made of plastic, but may be made of any suitable rubber or metal, and comprises a dome **28** adapted to fit over the teat portion **19**, and a flange **29** adapted to seat on the ferrule flange **23** and on a portion of the flange **21**. The shroud flange **29** is held tightly against the top surface of the flange **23** by an outer ferrule **31**, preferably made of thin aluminum or other frangible material that has sufficient strength to hold the shroud in place. Preferably, the aluminum is of proper temper so that it may be rolled or spun into place without cutting the tearing member **32**, hereinafter described, and may be ruptured easily by the tearing member.

The tearing member **32** may be in the form of a thin cord of nylon or other tough plastic, or may be a thin wire or narrow flat strip of stainless steel, tungsten, or similar tough metal. The lower portion of the tearing member **32** extends between the inner surface of the outer ferrule **31** and the glass finish, the intermediate portion of the teating member extends between the inner surface of the outer ferrule and the outer surface of the inner ferrule **22**, and the upper portion of the tearing member extends between the annular flange **33** of the outer ferrule and the dome flange **29**.

The annular flange **33** of the outer ferrule is adapted to seat on the dome flange **29**. The outer ferrule has a tubular skirt **34** having its lower edge **36** crimped or rolled under a lower bead **37** projecting outwardly from the finish **12**. If the bottle has external threads **38** between the beads **27** and **37**, as many conventional bottles do, the tubular skirt **34** may be rolled into engagement with the threads to provide added security for the holding engagement of the outer ferrule.

In FIGURE 1, the tearing member **32** comprises a single length of wire or cord anchored below the lower edge of the skirt **34**, as indicated at **39**. The element **39** may be in the form of a weldment or a knot if the tear member is in the form of a thin wire. The element **39** is usually a weldment if the tear member is a thin, flat metal strip, and a knot if the tear member is a cord of nylon, or similar material.

The upper end of the tear member has a finger gripping device **41**, shown in the form of a closed ring, to facilitate pulling the tear member outwardly to rupture the outer ferrule. The gripping device **41** may be integral with the tear member, or may be a separate member secured to one end of the tear member in any suitable manner. Ordinarily, the edge of the outer ferrule engaged by the tear member is of uniform strength along its entire length, and the tear strip may be pulled outwardly from any position around the inner edge of the flange **33**. If the edge of the outer ferrule that is to be ruptured first is

reinforced, as, for example, by a doubled edge, said edge may be notched, and the tear member may be engaged with the notch. If desired, the ends of the tear member may be reversed, and the outer ferrule may be torn upwardly from its lower edge. The tear strip ruptures the outer ferrule cleanly throughout its height, and the outer ferrule falls away from the bottle. The outer shroud **17** may then be removed easily, and the nipple **16** is exposed for use to permit feeding of the contents to a recipient.

In FIGURE 2, the tear member **42** is considerably longer than the height of the outer ferrule, and its ends are knotted or welded together to form a closed loop with enough slack outside the ferrule to provide a convenient gripping means for the tearing operation.

Although a few preferred embodiments of the invention have been described in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of structure may be modified or changed without departing from the spirit or scope of the invention. Accordingly, it is not desired to be restricted to the exact structure described.

What is claimed is:

1. A sealed bottle assembly comprising a bottle having a finish terminating in an open end, closure means comprising nipple means seated on said open end and an inner ferrule holding said nipple means against said open end, an outer ferrule holding said closure means in sealing engagement with said bottle, and a tear member interposed between said outer ferrule and said closure means, said tear member having sufficient strength to rupture said outer ferrule when pulled outwardly.

2. The bottle assembly of claim **1** in which said outer ferrule is metal and comprises a tubular skirt embracing said finish and an integral annular flange extending inwardly from one edge of said skirt, said annular flange having uniform resistance to rupture along its entire inner edge whereby said tear member may be pulled outwardly from any portion of the inner edge of said annular flange to rupture said outer ferrule.

3. The bottle assembly of claim **1** in which said outer ferrule comprises an annular flange overlying a portion of said closure means, and a tubular skirt embracing said finish, said skirt and said finish having interengageable means to secure said outer ferrule in place.

4. The bottle assembly of claim **1** in which said outer ferrule comprises a tubular skirt embracing said finish and an annular flange overlying a portion of said closure means, and said tear member is in the form of a closed loop encircling one portion of said skirt and flange in a vertical direction and having sufficient slack outside said outer ferrule to provide a hand grip to facilitate pulling said tear member outwardly.

5. The bottle assembly of claim **1** in which one end of said tear member is anchored below the lower edge of said ferrule and the other end of said tear member is provided with gripping means to facilitate pulling it outwardly.

6. A sealed bottle assembly comprising a bottle having a finish terminating in an open end, said finish having an external projection, closure means seated on said open end, said closure means including nipple means covering said open end and inner ferrule means securing said nipple means against said open end, and an outer shroud enclosing said nipple means, an outer ferrule holding said closure means in sealing engagement with said bottle, said outer ferrule having an annular flange overlying a portion of said shroud to hold it in position, and a tubular skirt having a lower edge portion crimped over said external projection, and a tear member interposed between said outer ferrule and said closure means, said tear member having sufficient strength to rupture said outer ferrule when pulled outwardly.

7. A sealed bottle assembly comprising a bottle having a finish terminating in an open end, said finish having an external projection spaced from said open end, closure means seated on said open end and including a sealing disk and a nipple, an outer shroud having a lateral flange overyling the outer edge portions of said disk and nipple, a ferrule holding said sealing disk in sealing engagement with said bottle, said ferrule having an annular flange overlying said lateral flange and a tubular skirt embracing said finish and having a lower edge portion crimped over said external projection, and a tear member interposed between said ferrule and said closure means, and tear member having sufficient strength to rupture said ferrule when pulled outwardly.

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