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PROTECTED VACUUM INSULATED RECEPTACLE

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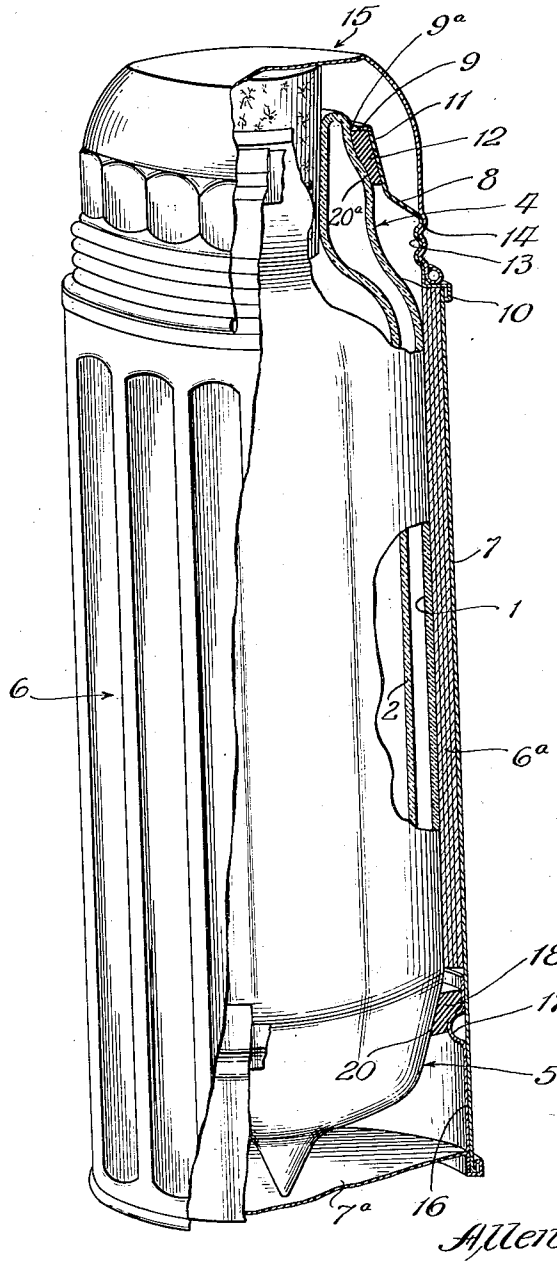

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PROTECTED VACUUM-INSULATED RECEPTACLE

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11 Claims. (Cl. 215—13)

The invention relates to protected vacuum-insulated receptacles wherein the food container includes two separated glass walls and is enclosed by a protective jacket, and said invention involves means preferably of a resilient character, for preventing both vertical and lateral movements of said container within said jacket, and for determining the altitudinal position of the vacuum-insulated receptacle in said protective jacket.

The drawing shows one embodiment of the invention.

The container is as usual provided with spaced outer and inner walls, 1, 2 having closed bottoms, these walls being welded together at their upper ends to thereby hermetically seal the vacuum space between them.

The contour of the outer wall 1 is such as to form a tapering upper end 4 and a tapering lower end 5.

The jacket 6 is provided with a cylindrical body 7, having bottom 7*a* seamed thereto, and with a conical collar 8 provided with an inturned flange 9 and soldered at 10 to the upper extremity of the cylindrical body 7 over which it telescopes.

The tapering upper end 4 of the container 1 and the adjacent portion 11 of the collar 8 are so shaped as to leave a preferably downwardly-tapering space for the reception of a gasket 12 constituting a cushioning element against which said tapering upper end 4 of the container may rest, and said collar 8 may have screw-threads 13 with which the screw-threads 14 of a drinking cup 15 engage.

Within the lower end of the cylindrical body 7 is a cylindrical support 16 having an interior bead 17 on which is supported a gasket 18 constituting a cushioning element against which said tapering lower end 5 of the container may rest.

