

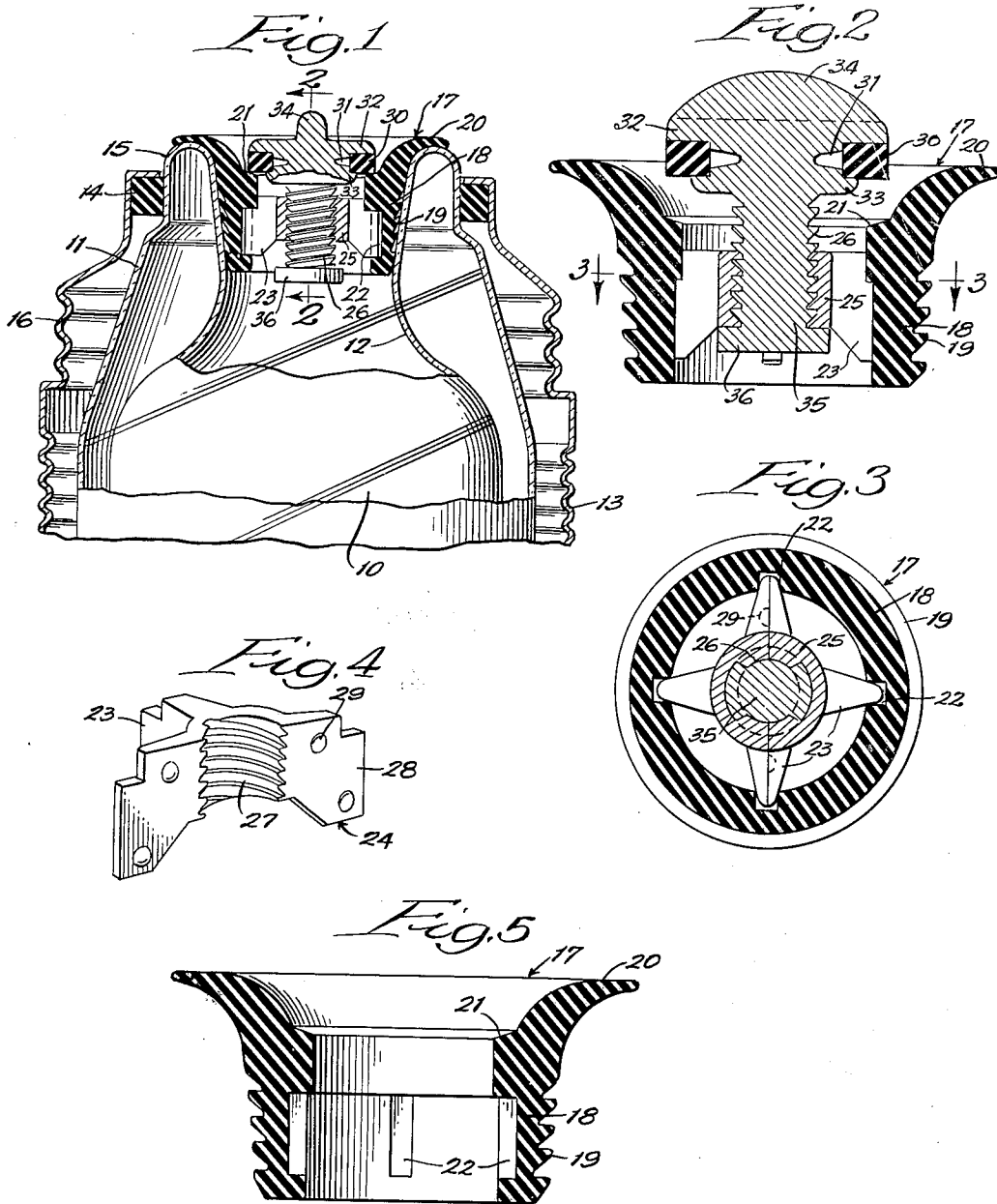
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Pouring Stopper for Containers

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POURING STOPPER FOR CONTAINERS

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This invention relates to a stopper assembly for containers, such as vacuum bottles or the like, and it relates more particularly to a stopper of the type described capable of adjustment to closed position for establishing a sealing relation with the container and to open position for permitting access to the container for pouring.

