April 29, 1958 D. J. O'CONNOR 2,832,514

CONTAINER

Filed Oct. 4, 1955

Fig. 1

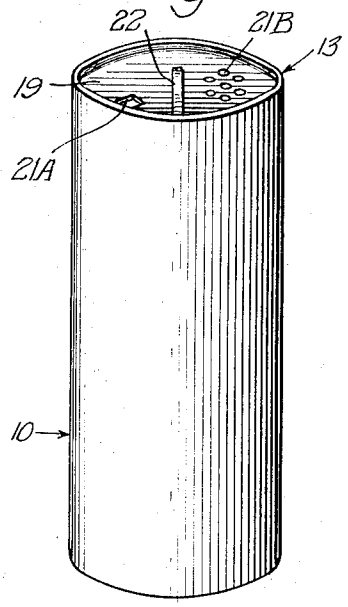


Fig. 2

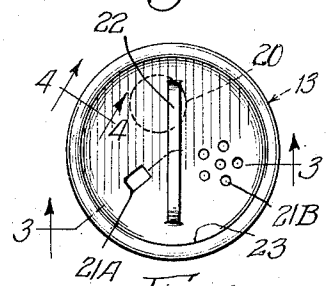


Fig. 5

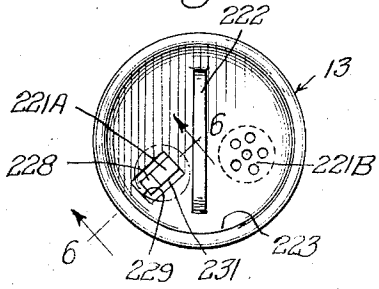


Fig. 3

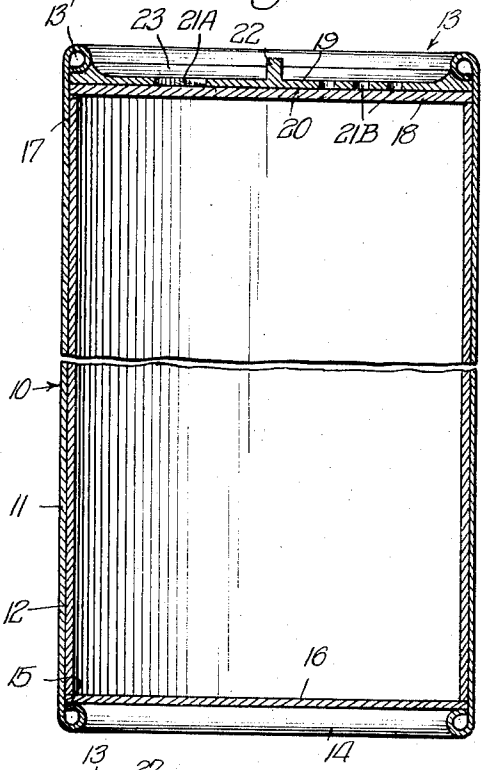


Fig. 4

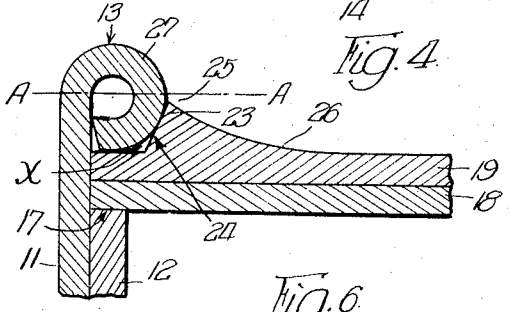
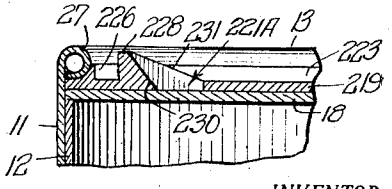


Fig. 6



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2,832,514

CONTAINER

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20 Claims. (Cl. 222—480)

This invention relates to containers and more particularly to end plugs therefor. It has specific application, altho not limited thereto, to containers of the type which are intended to be useful in dispensing small portions of its contents at a time, which contents may be in either granulated or powdered form.

Such containers have been provided previously of paper tube stock, in the dispensing end of which has been located a pair of disks or similar members having apertures in offset relation to their center. By holding one disk fixed and being able to rotate the other, the openings may be arranged in aligned open position to permit pouring of the contents or be shifted out of alignment to a closed position. Preferably, the outermost disk is the rotatable one and is held in close sliding relation with the fixed disk by crimping or otherwise inwardly turning the edge of the paper tube to form a bead overlying the peripheral edge of the disk.

