

March 7, 1944.

C. B. WHITE ET AL
OPENER FOR CONTAINERS

2,343,602

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Fig. 1,

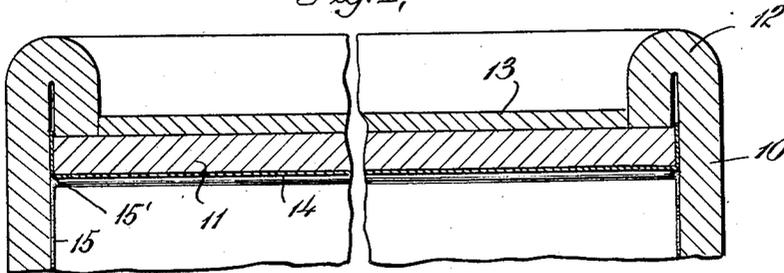


Fig. 2,

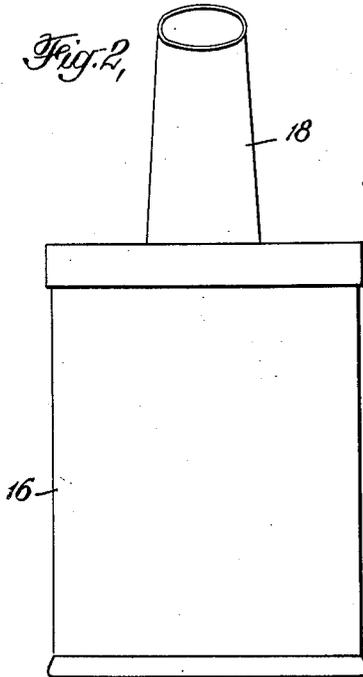


Fig. 4,

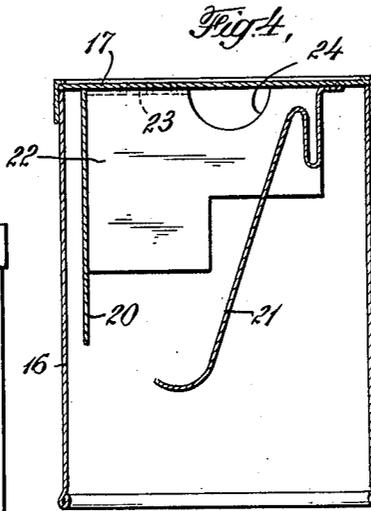


Fig. 6,

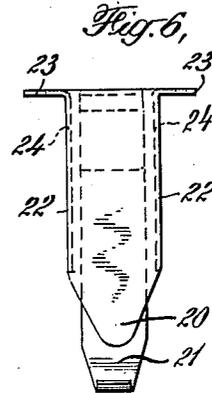


Fig. 5,

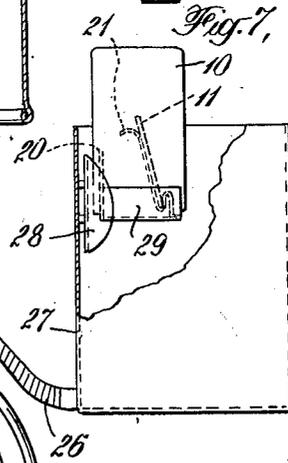
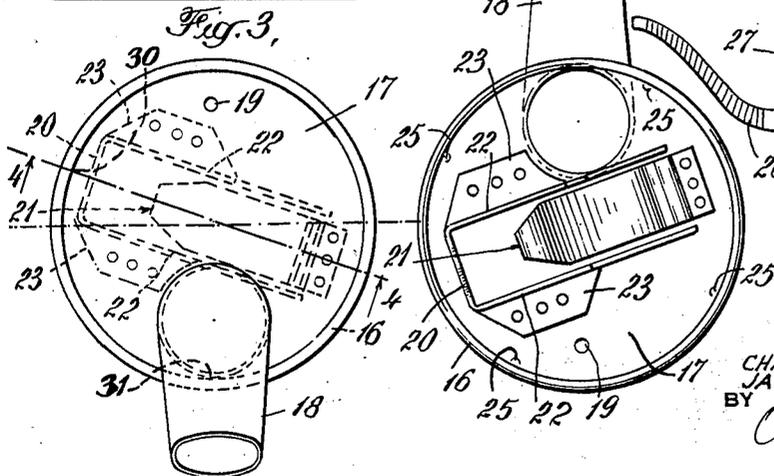


Fig. 3,



INVENTORS
CHARLES B. WHITE AND
JACK WINKLER
BY
Oswald G. Hoyer
ATTORNEY

UNITED STATES PATENT OFFICE

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OPENER FOR CONTAINERS

Charles B. White, Bronxville, and Jack Winkler,
Brooklyn, N. Y., assignors to Socony-Vacuum
Oil Company, Incorporated, New York, N. Y.,
a corporation of New York

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3 Claims. (Cl. 221-23)

This invention relates to the opening of containers of the type having a longitudinal body member of fibrous or other sheet material closed at both ends by discs of cardboard or the like.

