April 10, 1962 C. BRAMMING 3,028,984

VACUUM BOTTLE JACKET CONSTRUCTION

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FIG. 1

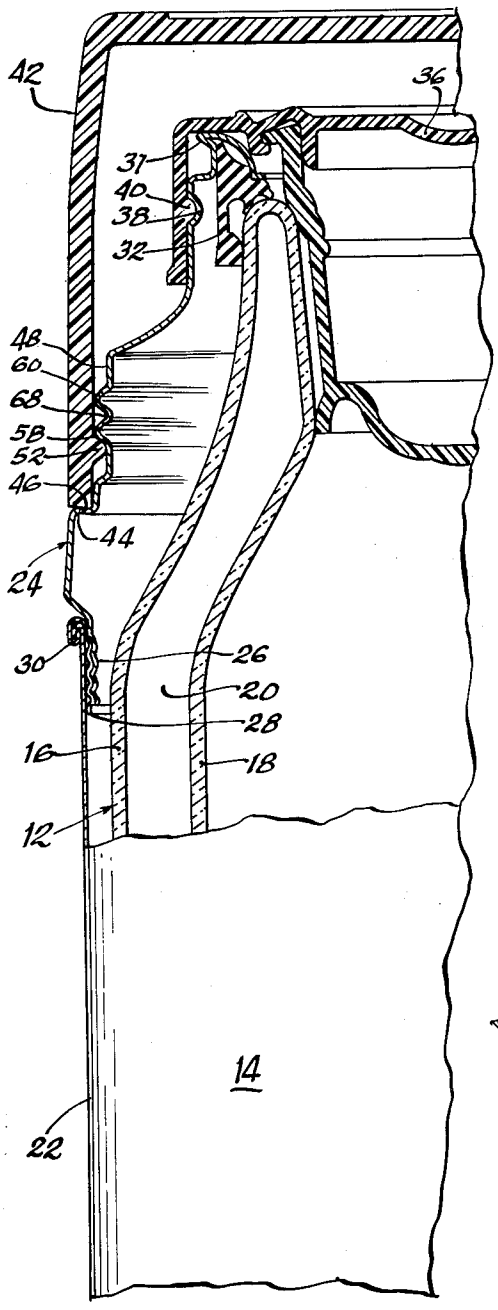


FIG. 2

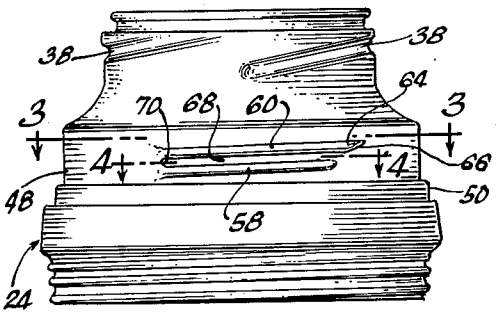


FIG. 3

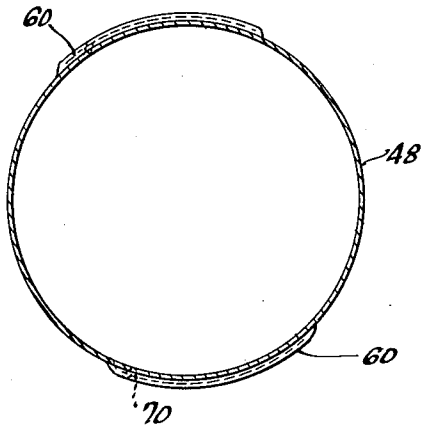
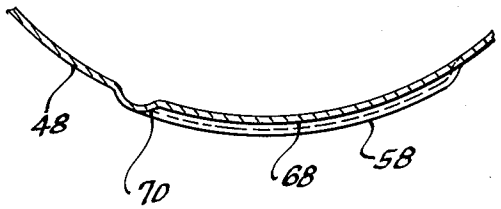