However, since the tube is of paper, it is susceptible to moisture, and if sufficiently dampened, the crimped edge or bead will lose its effectiveness and tend to uncurl. This can be a particularly acute problem when the containers are used for dispensing ordinary table salt and other hygroscopic materials. In containers formed according to the above mentioned prior art construction, there is opportunity, in their normal use, for small amounts of salt to collect or become lodged in the pocket or V between the bead and edge of the disk. If not removed, the salt being hygroscopic, will pick up moisture from the air, and over a period of time dampen the bead sufficiently to cause uncurling and destroy further usefulness of the container.

It is therefore a first and primary object of the invention to provide an effective means of preventing the crimped edge of the paper tube from uncurling even when moistened, and, secondly, to provide a barrier which will prevent such salt granules or the contents of the container from becoming lodged in contact with the crimped edge.

A further object is to provide such a means in the form of a ridge or a wall on the rotatable disk which is spaced inwardly of its peripheral edge, and so shaped as to contact closely the surface of the bead without forming pockets or the like for the collection of minute amounts of salt or other contents being dispensed from the container.

A further object is so to shape the ridge or wall that it will accommodate for variations in the tightness of the crimped edge or bead while still providing the desired barrier and/or effective seal.

A further and important object of the invention is to so shape the surface of the disk and ridge over which the contents will flow during the dispensing act that it will substantially merge without abrupt change into the curved shape of the crimped edge or bead.

A further important object of the invention is to provide a curved or dish-shape to the outer surface of the rotatable disk and to so control its height at the edges thereof that said surface will effectively merge into the curved shape of the overlying bead or crimped edge without substantial break to effect free-flowing of the contents out of the aligned apertures and off the bead when the container is tilted to pouring position and to redirect all of the particles or grains which do not fall off the bead back through said aligned openings, when the container is returned to its normal vertical position.

It is a further object of this invention to obtain and accomplish all of the above in a simple and inexpensive as well as practical manner.

Many other objects and advantages of the invention will, of course, appear and become evident from the description of the invention which follows, and when considered with the accompanying drawings in which:

Figure 1 is a perspective view of a container formed according to the invention;

Figure 2 is a top end view of the container;

Figure 3 is a sectional view through the container taken on lines 3—3 in Figure 2 and looking in the direction indicated by the arrows;

Figure 4 is an enlarged fragmentary sectional view, taken on lines 4—4 of Figure 2 to illustrate more clearly the shape and relation of the ridge on the closure disk relative to the inwardly turned or crimped edge of the outer wall of the container;

Figure 5 is a view similar to that of Figure 2, but showing an alternative embodiment of the invention; and

Figure 6 is a fragmentary cross sectional view taken on lines 6—6 of Figure 5 and looking in the direction indicated by the arrows.

Referring to Figures 1 and 3, the main body portion **10** of the container hereindescribed comprises an open-ended outer cylinder **11** and an open-ended inner cylinder **12**, both of which may be formed of paper tube stock, chip board and like materials. The opposed ends of the outer cylinder **12** extend a slight distance beyond the respective adjacent ends of the inner cylinder **12** and are crimped or inwardly turned to form beads **13** and **14**. End **15** of the inner cylinder **12** forms a shoulder which functions with bead **14** to hold bottom disk **16** securely in place while its other end **17** provides a shoulder which functions with bead **13** to hold a pair of disks **18** and **19** in place.

Disk **18** is preferably formed of paper and is tightly fitted within cylinder **11** and against shoulder **17** to resist turning. As seen in Figures 2 and 3 it has an opening **20** offset from its center through which the contents may be dispensed. Although the container is intended principally for dispensing salt, it is obvious that the container will be suitable for use in dispensing a large variety of materials in granulated or powdered form.

