Jan. 26, 1937. R. R. GUENTHER 2,069,033

PAPER BOTTLE

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Fig. 1.

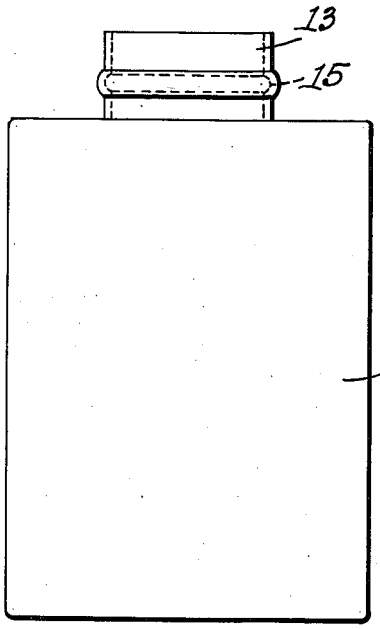

Fig. 3.

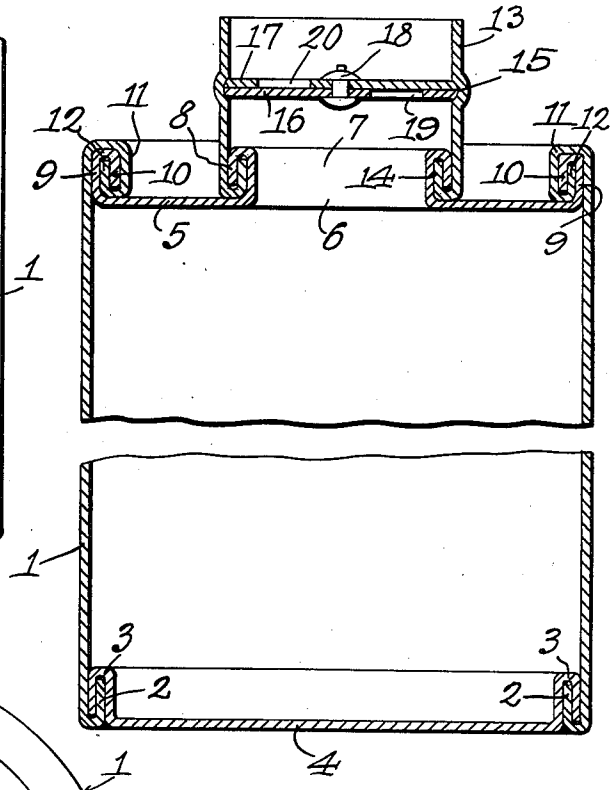

Fig. 2.

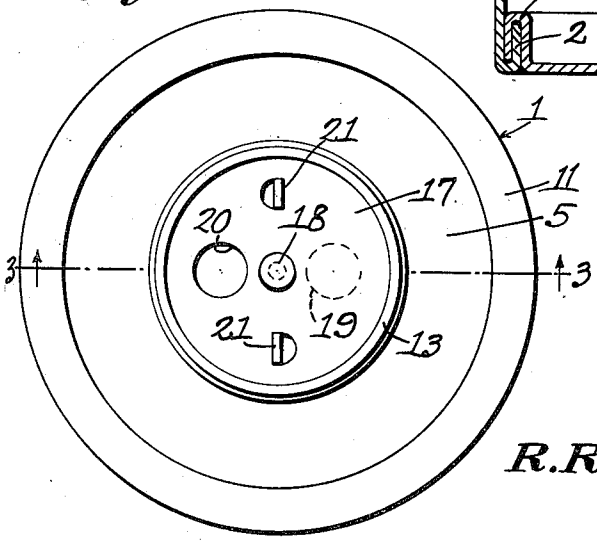

Fig. 4.

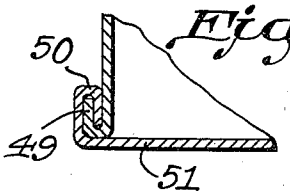

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Fig. 9.

