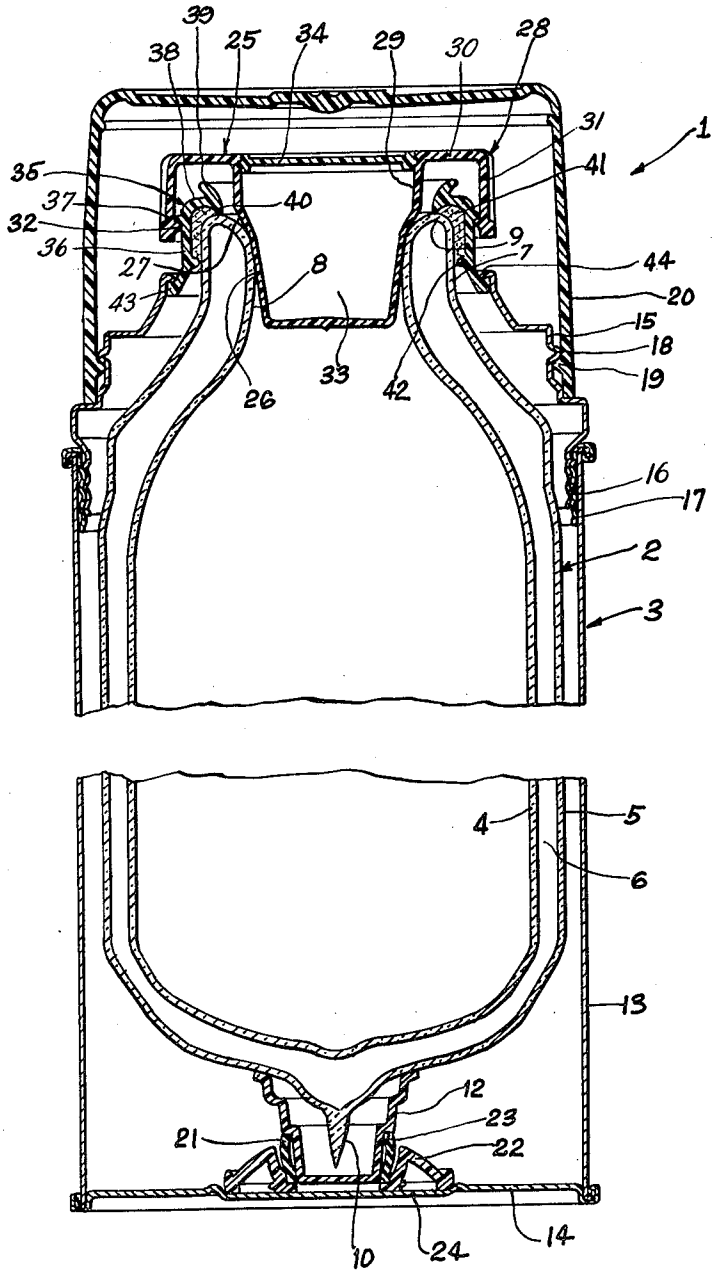
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VACUUM BOTTLE HAVING FILLER WITH CLOSURE MOUNTING RING CEMENTED THERETO

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VACUUM BOTTLE HAVING FILLER WITH CLOSURE MOUNTING RING CEMENTED THERETO

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This invention relates to vacuum bottles or the like and pertains particularly to the portion of such bottle whereby the mouth of the bottle is closed.

One object of the present invention is to provide a new and improved vacuum bottle having a stopper portion together with means for pushing the stopper portion into the mouth of the vacuum insulated filler or inner receptacle of the vacuum bottle without any tendency to push the filler downwardly relative to the protective jacket.

Thus, it is an object of the present invention to prevent any disturbance of the seal between the filler and the upper portion of the protective jacket due to the tightening down of the stopper, such disturbance of the seal having tended to permit leakage between the filler and the upper portion of the jacket in some cases with prior constructions.

A further object is to provide a new and improved vacuum bottle of the foregoing character in which the upper portion of the protective jacket takes the form of a ring which is cemented or bonded to the neck portion of the filler to prevent any separation of the filler from the ring, the ring being formed with screw threads or the like whereby the stopper for the vacuum bottle may be tightened down.

Another object is to provide a new and improved vacuum bottle of the foregoing character in which the ring is formed as a separate element of the protective jacket so that each replacement filler may be supplied with a new ring, securely cemented thereto.

A further object is to provide a new and improved vacuum bottle of the foregoing character in which the upper end of the ring is formed with a pouring lip, while the lower end of the ring is provided with a joint element adapted to engage the upper or collar portion of the protective jacket.

Another object is to provide a new and improved closure construction which avoids any possibility of leakage between the upper end of the filler and the protective jacket, while being economical and easy to manufacture.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawing, in which the single figure is a longitudinal section of a vacuum bottle to be described as an illustrative embodiment of the present invention.