The jacket 6 may, if desired, be provided with an enclosed cylindrical heat insulator 6*a* of cardboard, paper or any suitable substance.

The upper gasket 12 initially is made of partially-vulcanized and yielding rubber, while the lower gasket 18 is initially made of rubber of such degree of vulcanization as will enable it to materially resist compression. Hence, when the food container is pushed downward into the still open body 7 of the jacket 6 and into contact with the substantially unyielding gasket 18, its altitudinal and lateral positions will be accurately determined by the position of said gasket 18 which gasket, as shown in the drawing, has a conical interior surface 20 exactly fitting the tapering lower end 5 of the container, to thereby not only prevent said container from moving downward within, but to determine its lateral position relatively to the jacket 6.

When the container has thus come to rest upon the gasket 18, with its tapering upper end properly disposed relatively to the final position of the collar 8 and its gasket 12, the collar 8, bearing the gasket 12, is slipped over said upper end 4 of the container and telescoped with the upper end of the cylindrical body 7 of the jacket 6. Pressure sufficient to materially compress the yieldable upper gasket 12, and at the same time, depress the collar 8, is then applied to the upper end of said collar 8. Solder is then applied to the telescoping joint at 10 to permanently hold the collar 8 in its depressed position to thereby maintain the downward pressure of the upper gasket 12 upon the tapered upper end 4 of the container. This upper gasket 12 is provided with an interior conical surface 20*a* which not only prevents an upward movement of the container within, but determines its lateral position relatively to the jacket 6. After the parts are thus assembled and fixed in their final positions, the gasket 12 is subjected to any suitable known process which will complete its vulcanization. This gasket effectively seals the space between the collar 8 and the container, and excludes moisture.

Unless the rubber seal at the neck of the device, is vulcanized in situ, leakage will occur, even though the rubber be under compression. If, however, vulcanization takes place in situ, the swelling of the rubber due to vulcanization, will cause the rubber to adjust itself to the minute irregularities of the abutting metal and glass walls and thus produce liquid-tight joints.

Neither the inturned flange 9 of the collar 8, nor any other unyielding part of the protective jacket, is in contact with the enclosed frangible container, there being a space 9*a* between the edge of said flange 9 and the upper end of said frangible container. Also, as shown, the cylindrical support 16 at the lower end of the cylindrical wall 7, is out of contact with said frangible container. Hence, extraneous shocks of such magnitude as would shatter an inadequately-protected frangible container, will substantially be absorbed by the resilient gaskets 12, 18, and not reach said frangible container.

The immunity of the container from breakage is largely due to the fact that its tapering upper and lower ends are engaged by the resilient gaskets 12, 18 which fit said tapered ends and transmit such external longitudinal shocks as may be imparted to said gaskets and said con-

tainer, as strains which, mainly, are compressional rather than tensional strains.

It is desirable that some suitable adhesive substance be applied to the respective gaskets, 12, 18, before they are placed in position, so that said gaskets may be firmly secured to the adjacent elements of the device, although the adhesive substance which lies between the gasket 12, the portion 11 of the collar 8, and the tapering upper end 4 of the food container conveniently may be applied to said tapering upper end 4 and the collar portion 11 instead of to said gasket 12.

The adhesive is employed to so firmly unite the rubber gasket, the glass neck of the container, and the metal collar of the jacket that, when removing the cork, the container cannot move relatively to said gasket or said metal collar and break the hermetical seal.

Having thus described my invention, what I claim is:

1. A heat-insulated receptacle including a frangible container, a protective jacket for and spaced from said container, a compressed shock-insulating rubber gasket vulcanized in sealing engagement with and disposed between the upper ends of said container and said jacket, and hermetically sealing the entrance to the space between the bodies of said container and said jacket, and a restraining resilient element engaging the lower end of said frangible container.