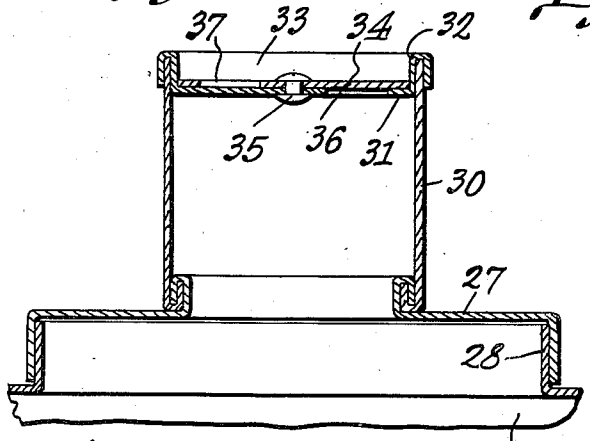


Fig. 5.

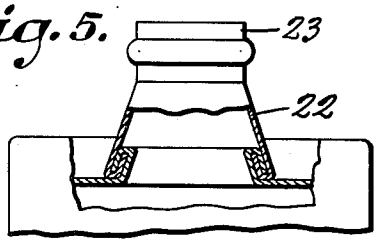


Fig. 7.

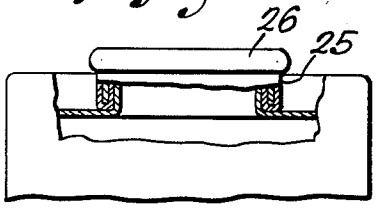


Fig. 10.

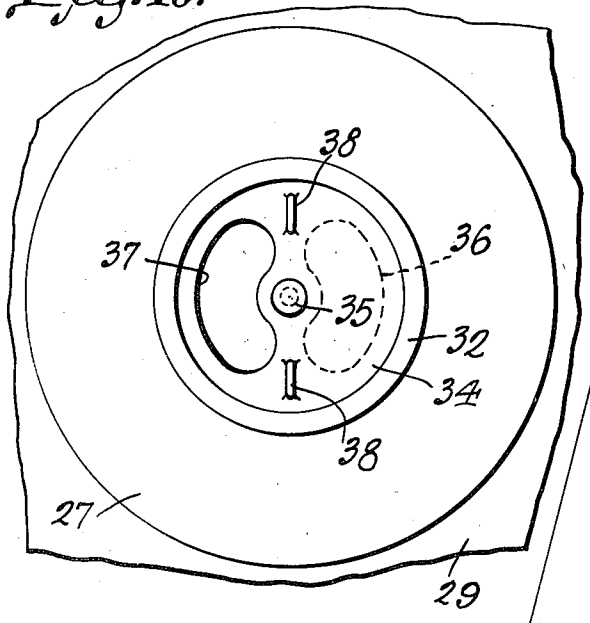


Fig. 8.

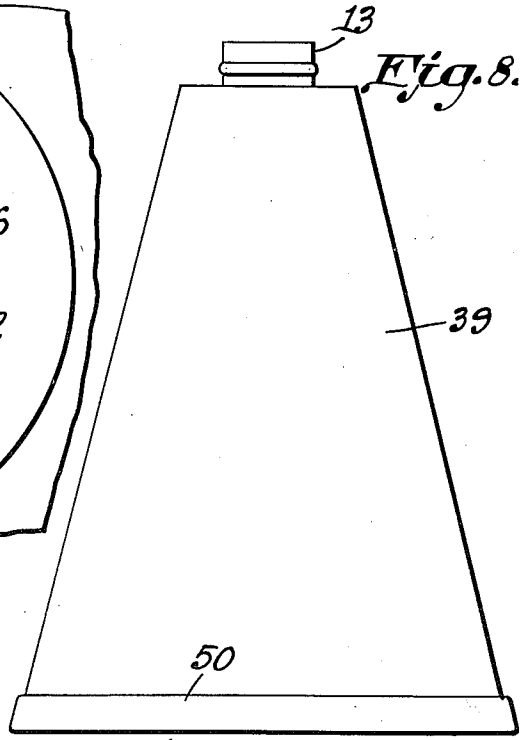
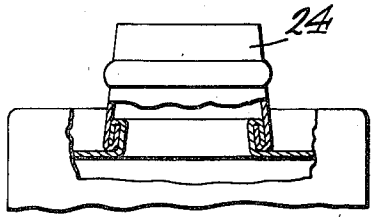