Thus, it will be seen that the drawing illustrates a vacuum bottle 1 which is of the usual type having a vacuum insulated filler or receptacle 2 which is received within a protective jacket 3. The filler 2 has inner and outer walls 4 and 5 with an evacuated space 6 therebetween. At its upper end, the filler 2 has a neck portion 7 of reduced diameter. A mouth 8 is formed in the upper end of the filler 2. The inner and outer walls 4 and 5 are joined together at the upper end of the filler 2 to form a rounded rim portion 9.

At its lower end, the filler 2 may have a fragile tubulation 10, projecting downwardly therefrom, constituting the sealed remainder of the tube whereby the space 6 was evacuated during the process of manufacture. The tubulation 10 is preferably protected from breakage by being enclosed within a generally cup-shaped protector 12, cemented to the lower end of the filler 2.

The illustrated protective jacket 3 is made principally of metal, but plastics or other suitable materials may be employed. In this case, the jacket 3 comprises a generally cylindrical side wall 13 to which a bottom wall 14 is secured. A collar 15 is mounted on the upper end of the side wall 13. Normally, the jacket 3 is constructed so that it may be taken apart to provide for replacement of the filler 2, if the filler should be broken. In this instance, the collar 15 has a threaded lower portion 16 which is adapted to be screwed into a threaded ring 17 which is secured to the upper end of the side wall 13. Thus, the collar 15 is readily removable from the side wall 3. It will be understood that the bottom of the jacket 3 might be removable, in which case the collar could be permanently connected to the side wall. Various other arrangements could be employed to provide for removal and replacement of the filler.

In this case, the collar 15 is formed with external threads 18 to mate with internal threads 19 on a cup 20 which may be mounted in an inverted position on the upper end of the protective jacket to cover the upper end of the filler 2 and the upper portion of the collar 15. When removed from the vacuum bottle, the cup 20 serves as a drinking cup into which the beverage or other liquid in the vacuum bottle may be poured. The cup 20 may be made of plastic or any other suitable material.

The lower end of the filler 2 may be resiliently supported in the manner disclosed and claimed in the Carl Bramming Patent No. 2,963,187, patent December 6, 1960, and entitled Filler Support for Vacuum Bottles. Thus, the tubulation protector 12 is preferably supported by a resiliently compressible sleeve 21 made of rubber, synthetic rubber, or other rubberlike material. The sleeve 21 is adapted to be compressed between an upwardly facing seat member 22 and a downwardly facing shoulder 23 on the tubulation protector 12. As shown, the seat member 22 is received and retained within a depressed portion 24 in the center of the bottom wall 14. The seat member 22 may be made of plastic or other suitable material. When the filler 2 is pressed downwardly, the rubber sleeve 21 bulges outwardly and acts as a spring member to afford resilient support for the filler.

To close the mouth 8, the vacuum bottle is provided with a closure member 25 comprising a downwardly tapering hollow stopper portion 26 adapted to be received in the mouth 8. It will be evident that the stopper portion 26 forms a primary seal with the mouth 8. To form a further seal with the rim portion 9, the illustrated stopper 26 is provided with an outwardly flaring shoulder 27 near its upper end. The stopper 26 is preferably made of a resilient plastic material, such as polyethylene, polypropylene or the like.

To secure the closure 25 on the vacuum bottle, the illustrated closure is formed with a mounting neck portion 28, which may comprise a cylindrical member or flange 29 projecting upwardly from the shoulder 27, a generally horizontal flange 30 projecting outwardly from the upper end of the cylindrical member 29 and a depending cylindrical flange 31 projecting downwardly from the outer edge of the horizontal flange 30. All of the flanges 29, 30 and 31 may be formed integrally with the stopper portion 26. The depending outer flange 31 may serve as a hand grip for holding and manipulating the closure 25. In order that the closure 25 may be tightened down on the vacuum bottle, the inside of the outer flange 31 may be formed with internal screw threads 32 or other similar elements. A cavity 33 may be formed within the hollow stopper portion 26. The cavity 33 may be closed at its upper end by a generally disk-shaped closure 34 adapted to be snapped into the upper end of the cylindrical wall 29. If desired, the cavity 33 may be filled with an insulating material such as ground cork or the like.

To provide means for mounting the closure **25** on the vacuum bottle, a ring **35** is connected to the upper end of the protective jacket **3**. As shown, the ring **35** is made of plastic but other suitable materials may be employed. In the illustrated construction, the ring **35** has a generally cylindrical body portion **36** which is mounted around the upper portion of the neck **7** of the filler **2**. External screw threads **37** may be formed on the cylindrical portion **36** to mate with the internal screw threads **32** on the closure **25**. As shown, an annular flange **38** projects inwardly from the upper end of the cylindrical body portion **36** so as to overhang the rim **9** in the tube of the filler **2**. An upwardly projecting pouring lip **39** may be formed on the inner edge of the flange **38**, to provide for smooth pouring of liquids from the vacuum bottle, while minimizing the tendency of liquids to drip or flow down the outside of the protective jacket. Below and within the pouring lip **39**, a flange **40** projects downwardly from the flange **38** for engagement with the curving rim **9** of the filter **2**. In accordance with the present invention, the mounting ring **36** is retained on the upper end of the filler **2** in a secure and substantially permanent manner by means of a body or layer of suitable cement or adhesive **41** disposed between the ring **35** and the neck portion **7** of the filler **2**. The cement **41** forms a bond with both the ring **35** and the filler **2** so as to prevent the ring **35** from separating from the filler. Thus, the cement **41** prevents any possiblity of leakage between the filler **2** and the ring **35**. To interlock with the body of adhesive **41**, the ring **35** may be provided with an internally projecting annular bead or ridge **42**.