FIG. 4



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FIG. 5

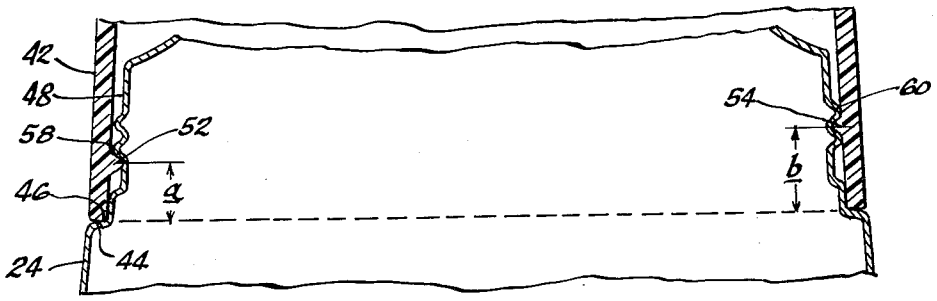


FIG. 6

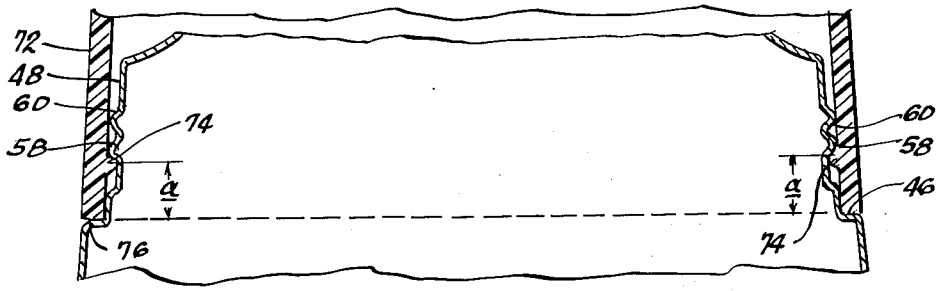
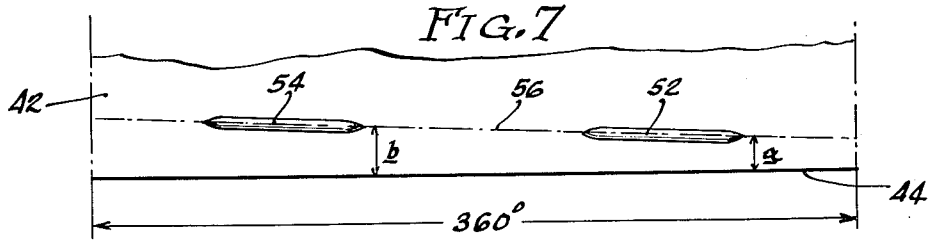


FIG. 8
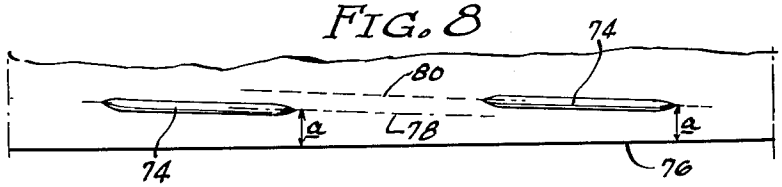


FIG. 7



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VACUUM BOTTLE JACKET CONSTRUCTION

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6 Claims. (Cl. 215—13)

This invention relates to vacuum bottles of the type having a vacuum insulated filler or receptacle, received within a protective jacket.

One object of the present invention is to provide a new and improved vacuum bottle having a jacket with segmental external threads thereon for receiving a cup having internal segmental threads thereon, the segmental threads on the jacket being arranged so as to receive a cup having either double threads or single threads thereon.

A further object is to provide a new and improved vacuum bottle of the foregoing character, in which the jacket has upper and lower segmental threads disposed in pairs on diametrically opposite sides thereof, so that a cup with single segmental threads thereon will properly engage the segmental threads on the jacket, for either of the two possible starting positions of the cup.

Another object is to provide a jacket construction of the foregoing character which is easy to manufacture and low in cost.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawings, in which:

FIG. 1 is a fragmentary elevational section of a vacuum bottle to be described as an illustrative embodiment of the present invention.

FIG. 2 is an elevational view of a collar constituting the upper portion of the jacket of the vacuum bottle shown in FIG. 1.

FIG. 3 is a horizontal section, taken generally along a line 3—3 in FIG. 2.

FIG. 4 is a fragmentary enlarged horizontal section taken along a line 4—4 in FIG. 2.

FIG. 5 is a fragmentary elevational section showing the vacuum bottle when equipped with a single threaded cup.