Fig. 6.



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PAPER BOTTLE

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Fig. 11.

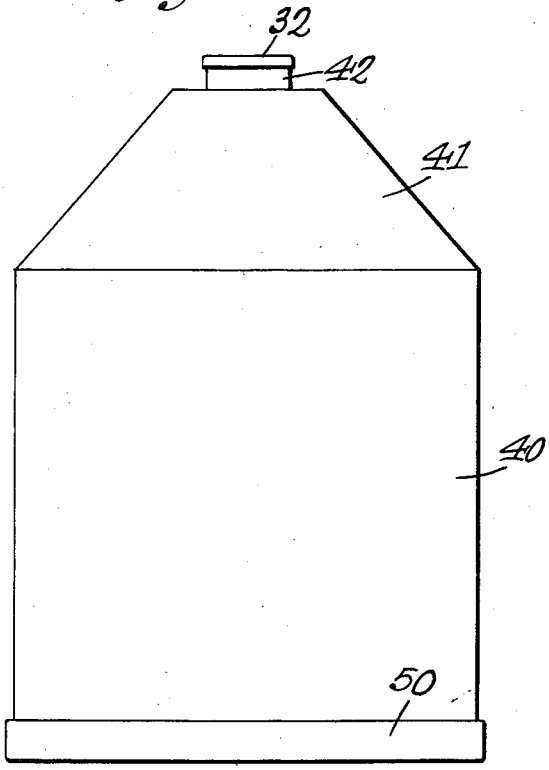
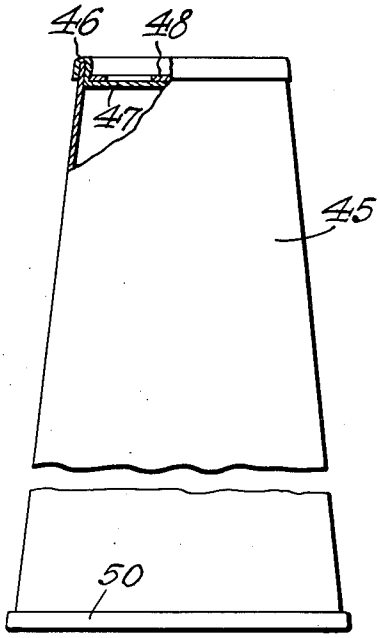


Fig. 14.



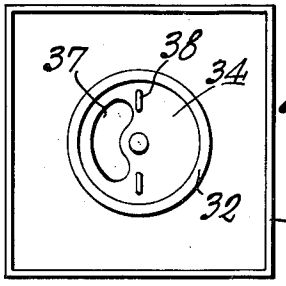


Fig. 12.

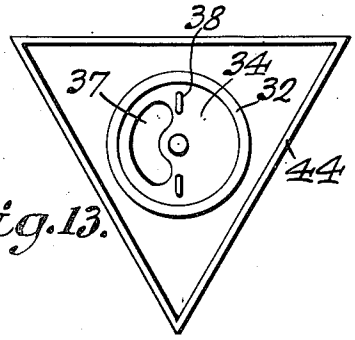


Fig. 13.