The lower end of the ring **35** is connected to the upper end of the protective jacket **3** so that the ring **35** actually constitutes the upper portion of the jacket. Thus, the lower end of the illustrated ring **35** is formed with an outwardly projecting upwardly facing shoulder or flange **43** adapted to interlock with an inwardly projecting annular flange **44** on the collar **15**. It will be seen that the inwardly projecting flange **44** is hooked or slanted downwardly while the outwardly projecting flange **43** is slanted upwardly to mate with the flange **44**. In the use of the vacuum bottle, the closure **25** may be screwed down tightly onto the vacuum bottle without causing any separation between the upper end of the filler **2** and the ring **35**, despite the downward force exerted by the stopper **26** upon the filler. The cement **41** resists the tightening force exerted by the closure **25** and prevents any movement between the ring **35** and the filler. It will be realized that the threads **32** on the closure **25** pull upwardly on the ring **35**, while the stopper **26** pushes downwardly on the filler **2**. However, the cement **41** prevents any movement between the ring **35** and the filler, due to these forces, and thus prevents any disturbance to the seal between the ring and the filler. With certain prior constructions, it has been found that the tightening of the closure tends to push the filler downwardly relative to the protective jacket. Such movement of the filler disturbs the seal between the filler and the upper end of the protective jacket. Such disturbance of the seal may cause leakage of liquids into the space between the filler and the protective jacket when liquids are subsequently poured out of the vacuum bottle.

The present construction also provides a tighter seal between the stopper **26** and the mouth of the filler **2** by insuring that the filler will not move downwardly under the sealing pressure exerted by the stopper.

The resilient supporting member **21** exerts a constant upward supporting force on the filler **2** so as to prevent any looseness of the filler within the protective jacket. The spring action of the resilient member **21** is adapted to compensate for the use of fillers varying slightly in length. Such variations are often noted between different fillers made by ordinary manufacturing techniques, despite efforts to hold all of the fillers to the same length. The

resilient supporting member **21** insures that the flange **43** on the lower end of the ring **35** will be pressed upwardly against the flange **44** on the upper end of the collar **15**.

The compression of the resilient supporting member **21** is produced by the tightening of the collar **15** when the vacuum bottle is assembled. If the filler **2** is broken, it may be replaced by unscrewing the collar **15**, removing the remains of the broken filler, inserting a new filler, and replacing the collar. Each new filler is supplied with a new ring **35**, which is cemented to the filler at the factory to insure that the ring will be securely and permanently bonded to the filler. It will be recognized that the cost of the ring **35** is extremely small so that it is economical to supply a new ring with each filler.

The present invention positively prevents leakage of liquid between the filler and the upper end of the protective jacket so that there is no danger that the inside of the jacket will be corroded by the action of the liquid. Moreover, the present invention provides an improved seal between the stopper and the mouth of the filler.

Various modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims.

I claim:

1. In a vacuum bottle,
the combination comprising a vacuum insulated receptacle having a neck portion with a mouth therein,
a protective jacket removably mounted around said receptacle,
a closure mounting ring mounted around the outside of said neck portion of said receptacle,
a layer of adhesives disposed between said closure mounting ring and said neck portion and forming a permanent bond therebetween,
joint means removably connecting the lower end portion of said closure mounting ring to the upper end portion of said jacket,
said closure mounting ring having screw threads thereon,
and a closure having a stopper portion disengageably received in said mouth of said receptacle,
said closure having screw threads thereon for disengageably mating with said screw threads on said closure mounting ring,
said receptacle and said closure mounting ring being removable from said jacket and replaceable as a unit,
said adhesive preventing separation of said closure mounting ring from said neck portion of said receptacle when said closure is tightened down,
said adhesive forming a leak-proof seal between said ring and said receptacle,
whereby said adhesive takes up the entire thrust exerted by said closure between said mounting ring and said neck portion of said vacuum insulated receptacle.

2. The combination of claim **1**,
in which said closure mounting ring is formed with an integral pouring lip.

3. The combination of claim **1**,
in which said closure is provided with an annular mounting flange connected to the upper end of said stopper portion,
said screw threads on said closure being formed on the inside of said flange,
said screw threads on said closure mounting ring being formed on the outside thereof.

4. The combination of claim **1**,
in which said joint means comprises an upwardly facing annular shoulder on said closure mounting ring,

and a downwardly facing annular flange on said jacket and engageable with said shoulder.

5. The combination of claim 1,

comprising means forming a resilient support between the lower portion of said protective jacket and the lower portion of said vacuum insulated receptacle,

said resilient support biasing said receptacle upwardly and maintaining said joint means in assembled relation between said closure mounting ring and said jacket.

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