FIG. 6 is a view similar to FIG. 5, but showing the vacuum bottle equipped with a double-threaded cup.

FIG. 7 is a fragmentary developed elevational view showing the segmental threads on the single threaded cup of FIG. 5.

FIG. 8 is a view similar to FIG. 7, but showing the segmental threads on the double-threaded cup of FIG. 6.

It will be seen that FIG. 1 illustrates a vacuum bottle 10, of the usual type having a vacuum insulated filler 12, received within a protective jacket 14. The filler has outer and inner walls 16 and 18, with an evacuated space 20 therebetween.

The illustrated jacket 14 comprises a lower portion, in the form of a casing or can 22, and an upper portion or collar 24. The casing and the collar are shown as separate parts, but they may be made in one piece. In this case, the collar has a threaded, reduced lower portion 26 which is screwed into a threaded bushing or ring 28 mounted on the upper end of the casing 22. A crimped joint 30 may be provided between the bushing 28 and the casing 22.

An annular gasket or sealing ring 32 is interposed between the upper end of the collar 24 and the filler 12, to prevent liquid from leaking between the collar and the filler. It will be seen that the collar 24 is formed with an outwardly projecting, annular pouring lip 34, which may be arranged as disclosed and claimed in my Patent No. 2,832,492, issued April 29, 1958.

A suitable closure 36 may be employed to close the mouth of the filler 12. The illustrated closure is of the type disclosed and claimed in my copending application, Serial Number 715,025, filed February 13, 1958, and entitled Closure for Vacuum Bottles. It will be seen that the upper portion of the collar 24 is formed with helical grooves or threads 38, adapted to receive internal threads 40 on the closure 36. The closure is thus adapted to be screwed onto the collar 24, so as to be securely retained on the vacuum bottle.

It is convenient to cover the top of the vacuum bottle with an inverted cup 42, which, when removed, may be used for drinking the coffee, milk or other liquid contained in the vacuum bottle. The inverted cup 42 covers the closure 36 and the upper portion of the collar 24.

The present invention is concerned primarily with the arrangement whereby the cup 42 may be screwed onto the collar 24. When the cup 42 is fully seated on the vacuum bottle, the lower edge 44 of the cup is engaged with an upwardly facing shoulder 46 on the collar. Above the shoulder 46, the collar 24 has a generally cylindrical portion 48 over which the cup 42 is adapted to slip. A somewhat enlarged portion 50 is formed on the collar between the cylindrical portion 48 and the shoulder 46, the enlarged portion 50 being immediately above the shoulder. It will be seen from FIG. 1 that the outside diameter of the enlarged portion 50 corresponds closely to the inside diameter of the cup at its lower end. Thus, the enlarged portion 50 centers the cup on the collar 24 and prevents the cup from being flexed or distorted into an out-of-round condition, when it is screwed down tightly.

As shown to best advantage in FIGS. 5 and 7, the illustrated cup 42 is formed with two diametrically opposite internal thread segments 52 and 54, constituting portions of a single helix. This is illustrated clearly in FIG. 7 by showing the single helical thread line 56 along which the thread segments 52 and 54 extend. It will be seen that the segment 54 is at a greater elevation above the lower edge of the cup than the thread segment 52. In FIG. 7, the letter *a* represents the height of the lower thread segment 52, while the letter *b* represents the height of the upper thread segment 54, both heights being measured at the lower ends of the thread segments.

Each of the illustrated thread segments 54 and 56 extends through somewhat less than 90° along the internal surface of the cup 42. Of course, the cup 42 could be provided with more than two internal thread segments, in which case the length of the thread segments would be correspondingly reduced.

As shown to best advantage in FIGS. 2 and 5, the collar 24 is formed with lower and upper thread segments 58 and 60, disposed in pairs on diametrically opposite sides of the cylindrical portion 48. The pitch of the thread segments 58 and 60 is the same as the pitch of the segments 52 and 54. It will be apparent from FIG. 5 that the lower internal thread segment 52 on the cup is adapted to engage one of the lower thread segments 58 on the collar 24. The upper thread segment 54 is adapted to engage either of the upper thread segments 60. Thus, the lower side of each of the lower thread segments 58 is at an elevation corresponding to the upper side of the lower thread segment 52, the elevations being measured above the shoulder 46. Similarly, the lower side of each upper thread segment 60 is at an elevation corresponding to the upper side of the thread segment 54. The spacing between the thread segments 58 and 60 amounts to one unit of pitch.