Disk **19** functions as closure means for said opening **20**, and is preferably formed of plastic by injection molding technique. It is provided with an enlarged opening **21***a* and a perforated area **21***b* which are also offset from the center of the disk so that either may be brought into registry with the opening **20** in disk **18** by simple rotation of disk **19** utilizing rib **22** formed integrally thereon. It is of course understood that the perforated area **21***b* permits a sifting of the contents when aligned with opening **20** while opening **21***a* will allow a more free flowing of the contents during pouring. Either one or the other may be omitted, although there are obvious benefits to be derived from having both. As seen in Figure 2, opening **21***a* and perforated area **21***b* are radially spaced at some angle other than 180°, preferably 120°. This will permit both the perforated area **21***b* and opening **21***a* to be rotated a maximum distance from opening **20** in disc **18** so as to provide greater assurance against spilling of the contents if, for some reason, disc **19** were to be accidentally rotated a few degrees from a presumably closed position.

The container is ordinarily formed by first spinning

or crimping one end only of the outer cylinder **12** to form bead **13**. Disks **19** and **18** are then inserted through the uncrimped end in that order. Next, the inner cylinder **12** is positioned within the cylinder **11** and its end **17** brought up to lodge the two disks securely in place. It may be then glued or otherwise fastened to the outer cylinder **11**. The bead **13** is ideally of the cross sectional shape indicated in Figures 3 and 4. However, in practice it may vary somewhat therefrom. It may be considerably more oval in shape and in some instances, it may be so flattened that opening **13'** is omitted altogether.

Because of this, disk **19** is provided with a continuous ridge **23** inwardly spaced from its periphery which serves to engage the adjacent outer surface **27** of said bead **13**. As will be seen most clearly in Figure 4, the outer surface **24** of the ridge **23** is inclined away from its periphery at a slight angle. This helps to locate the disc properly and also to accommodate for different variations in tightness of the crimp constituting bead **13**. Preferably the ridge **23** is so spaced from the periphery of the disc **19** that in assembled relation, its surface **24** will tightly bear against the crimped edge or bead **13** of cylinder **11**, but will not prevent rotation of the disc **19** when torque is applied to the rib **22**.

To complete the assembly operation, the container is inverted and filled, it being understood of course that disk **19** has been moved to its closed position. Once filled, bottom disk **16** is positioned on end **15** of cylinder **12** and the end of cylinder **11** crimped to form bead **14** sealing the contents within the container. Although bottom disk **16** is preferably formed of paper, it may be paper impregnated or coated with plastic to render it resistant to moisture. Conceivably disk **16** could be formed of plastic or metal or other means than the crimped edge **14** used to seal such a disk in place.

Referring again to Figure 4, it will be noted that ridge **23** not only helps to center properly the disk **19** and, in bearing against the beaded edge **13**, prevent its uncurling, but it also serves to bar entrance to the V-shaped area designated "X" between the peripheral edge of disk **19** and bead **13**. It should be apparent that in the absence of such a ridge **23**, during an act of pouring contents from the container, a few of the particles could easily become lodged in this area X between the bead **13** and disk **19**. Assuming these particles to be salt granules or other particles of hygroscopic character, their collection in this area X could cause the crimped edge to become moist and tend to uncurl. The ridge **23** thus also serves as a barrier to prevent such lodgment of these particles from the area X. Obviously, if the height of the ridge **23** were to extend above the horizontal radius center line A—A seen in Figure 4, a new V-shaped pocket would be provided for receiving the salt particles. For this reason, its height should be near but not higher than said center line A—A. Preferably also, the top surface **26** of the enclosure disk **19** should be dish-shaped or cupped, as seen in Figures 3 and 4, so that it will blend or merge into the outer surface **27** of the beaded edge **13** without providing a pocket for the salt granules. This merging of the dish-shaped surface **26** of the disk **19** with the outer surface **27** of the bead **13** serves to channel the particles from the opening **20** through opening **21***a* or perforated area **21***b*, as the case may be, off the top surface of disk **19** and over the beaded edge **13** when the container is tilted to normal pouring position and also it serves to channel the remaining particles back through the openings when the container is returned to its upright or normal vertical position.

Although it is preferred that the outer surface of the closure disk be dish-shaped for this reason, it may also be made substantially flat as shown in the modification according to Figures 5 and 6. In this modification, the inner side surface **226** of the ridge **223** on closure disk **219** is disposed nearly vertical, although it may be very slightly inclined, and it may be somewhat rounded where it meets the flat surface of the disk **219**. In other respects, ridge **223** is substantially like the ridge **23** according to the modification shown in Figures 2, 3 and 4. Preferably, ridge **223** is tapered and its height controlled so that it meets the adjacent surface **27** of the bead **13** at a point adjacent to or slightly below the horizontal center line of said crimped or inwardly turned edge portion **13** as in the embodiment according to Figure 4. This provides a substantially continuous surface without interruption between the surface **226** and the surface **27** of the beaded edge **13**. In order to channel the particles over the bead **13**, disk **219** may be formed with a spout **228** about its opening **221***a* having a pouring edge **229** which is disposed above the height of the ridge **223**. Preferably, it will also be provided with an inclined surface **230** and sides **231** to assist in directing the flow of the particles.