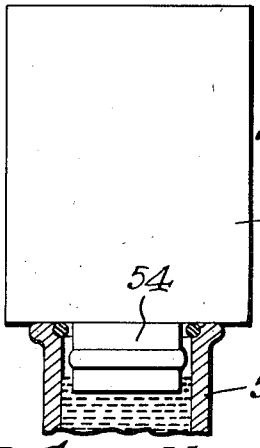


Fig. 15.

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Patented Jan. 26, 1937 2,069,033

UNITED STATES PATENT OFFICE

2,069,033

PAPER BOTTLE

Rudolph R. Guenther, Bethlehem, Pa.

Application September 28, 1934, Serial No. 745,981

3 Claims. (Cl. 229—5.6)

This invention relates to paper bottles which can be made from one quart up to five gallon capacities and while they are designed primarily for holding drinking and distilled water, it is to be understood that they can also be used advantageously for holding other liquids.

It has been the practice heretofore to supply drinking and distilled water in large glass bottles which generally have been supported in inverted positions while in use. The employment of glass bottles for this purpose has had many objections. Aside from the necessity of sterilizing and washing every bottle prior to filling it, there has been frequent loss due to breakage and such breakage has often resulted in injuries to persons handling the containers.

A further objection to the use of glass bottles has been the necessity of making return trips to collect the empty containers. It has also been necessary to use cork stoppers, paper caps, tin foil or the like upon the stoppers. Labeling of the bottles has further increased the costs incident to the use of glass containers, and breakage resulting from freezing has been an added objection.

It is an object of the present invention to eliminate all of the undesirable features herein enumerated by providing a strong and efficient paper bottle which can be used under all conditions in lieu of the ordinary glass bottle for holding drinking and distilled water, it being understood that the bottle, with its specially made closure, can be discarded after being emptied, thereby doing away with the necessity of collecting bottles, sterilizing and washing them.

It is also an object to provide paper bottles on which the water analysis or other data can be printed directly without requiring separate gummed labels.

Another object is to provide a bottle which acts as an insulator to prevent freezing of its contents, which will not break, and which consequently does not require the use of protecting crates or of special care in handling.

A still further object is to provide the bottles with inexpensive but efficient closures of new and novel construction whereby the contents of the bottle can be sealed tightly, said closures being readily shiftable to permit the contents to pour from the containers.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings

Figure 1 is a front elevation of a paper bottle constructed in accordance with the present invention.

Figure 2 is an enlarged plan view thereof.

Figure 3 is a section on line 3—3, Figure 2, an intermediate portion of the bottle being broken away.

Figure 4 is a section through a modified form of interlocking seal joint.

Figure 5 is a central vertical section through a portion of a modified form of bottle, parts being in elevation.

Figure 6 is a view similar to Figure 5 showing another modified neck construction.

Figure 7 is a view similar to Figures 5 and 6 showing still another modification of bottle neck.

Figure 8 is an elevation showing a tapered bottle which can be used in lieu of the cylindrical form shown in Figure 1.

Figure 9 is a central vertical section through the neck portion of a bottle showing a modified form of closure and neck construction.

Figure 10 is a plan view of the structure shown in Figure 9.

Figure 11 is an elevation of a cylindrical bottle having a conical upper portion carrying the neck.

Figure 12 is a plan view of a square bottle which could be used instead of a round one.

Figure 13 is a plan view of a triangular bottle.

Figure 14 is an elevation of a tapered bottle from which the neck portion has been eliminated as a separate structure, the closure being applied directly to the upper or mouth portion of the body of the bottle.

Figure 15 is a view partly in section and partly in elevation of a portion of a water cooler with which is combined a paper water bottle such as constitutes the present invention.

The bottles constituting the present invention are formed of paper of requisite strength, said paper being treated with a suitable water-proofing material which will not affect the taste or purity of the liquid contents. In the structure shown in Figures 1, 2, and 3, the body portion 1 of the bottle is cylindrical and has its bottom edge inturned upwardly as at 2 to seat snugly within an inverted channel 3 formed at the margin of

a paper bottom disk 4, thereby producing an interlocking sealed joint through which the contents of the bottle cannot leak. It will be noted, furthermore, that the bottom portion of the body 1 is flush with the bottom surface of disk 4 so that both can rest upon a supporting surface.