An object of this invention is to produce a stopper assembly of the type described which is sturdy in construction, easy in operation, and formed of relatively few simple parts expediently inserted in their assembled relation to form a closure in the container.

Another object is to produce a stopper assembly of the type described which is quickly adjustable to open and closed positions without removal from the container and it is a related object to provide sufficient resiliency in the stopper assembly to permit impact without transmission of forces to the container and thereby prevent breakage in use.

A further object is to provide a stopper formed of parts adjustable to one position for effecting a sealing relation with the container and to another position to open the container and permit access to the interior thereof, and it is a related object to provide a stopper assembly of the type described which is bodily removable from the container for purposes of cleaning and replacement of parts.

A still further object is to produce a stopper assembly of the type described which embodies an improved pouring lip when in position of use to prevent drip of content material onto the walls of the casing and to improve the pouring relation.

These and other objects and advantages of this invention will hereinafter appear, and for purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawing in which—

Figure 1 is a sectional elevational view of the upper end portion of a container having a stopper assembly embodying features of this invention;

Figure 2 is a sectional view taken along the line 2-2 of Figure 1 but with the elements shown in open position;

Figure 3 is a sectional view taken substantially along the line 3-3 of Figure 2;

Figure 4 is a perspective view of one modification of the spider element forming a part of the stopper assembly shown in Figure 3; and

Figure 5 is a sectional elevational view of the resilient element in which the spider of Figure 4 is inserted in position of use.

Description herein will be made of a closure or stopper assembly in position of use with a vacuum bottle comprising a glass filler 10 formed of an outer blank 11 and an inner blank 12 joined together in spaced apart relation with the area therebetween exhausted to subatmospheric conditions to minimize transfer of heat in either direction. The glass filler 10 is enclosed within a casing 13 formed of metal, plastics or other rigid material having a rubber gasket 14 to establish a sealing relation between the upper end of the casing and the adjacent neck portion 15 of the glass filler. The portion adjacent the

upper end of the casing may be threaded, as at 16, to receive a cup member (not shown) which functions as a cap for the vacuum bottle when in mounted relation.

The stopper embodying the features of this invention comprises a cylindrical member 17 formed of rubber or other resilient material corresponding in shape throughout the body portion 18 to that of the neck of the container and dimensioned frictionally to engage the walls thereof when inserted. Annular ribs 19 or serrations are provided in the outer wall of the body portion 18 for purposes of establishing a better gripping relation with the adjacent wall of the glass filler notwithstanding slight variations which might exist in the dimensions thereof so as to adapt the cylindrical member for glass fillers of slightly varying shape or size. The upper end portion of the cylindrical member is formed with an outwardly extending curvilinear lip 20 which embraces the upper end of the glass filler to provide an improved pouring spout and to protect the glass filler against destruction by impacts against the upper edge thereof.

The body portion of the cylindrical section is of greater thickness than the lip thereby to provide an annular ledge 21 extending inwardly from the base of the lip to establish a sealing relation all around with the cap member, as will hereinafter appear. Intermediate the ends, the inner wall of the body portion is provided with a plurality of vertically disposed grooves or notches 22 in substantially equally spaced apart relation wherein legs 23 of a spider member 24 are anchored to establish a mounted relation.

The spider 24 comprises a rigid member formed of molded plastics or other substance having a low coefficient of friction and capable of retaining its shape. The plurality of legs 23, such as the four illustrated in Figure 3, extend radially in spaced apart relation from a central hub 25 having a cylindrical bore 26 extending through the central portion thereof with screw threads 27 formed in the wall thereof. While the spider may be formed of a unitary structure that is capable of being snapped into position with the outer end portions 28 of the legs 23 seated within the notches 22, for purposes of economy in manufacture and assembly it is expedient to mold the spider of a pair of identical semicircular sections split centrally through diametrically opposed legs. The threaded portions in the bore of the hub may be formed to provide continuous threads when in the assembled relation but complete identity in construction is permitted when the spider sections are formed of threads having a double lead to permit interchange of one for another without destroying the continuity of threads therein. For purposes of alignment, a plurality of recesses 29 may be provided in the split walls with pegs inserted in one for entrance into another when face to face with each other for assembly or recesses may be provided in one side and pegs on the other to provide an interfitting relation if the parts are otherwise identical.