Although the above description has been applied specifically to a container such as used for dispensing salt and like granular and/or powdered materials, conceivably a disk equivalent to disk **19** or **219** as described might be used to seal or plug the end of a great variety of other type containers such as shot-gun shells, tubes of BB's or even shipping tubes as used for various materials. In each of these instances the end of the cylinder or tube would be crimped as previously described and the disk would be urged into engagement therewith so that the inclined wall of its peripherally spaced ridge would tightly bear against the crimped edge or bead of the cylinder to prevent its uncurling. Although preferably the disk would be held in engagement with said crimped edge of the cylinder by means of a second or inner cylinder, as described above, it is conceivable that the disk might have a sufficiently tight fit within the tube or cylinder as to make the second cylinder unnecessary. Such a tight fit would be possible since in these alternative uses the disc need not and preferably does not rotate. Moreover it will be obvious that in these latter uses the disk will not be apertured. Neither will a rib such as shown at **22** be required.

Thus having described my invention, it would appear that all of the objects of the invention have been obtained in a simple, convenient and practical manner. It is further understood that the foregoing is not to be taken in a limiting sense, but merely as illustrative as to how the invention may be carried out.

I claim:

1. A device such as described comprising a cylindrical body having one end open, an apertured disk secured in the said open end, a closure disk rotatably mounted on said apertured disk in sliding relation therewith, the edge of said open end of the cylindrical body being inwardly crimped about a short radius to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending upstanding ridgelike portion spaced from the peripheral edge thereof and having a height no greater than that of the radius about which said edge is crimped, the edge of said ridgelike portion being pressed against the adjacent surface of said crimped edge of the cylindrical body to provide a substantial merging thereof with said surface.

2. A device such as described comprising a cylindrical body having one end open, an apertured disk secured in the said open end, a closure disk rotatably mounted on said apertured disk in sliding relation therewith, the edge of said open end of the cylindrical body being inwardly turned about a radius to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending upstanding tapered ridge portion spaced from the peripheral edge thereof which has a height less than that of the radius of the inwardly turned edge of the cylindrical body and is pressed against said turned edge to provide a substantially continuous uninterrupted merging of the adjacent surface of the inwardly turned edge and tapered ridge portion.

3. A device such as described comprising a cylindrical body having one end open, apertured means secured in

the said open end, a closure disk rotatably mounted on said apertured means in sliding relation therewith, the edge of said open end of the cylindrical body being inwardly crimped to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending upstanding angled wall portion spaced from the peripheral edge thereof which engages the adjacent surface of said crimped edge of the cylindrical body.

4. A device such as described comprising a cylindrical body having one end open, apertured means secured in the said open end, a closure disk rotatably mounted on said apertured means in sliding relation therewith, the edge of said open end of the cylindrical body being inwardly crimped to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending upstanding wall portion spaced from the peripheral edge thereof which engages the adjacent surface of said crimped edge of the cylindrical body and further has an exposed surface which substantially merges with the adjacent surface of the crimped edge of the cylindrical body.

5. In a container, the combination of a sleeve having an edge inwardly crimped about a short radius, a first apertured disk secured in place within the sleeve and just below the crimped edge, and a second apertured disk having its peripheral edge between the crimped edge and first disk and being slidably rotatable on the said first disk to bring the apertured portions of the two disks into and out of alignment, said second disk having an upstanding circumferentially extending ridge spaced inwardly from its peripheral edge and bearing against the crimped edge of the sleeve in sealing relation therewith.

6. In a container, the combination of a sleeve having an edge inwardly crimped about a short radius, a first apertured disk secured in place within the sleeve and just below the crimped edge, and a second apertured disk having its peripheral edge between the crimped edge and the first disk and being slidably rotatable on the said first disk to bring the apertured portions of the two disks into and out of alignment, said second disk having an upstanding circumferentially extending ridge spaced inwardly from its peripheral edge, and said ridge having a tapered end bearing against the crimped edge of the sleeve in sealing relation therewith, the exposed surface of the said ridge substantially merging with the outer surface of the said crimped edge of the sleeve.