Seated in the upper portion of the body 1 is a shoulder disk 5 having an opening 6 surrounded by an upstanding flange 7 the upper edge portion of which is bent outwardly and downwardly to provide an inverted channel 8. The outer edge portion of disk 5 is formed with an annular flange 9 which fits snugly against the inner surface of the body 1 and is folded inwardly and downwardly to provide an inverted channel 10. The upper edge portion of body 1 is folded inwardly and downwardly over the channel 10 as shown at 11 and is extended upwardly into the channel as indicated at 12. Thus there is provided a tight interlocking seal between the shoulder disk and the body.

The neck portion of the bottle comprises a paper tube 13 the lower end portion of which is folded upwardly and inwardly as at 14 so as to rest upon shoulder disk 5 and extend into the channel 8.

Obviously the sealing joints between the shoulder disk, neck and body not only serve to securely connect these parts but also act as stiffening means to prevent distortion of the bottle while in use or being handled. The same advantages are present in the sealing joint at the bottom of the bottle.

As the paper of the bottle is all waterproofed it will be apparent that liquid can be retained without danger of leakage.

For the purpose of sealing the bottle after it has been filled a novel form of closure is provided. As shown in Figure 3 an annular groove 15 is pressed into the inner surface of tube 13 and constitutes a seat for the marginal portions of two superposed disks 16 and 17 which are joined at their centers by a rivet 18 or other suitable pivot device. The disk 16 is provided with an opening 19 and another similar opening 20 is formed in the disk 17. These openings are normally out of register at which time the bottle is completely sealed. When it is desired to release the contents of the bottle, disk 17 is rotated to bring opening 20 into register with opening 19. To facilitate rotation ears 21 can be punched upwardly from disk 17. Rotation of the disk will be retarded by its frictional contact with tube 13 and disk 16.

Although the bottle has been illustrated as provided with a relatively long cylindrical neck, it is to be understood that, if preferred, the lower portion of the neck can be frusto-conical as shown at 22 in Figure 5, the upper portion of the neck being cylindrical as at 23 to receive the closure.

As shown in Figure 6 the entire neck 24 can be made frusto-conical without the cylindrical portion and, as shown in Figure 7, instead of employing a relatively long neck, as in Figure 3, a short cylindrical neck 25 can be used, the out-pressed closure receiving portion 26 being positioned at the upper end of the neck.

In Figures 9 and 10 the shoulder disk 27 of the bottle is shown in the form of a lid applied to and surrounding an upstanding flange 28 extending from a container 29. The tube 30 forming the neck portion is joined to the shoulder disk in the same manner as heretofore described but the closure is somewhat different in construction. Instead of grooving the neck as heretofore described, the inner disk 31 of the closure is formed with an annular channel 32 which straddles and is fitted tightly upon the edge portion of the neck. The channel 32 defines a recess 33 in which is seated the outer disk 34 which is joined at its center to the disk 31 by a pivot device 35. An opening 36 is provided in disk 31 and another opening 37 is provided in disk 34. These openings are normally out of register.

For convenience in rotating disk 34, ears 38 or other suitable means can be carried by said disk.

While the containers thus far described have been shown cylindrical, it is to be understood that they can be made of other shapes. In Figure 8 the container has been illustrated as provided with a frusto-conical body 39 carrying a neck construction which can be similar to any of those heretofore described although the one shown is like that illustrated in Figure 3. In Figure 11 there has been shown a cylindrical container 40 with a frusto-conical upper portion 41 supporting the neck construction 42.