The desired sealing relation in the stopper is effected by means of an annular gasket 30 seated within a groove 31 formed in a head having an annular disc 32 dimensioned to extend beyond the ledge 21 and another annular disc 33 dimensioned to be less than the distance between the inner walls of the body portion thereby to enable the underside of the sealing gasket 30 to engage a substantial portion of the ledge 21 when urged into contact therewith thereby to establish a sealing relation. Actuation of the sealing gasket into and out of sealing engagement with the ledge 21 is effected by a knob 34 extending upwardly from the head and which functions as a tool to facilitate turning movement. A cylindrical spindle 35 depending from the gasket supporting head is threaded through its outer wall which extends through the bore of the spider in threaded engagement therewith whereby turning movement of the head causes the unit

to be actuated upwardly to open position and downwardly to bring the sealing gasket into contacting relation with the ledge. The lower end portion of the spindle 35 is formed with an outwardly extending disc 36 to limit upward movement of the stopper to open position.

In operation, as the stopper is turned in the counter-clockwise direction for one complete turn or more, the stopper portion is raised to separate the sealing gasket 30 from the ledge 21 so as to provide a space therebetween through which the content material may be poured or fluid admitted to the container. When it is desired to establish a sealing relation, the stopper is turned back in the clockwise direction until the sealing gasket is lowered into engagement with the ledge to seal off the interior of the container. When in open position, the content material can flow through the space between the spider legs and out of the container. Cleansing of the bottle may be effected simply by rinsing but it is preferred to remove the closure for more thorough cleaning.

It will be significant that engagement occurs between the rubber or resilient material to effect the desired sealing relation while actuation of the parts to and from their sealing relation takes place by reaction between rigid members having little surface friction to enable operation of the closure device with minimum force to between open and closed position.

While description herein has been made to the use of the closure assembly with a wide mouth vacuum bottle, it will be understood that use can be made thereof with other containers and bottles.

It will be further understood that changes can be made in the details of construction, arrangement and operation without departing from the spirit of the invention, especially as defined in the following claims.

I claim:

1. A closure for a vacuum bottle, comprising a soft resilient rubber-like stopper having a hollow generally cylindrical downwardly tapering body portion adapted to be received in the neck of the vacuum bottle, said body portion having an axial aperture therethrough, said body portion having an upwardly facing internal annular shoulder thereon at the upper end of said aperture, a spider mounted in the lower end portion of said aperture and having an axial opening therein with internal threads therealong, a plug having an externally threaded shank in threaded engagement with said opening in said spider, said plug having an enlarged manually rotatable head on the upper end of said shank for movement into and out of sealing engagement with said annular shoulder to close and open said aperture, said shank having an enlarged

retaining element on its lower end for limiting upward movement of said plug, and an annular tapering upwardly extending outwardly flaring curved pouring lip formed integrally with said rubber-like stopper and surmounting said body portion above said shoulder.

2. A closure for a vacuum bottle, comprising a soft resilient rubber-like stopper having a hollow generally cylindrical downwardly tapering body portion adapted to be received in the neck of the vacuum bottle, said body portion having an axial aperture therethrough, said body portion having an upwardly facing internal annular shoulder thereon at the upper end of said aperture, a spider mounted in the lower end portion of said aperture and having an axial opening therein with double-lead internal threads therealong, said spider having a plurality of radial arms and being split longitudinally along a diametrical plane bisecting a pair of said arms to define a pair of identical half-spider elements composing said spider, said body portion having a plurality of grooves in the lower end of said aperture for receiving said arms and holding said half-spider elements in abutting assembled relation, said half-spider elements having interlocking elements thereon for maintaining registration therebetween, said half-spider elements having identical double-lead thread elements therein composing said double-lead threads, a plug having an externally double-threaded shank in threaded engagement with said opening in said spider, said plug having an enlarged manually rotatable head on the upper end of said shank for movement into and out of sealing engagement with said annular shoulder to close and open said aperture, said head having a soft resilient annular gasket carried on the underside thereof for engaging said shoulder, said shank having an enlarged retaining element on its lower end for limiting upward movement of said plug, and an annular tapering upwardly extending outwardly flaring curved pouring lip formed integrally with said rubber-like stopper and surmounting said body portion above said shoulder.

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