7. In a container, the combination of a sleeve having an edge inwardly crimped about a short radius, apertured means secured in place within the sleeve and just below the crimped edge, and an apertured disk having its peripheral edge between the crimped edge and the apertured means and being slidably rotatable thereon to bring the apertured portions thereof into and out of alignment, said disk having an upstanding circumferentially extending ridge spaced inwardly from its peripheral edge, the outer surface of said ridge being angled inwardly and having its end located to bear against the crimped edge of the sleeve in sealing relation therewith at a location substantially no higher than the horizontal radius of said crimped edge, and the outer exposed surface of the ridge being shaped substantially to merge with the outer surface of the said crimped edge of the sleeve.

8. In a container, the combination of a sleeve having an edge inwardly crimped about a short radius, apertured means secured in place within the sleeve and just below the crimped edge, an apertured disk having its peripheral edge between the crimped edge and the apertured means and being slidably rotatable on said means to bring the apertured portions thereof into and out of alignment, said disk having an upstanding circumferentially extending ridge spaced inwardly from its peripheral edge, the outer surface of said ridge being angled inwardly and engaging against the crimped edge of the sleeve, and the exposed surface of the disk being somewhat dish-shaped and substantially merging with the outer surface of the said crimped edge of the sleeve.

9. In a container, the combination of a sleeve having an edge inwardly turned about a short radius, a first apertured disc secured in place within the sleeve and just below the inturned edge, and a second apertured disk having its peripheral edge between the inturned edge and the first disk and being slidably rotatable on the said first disk to bring the apertured portions of the two disks into and out of alignment, said second disk having an upstanding circumferentially extending ridge spaced inwardly from its peripheral edge, the outer surface of said ridge being angled inwardly and having a tapered end engaging the inturned edge of the sleeve, and the height of said ridge being substantially no higher than the horizontal radius of said inturned edge of the sleeve.

10. A container comprising inner and outer cylindrical bodies in secured telescopic relation, the outer cylindrical body having an edge portion extending beyond the edge of the inner cylindrical body of one end of the container, and means closing off the other end of the container, a disk immovably seated on said mentioned edge of the inner cylindrical body, said disc having an opening therein offset from its center, a closure disk rotatably mounted on said disk in close slidable relation therewith, said closure disk also having an opening therein offset from its center, and the mentioned edge of the outer cylindrical body being crimped inwardly to overlie and hold said closure disk in its close sliding relation with the first disk, together with means on said closure disk to effect rotation thereof whereby the opening in the first disk may be opened and closed, said closure disk further having an inwardly angled continuous circumferentially extending wall portion which is so spaced from its peripheral edge as to bear against the adjacent surface of the mentioned crimped edge portion of the outer cylindrical body in substantially sealing relation therewith, and the top surface of said closure disk defined by said continuous wall being substantially dish-shaped and merging with the surface of said crimped edge portion of the outer cylindrical body at the top of the inwardly angled wall to effect free flowing of the contents from said container.

11. A container comprising inner and outer cylindrical bodies in secured telescopic relation, the outer cylindrical body having an edge portion extending beyond the edge of the inner cylindrical body of one end of the container, and means closing off the other end of the container, a disk immovably seated on said mentioned edge of the inner cylindrical body, said disk having an opening therein offset from its center, a closure disk rotatably mounted on said disk in close slidable relation therewith, said closure disk also having an opening therein offset from its center, the mentioned edge of the outer cylindrical body being crimped inwardly to overlie and hold said closure disk in its close sliding relation with the first disk, and said closure disk further having a continuous circumferentially extending tapered ridgelike portion which is so spaced from its peripheral edge as to bear against the adjacent outer surface of the mentioned crimped edge portion of the outer cylindrical body to hold the same in place, and the top surface of said closure disk being substantially dish-shaped and merging with the surface of said crimped edge portion of the outer cylindrical body to effect free flowing of the contents from said container.