Instead of utilizing a container which is round in cross-section, the body of the container can be square as shown at 43 in Figure 12 or triangular as shown at 44 in Figure 13. In these modified structures the type of closure illustrated in Figure 9 has been shown but it is to be understood that the type shown in Figure 3 could also be used.

While it is preferred generally to provide a shoulder disk in the bottle construction, it is possible under some conditions to eliminate this disk. This is particularly true where a tapered body 45 is employed as in Figure 14. In that figure the channeled margin 46 of one disk 47 is applied directly to the neck of the body and the other disk 48 is carried thereby as in Figure 9.

It will be noted that in some of the figures the interlocking sealing joint at the bottom of the container is exterior of the body. This type of joint has been illustrated in detail in Figure 4. The bottom edge of the body is turned outwardly and upwardly to provide an annular channel 49 and into this channel is extended an inverted channel 50 which extends upwardly from the bottom disk 51 and extends around channel 49. It is to be understood that this type of seal can be employed instead of the corresponding seal shown in Figure 3 and vice versa.

In Figure 15 there has been illustrated an inverted paper water bottle in position on a water cooler only a portion of which has been shown. This water cooler, which can be maintained cold either with ice or with electrical or other mechanical means, is provided with a neck portion 52. The inverted paper water bottle indicated generally at 53 and which can be any of the preferred constructions, has its neck 54 projecting downwardly into the upper portion of the cooler 52. Thus when the water flows out of the paper water bottle and into the cooler the water level will rise to a point above the bottom of the bottle neck so that the neck will thus be partly submerged. As the neck as well as the other parts of the paper water bottle is impregnated by a special process with pure paraffin, which is tasteless and odorless, the fact that the neck of the bottle is partly submerged will have not effect on the water when used for drinking or any other purposes.

Importance is attached to the fact that the bottle covered by this application is absolutely sanitary, germ-proof and disease-proof and after once being used are to be discarded.

The bottles are impregnated by a special proc-

ess with pure paraffin, which is tasteless and odorless. Furthermore the bottle is simple in construction, cheap to manufacture and is very strong so as to facilitate shipping and hauling. Its seal is so constructed that when opened the contents of the bottle will pour over surfaces impregnated with pure paraffin and which are germless, fully protected and uncontaminated.

It will be noted that in all of the structures illustrated, except that shown in Figure 9, the shoulder disks have their flanges 9 extended upwardly and the same is true of their flanges 8, the flanges in both cases forming inverted channels. Thus the paper tube constituting the neck portion extends down into the recess defined between the flanges so that the joint formed by the interfitting portions of the tube and the shoulder disk will be protected by the upstanding seam formed by the interfitting portions of the shoulder disk and the wall of the bottle or container. This will be apparent by referring to Figure 3. Thus danger of separating the neck portion from the shoulder portion is materially reduced because of the protection afforded.

What is claimed is:

1. A paper bottle including a body, a shoulder disk, an outwardly extending annular reinforcement formed by the body and disk and constituting a sealing joint therebetween, a tube mounted upon and opening through the shoulder disk, said tube and disk having interlocking portions surrounded and protected by the annular reinforcement and constituting a connecting and sealing joint.

2. In a paper bottle a body, a shoulder disk secured therein, a neck tube resting upon and secured to the shoulder disk and opening therethrough, a disk having an annular channel straddling and gripping the end of the neck tube, said disk being supported by the channel within the neck tube and having an aperture, and a rotatable apertured disk pivotally connected at its center to the other disk and surrounded by the channel.

3. A paper bottle including a body, a shoulder disk, an outwardly extending reinforcement formed by the body and disk and constituting a sealing joint therebetween, a tube mounted upon and opening through the shoulder disk, said tube and disk having interlocking portions surrounded and protected by the annular reinforcement and constituting a connecting and sealing joint, an annular groove in the inner surface of the neck portion, and superposed relatively movable disks held together at their margins by the wall of and seated within the groove, said disks having openings movable into register.

RUDOLPH R. GUENTHER.