2. A heat-insulated receptacle including a frangible container and a protective jacket for and spaced from said container, a compressed shock-insulating rubber gasket vulcanized in sealing engagement with and disposed between the upper ends of said container and said jacket, and an adhesive joining said gasket to said jacket and said container.

3. A heat-insulated receptacle including a frangible container having tapering upper and lower ends, a protective jacket for and spaced from said container, and plural compressed resilient shock-insulating spacing elements disposed between said container and said jacket and respectively fitting the tapering upper and lower ends of said container, the upper of said spacing elements being made of rubber vulcanized in situ and hermetically sealing the entrance to the space between the bodies of said container and said jacket.

4. A heat-insulated receptacle including a frangible container having a tapering upper end, a protective jacket for and spaced from said container, said jacket having a flanged collar at its upper end spaced from the tapering upper end of said container, a compressed shock-insulating rubber gasket vulcanized in situ fitting said tapering upper end and shaped to prevent said container from moving vertically relatively to said protective jacket, and also to prevent lateral movements of said upper end, and a restraining element engaging the lower end of said frangible container.

5. A protected vacuum-insulated glass receptacle, including a double-walled glass container, a protective jacket for said container having a collar fixedly and hermetically secured to its upper end, a fixed and resilient cushioning element disposed between the lower end of said glass container and said protective jacket, and a compressed rubber gasket, vulcanized and thereby expanded in situ, disposed between and hermetically sealed to the upper ends of said collar and said glass container.

6. A vacuum-insulated receptacle including a protective jacket of non-frangible material, a double-walled vacuum-insulated and frangible container disposed within said jacket, a collar hermetically and fixedly sealed to said jacket, a shock-absorbing, resilient gasket held under pressure between said collar and said container and permanently, adherently and hermetically uniting said collar and the neck of said container in spaced relation, and a shock-absorbing resilient element resistantly supporting and restricting lateral and longitudinal movements of said container.

7. A protected vacuum-insulated receptacle, including a protective non-frangible jacket, an insulated frangible container, a resilient gasket held in compression between the upper ends of said jacket and said container, and adhesive material disposed between said container and a part of said protective jacket and attached to said gasket, said elements constituting a unitary structure having fixed and inseparable parts.

8. A protected vacuum-insulated receptacle, including a protective non-frangible jacket, an insulated frangible container having a tapering upper end and a tapering lower end, and a compressed yieldable gasket disposed between each of said tapering ends and the adjacent part of said protective jacket, whereby shocks imparted to said protective jacket from without are transmitted to said frangible container purely as compressive stresses in the tapering portions of said frangible container.

9. A vacuum-insulated glass container having a protective metal jacket that is spaced therefrom and is provided with a neck surrounding the neck of said container, there being interposed between the necks of said container and said jacket, a shock-absorbing, and resilient member held under pressure between and hermetically, adherently and permanently united to said necks, to thereby seal the entrance to the space between said container and said jacket, and a resilient restraining element engaging the lower end of said container.

10. A heat-insulated receptacle, including a non-frangible protective jacket, a frangible container disposed within and spaced from said jacket, a shock-insulating resilient element supporting and restricting both lateral and longitudinal movements of said frangible container at its lower end, and a resilient gasket held under pressure between and permanently and adherently united to said protective jacket and said frangible container at their upper ends, for restricting both lateral and longitudinal movements of the upper end of said frangible container and hermetically sealing the entrance to the space between said protective jacket and said frangible container.

11. A heat-insulated receptacle, including a non-frangible protective jacket, a frangible container having tapered upper and lower ends and disposed within and spaced from said protective jacket, a shock-insulating resilient element fitting the tapered portion of the lower end of the container supporting and restraining both lateral and vertical movements of said frangible container at its lower end, and an internally-tapered compressed and resilient gasket fitting the upper end of said frangible container, said compressed and resilient gasket permanently uniting said protective jacket and said frangible container and permanently sealing the entrance to the space between them.

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