12. A container comprising inner and outer cylindrical bodies in secured telescopic relation, the outer cylindrical body having an edge portion extending beyond the edge of the inner cylindrical body of one end of the container, and means closing off the other end of the container, a disk immovably seated on said mentioned edge of the inner cylindrical body, said disk having an opening therein offset from its center, a closure disk rotatably mounted on said disc, and the mentioned edge of the outer cylindrical body being crimped inwardly to

overlie and hold said closure disk in a close sliding relation with the first disk, said closure disk further having an angled continuous circumferentially extending wall portion which bears against the adjacent outer surface of the mentioned crimped edge portion of the outer cylindrical body, and the top surface of said closure disk defined by said continuous wall being substantially dish-shaped and substantially merging with the surface of said crimped edge portion of the outer cylindrical body to effect free flowing of the contents from said container.

13. A container comprising inner and outer cylindrical bodies in secured telescopic relation, the outer cylindrical body having an edge portion extending beyond the edge of the inner cylindrical body of one end of the container, and means closing off the other end of the container, a disk immovably seated on said mentioned edge of the inner cylindrical body, said disk having an opening therein offset from its center, a closure disk rotatably mounted on said disk, the mentioned edge of the outer cylindrical body being spun over the edge of said closure disk to hold it in close sliding relation with the first disk, said closure disk further having an angled continuous circumferentially extending wall portion which bears against the adjacent outer surface of the mentioned spun edge portion of the outer cylindrical body, and the top surface of said closure disk defined by said continuous wall being substantially dish-shaped and merging with the surface of said spun edge portion of the outer cylindrical body near the horizontal radius of said inwardly spun end portion to effect free flowing of the contents from said container.

14. A device such as described comprising a cylindrical body having one end open, apertured means secured in the said open end, a closure disk rotatably mounted on said apertured means in sliding relation therewith, the edge of said open end of the cylindrical body being inwardly crimped to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending angled wall portion engaging the adjacent surface of said crimped edge of the cylindrical body, the top surface of said closure disk defined by said angled wall portion being substantially dish-shaped and merging with the adjacent outer surface of said inwardly crimped edge of the cylindrical body.

15. In a container the combination of a sleeve having an inwardly beaded edge, a first apertured disk secured in place within the sleeve and just below the beaded edge thereof, and a closure disk rotatably mounted on the first disk in close sliding relation therewith, said closure disk having its peripheral edge disposed between the beaded edge of the sleeve and said first disk, and further having an upstanding circumferentially extending ridge spaced from its peripheral edge, said ridge having its top edge bearing against the surface of said beaded edge of the disk.

16. In a container the combination of a sleeve having an inwardly beaded edge, a first apertured disk secured in place within the sleeve and just below the beaded edge thereof, and a closure disk rotatably mounted on the first disk in close sliding relation therewith, said closure disk having its peripheral edge disposed between the beaded edge of the sleeve and said first disk, and further having an upstanding circumferentially extending ridge spaced from its peripheral edge, said ridge having its top edge bearing against the surface of said beaded edge of the disk, and the inwardly disposed side surface of said ridge substantially merging with the adjacent surface of said beaded edge.

17. In a container the combination of a sleeve having an inwardly beaded edge, a first apertured disk secured in place within the sleeve and just below the beaded edge thereof, and a closure disk rotatably mounted on the first disk in close sliding relation therewith, said closure disk having its peripheral edge disposed between the beaded edge of the sleeve and said first disk, and further having an upstanding circumferentially extending ridge spaced from its peripheral edge, said ridge having its top edge bearing against the surface of said beaded edge of the disk, and the inwardly disposed side surface of said ridge substantially merging with the adjacent surface of said beaded edge at a location no higher than the horizontal center line of said beaded edge.

18. A device such as described comprising a cylindrical body having a closure disk mounted in one end thereof, the edge of said cylindrical body being inwardly turned to overlie the peripheral edge of said closure disk, and said closure disk having a circumferentially extending upstanding inclined wall portion which is spaced from the peripheral edge thereof and engages the adjacent surface of said crimped edge of the cylindrical body.

19. A device according to claim 18 in which the upstanding inclined wall portion of the closure disk has a height less than that of the radius about which the edge of the cylindrical body is inwardly turned and is so pressed against the surface presented by said turned edge as to provide a substantially continuous uninterrupted merging of said surface of the inwardly turned edge and adjacent surface of the closure disk.

20. A device such as described in claim 18 having a cylinder like member fixed within the cylindrical body with its edge bearing against the underside of the periphery of the closure disk to hold said disk against the inwardly turned edge of the cylindrical body.

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