The thread segments 58 and 60 on the collar 24 extend through somewhat less than 90°. It will be seen from FIG. 2 that the upper thread segment 60 is somewhat longer than the lower thread segment 58. Thus, the upper thread segment 60 has a portion 64 at its leading

end which extends beyond the leading end of the lower thread segment 58. On its lower side, the overhanging portion 64 has a bevelled corner surface 66 to facilitate the movement of the internal thread segment 54 under the external thread segment 60.

It will be seen from FIG. 2 that a channel 68 extends between the thread segments 58 and 60. At the leading ends of the thread segments 58 and 60, the channel 68 is open so that the thread segment 54 may enter the channel. However, at the trailing ends of the segments 58 and 60, the channel 68 is closed by an outwardly projecting stop 70 which extends between the thread segments 58 and 60, as shown to best advantage in FIG. 4. The stop 70 obviates any possibility that the lower thread segment 52 on the cup will be moved into the channel 68 by reverse rotation of the cup. Moreover, the stop 70 limits the movement of the upper thread segment 54 along the channel 68 when the cup is properly mounted on the collar 24.

It will be apparent that the thread segments 52 and 54 are movable downwardly along the cylindrical surface 48 between the diametrically opposite pairs of thread segments 58 and 60. The cup 42 is moved downwardly until its lower edge 44 engages the shoulder 46. The cup 42 is then rotated clockwise, as viewed from the top. The lower thread segment 52 on the cup moves under the lower thread segment 58 on one side of the vacuum bottle. On the opposite side of the vacuum bottle, the upper thread segment 54 moves under the upper thread segment 60. Inasmuch as the thread segments 58 and 60 are duplicated on both sides of the vacuum bottle, the cup may be started equally well in either of its two possible positions on the collar 24. In either case, the segments 52 and 54 will be moved into interlocking engagement with the thread segments 58 and 60, by rotating the cup through less than 90°.

Those skilled in the art will be familiar with the fact that many vacuum bottles have been made in the past with cups and collars having continuous single threads thereon. The cup 42, with its segmental single threads will fit on the old style collars having continuous single threads. Thus, the cup may be used to replace old style cups having continuous threads, in addition to being usable in a highly advantageous manner with the segmentally threaded collar 24.

Another advantage of the present collar construction is illustrated in FIGS. 6 and 8, which show a slightly modified cup 72 having two diametrically opposite internal thread segments 74. Each thread segment 74 is the same as the lower thread segment 52 on the cup 42. Thus, the thread segments 74 are at the same elevation above the lower edge 76 of the cup 72. In FIG. 8, this elevation is indicated by the dimension *a*, which is the same as the dimension *a* in FIG. 7.

The thread segments 74 have the same pitch as the thread segments 52, 54, 58 and 60. However, the thread segments 74 extend along two parallel thread lines 78 and 80. The threads 74 are thus segments of double threads.

Nevertheless, the modified cup 72 will fit perfectly on the collar 24. The cup 72 is placed over the collar 24 so that the thread segments 74 will move downwardly between the pairs of thread segments 58 and 60. When the cup 72 is rotated, the thread segments 74 move under the lower thread segments 58 on the opposite sides of the collar 24. Since the pitch or slant of the thread segments 74 is the same as that of the thread segments 58, the thread segments 74 will fit perfectly under the segments 58. The ability of the collar 24 to accept both single and double-threaded cups is a highly advantageous feature.

It will be realized that the elevation of the thread segments 74 could be made the same as that of the thread segments 54, in which case the thread segments 74 would move under the upper thread segments 60.

It will be evident that the present arrangement of the collar and cup threads is highly versatile. Nevertheless, little or no additional cost is involved in making the vacuum bottle with this thread arrangement.

Various other 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 filler, a protective jacket received around said filler, an inverted cup disengageably received over the upper end of said jacket, said cup having a pair of diametrically opposite internal thread segments thereon constituting portions of the same single helix, the upper end of said jacket having a generally cylindrical portion with upper and lower thread segments formed in pairs on diametrically opposite sides thereof for engagement by the thread segments on said cup, said thread segments on said cup being movable downwardly between said thread segments on said jacket with said cup in either of two starting positions, said thread segments on said jacket having the same pitch as said segments on said cup, said jacket having an upwardly facing annular shoulder thereon engageable by the lower edge of said cup, said cylindrical portion extending downwardly between said lower jacket thread segments and said shoulder for at least one unit of pitch, the lower side of each of said lower thread segments being at a height above said shoulder corresponding to the height of the upper side of the thread segment on one side of said cup, the lower side of each of said upper thread segments being at a height above said shoulder corresponding to the height of the upper side of the other thread segment on said cup, said thread segments on said cup thereby being immediately engageable with the thread segments on said jacket in either of the two possible starting positions of said cup on said jacket.

2. In a vacuum bottle, the combination comprising a protective jacket, an inverted cup disengageably received over the top of said jacket, said jacket having an upwardly facing stop shoulder engageable by the lower edge of said cup, said cup having a lower internal thread segment on one side thereof and an upper internal thread segment on the diametrically opposite side thereof, said upper and lower internal thread segments constituting portions of the same single helix, said jacket having a generally cylindrical surface extending upwardly from said stop shoulder, said cylindrical surface having upper and lower external thread segments disposed in pairs on diametrically opposite sides thereof, said internal thread segments on said cup being movable downwardly between said external thread segments on said jacket with said cup in either of two starting positions, said upper and lower thread segments on said jacket having the same pitch, said cylindrical surface extending downwardly between said lower jacket thread segments and said shoulder for at least one unit of pitch, the lower side of each of said lower thread segments on said jacket being at a height above said shoulder corresponding to the height of the upper side of the lower thread segment on said cup, the lower side of each of said upper thread segments on said jacket being at a height above said shoulder corresponding to the height of the upper side of the upper thread segment on said cup, said internal thread segments on said cup thereby being movable into threaded engagement with the external thread segments on said jacket by rotation of said cup from either of the two possible starting positions thereof.

3. In a vacuum bottle, the combination comprising a vacuum insulated filler, a protective jacket received around said filler, said jacket having an upper portion adapted to be covered by an inverted cup, said upper portion of said jacket having a generally cylindrical surface formed with upper and lower thread segments disposed in pairs

on diametrically opposite sides thereof, said upper and lower thread segments having the same pitch, said lower thread segments being at the same height, said cylindrical surface extending below said lower thread segments for at least one unit of pitch, each of said upper thread segments being spaced above the corresponding lower thread segment by one unit of pitch, said upper thread segments thus being at the same height relative to each other.

4. In a vacuum bottle, the combination comprising a vacuum insulated filler, a protective jacket received around said filler, said jacket having an upper portion adapted to be covered by an inverted cup, said upper portion of said jacket having a generally cylindrical surface formed with upper and lower thread segments disposed in pairs on diametrically opposite sides thereof, said upper and lower thread segments having the same pitch, said lower thread segments being at the same height, said cylindrical surface extending below said lower thread segments for at least one unit of pitch, each of said upper thread segments being spaced above the corresponding lower thread segment by one unit of pitch, said upper thread segments thus being at the same height relative to each other, said jacket having stops closing the spaces between the lower trailing edges of the upper and lower thread segments on both sides of said jacket.

5. In a vacuum bottle, the combination comprising a vacuum insulated filler, a protective jacket received around said filler, said jacket having an upper portion adapted to be covered by an inverted cup, said upper portion of said jacket having a generally cylindrical surface formed with a plurality of pairs of upper and lower parallel thread segments, said upper thread segments being

at the same height relative to each other, said cylindrical surface extending below said lower thread segments for at least one unit of pitch said lower thread segments being at the same height relative to each other.

6. In a vacuum bottle, the combination comprising a vacuum insulated filler, a protective jacket received around said filler, said jacket having an upper portion adapted to be covered by an inverted cup, said upper portion of said jacket having a generally cylindrical surface formed with a plurality of pairs of upper and lower thread segments, said upper and lower thread segments having the same pitch, said lower thread segments being at the same height, said cylindrical surface extending below said lower thread segments for at least one unit of pitch, each of said upper thread segments being spaced above the corresponding lower thread segment by one unit of pitch, said upper thread segments thus being at the same height relative to each other, said jacket having stops closing the space between the lower trailing edges of the upper and lower thread segments of each pair.

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