Containers of one type to which the invention is applicable are described in patents to J. K. M. Harrison. In general, the containers are cylindrical, although the invention may be used in connection with containers of other cross-section, and are closed at each end by a circular disc. The ends of the cylindrical container wall are spun inward and downward to form disc retaining beads. In accordance with our invention, force is applied positively to a closure disc at an edge portion until the disc pulls free of its frictional or cemented bond with the container wall, whereupon the disc is turned by resilient means about an axis transverse of the disc and moved into the container to provide free flow space for emptying the container.

These and other aspects of the invention, together with the advantages thereof, will be apparent from the discussion below of a preferred embodiment illustrated in the attached drawing wherein:

Figure 1 is a longitudinal partial-section of a container of one type to which the invention is applicable;

Figure 2 is an elevation of an opener embodying the principles of the invention;

Figure 3 is a plan view thereof;

Figure 4 is a section on line 4-4 of Figure 3;

Figure 5 is a view of the operating elements of the opener;

Figure 6 is a detail view of the element adapted to break the seal of a container closure member; and

Figure 7 is a view of a modified form of the opener.

The opener here illustrated, while embodying certain general features of the invention adaptable to openers for containers of various types, is particularly well fitted for use in connection with a container of a particular structure described hereinafter. The dominant features of that container pertinent to this invention are shown in Figure 1. The container comprises a tubular body portion 10 and an end closure disc 11 maintained in place by close contact against the walls 10 and by a bead 12 formed by spinning over the end of the container wall 10. A small disc 13 fitted to the outside of disc 11 protects the joint of that disc with bead 12. On the inner face of disc 11 is a disc 14 of sheet material which is preferably

non-fibrous such as Cellophane or parchment. The disc 14 is firmly bonded to the inner face of disc 11 as by glue, which, however, does not extend to the edges of disc 11. The disc 14 laps over the edges of disc 11 and is bonded in this region to the wall 10 in a manner described below. In formation of the container, the wall 10 is interiorly coated with an adhesive 15, preferably a glue or the like, which is tacky at the time of insertion of the closure disc 11. The closure disc 11, as formed and inserted, is a very tight fit in the tubular body 10, being preferably of a slightly greater diameter than the internal diameter of the body. As the disc 11 is thrust into place, it scrapes up a portion of the adhesive 15 into a fillet 15' and the fillet together with the adhesive which remains between wall 10 and disc 14 firmly cements these two elements together. Thus, the container is closed at each end by a disc held in place primarily by tight engagement with the walls and by the bead 12, while the liquid and vapor tight seal is provided by the disc 14 which is bonded in its central area to disc 11 and at its edges to wall 10, while having an intermediate portion free of both disc 11 and wall 10.

This type of seal is highly advantageous in many instances, as, for example, packaging of lubricating oil. The wall 10 and closure disc 11 are, in accordance with usual practice, formed of layers or laminae of fibrous material, such as paper, cardboard, or the like. Any opening by rupture of one of these elements, either by cutting or breaking along weakened or cut lines, results in the loosening of fibres which contaminate the contents of the container. Where the disc 14 is of non-fibrous nature, the container may be opened by a pressure applied along the edge, tearing the disc 14 in the portion where it is not bonded to either the disc 11 or the wall 10, whereby the only rupture is in a substance which cannot provide loosened fibres.

The opener comprises an outer cylindrical shell 16 of a size adapted to fit about the container closely enough to enable handling the container and opener after opening as a unit, but loosely enough that the operation of opening is not affected materially by friction. The shell 16 has at one end a closure plate 17 carrying a spout 18 communicating with the interior of the shell, and is provided with a hole 19 for admission of air; while the other end of the shell is open to receive the container.

Inside the shell 16 is a container opening assembly comprising a rigid finger 20 and a spring finger 21.

The manner of securing the parts of the opening assembly to the shell 16 and/or plate 17 should be so designed as to offer a minimum of resistance to liquid flow to the spout from the opened container. In the present embodiment, rigidity is afforded the finger 20 by side plates 22 bearing flanges 23 which are spot welded to plate 17. The spring finger 21 is also spot welded to plate 17. Drain holes 24 are cut in the side plates 22 to promote drainage of liquid.

If desired, means may be provided on the inner surface of shell 16 to stop the container at a point before it contacts plate 17. Bosses 25 for that purpose aid in drainage by providing a free space between the container and the plate 17.

In using the device, a container, such as that partially shown in Figure 1, is inserted into the shell 16 from the open end, preferably by resting the container in upright position on a suitable surface and pushing the tool thereover. As the container advances into the shell 16, the end closure disc will contact and flex spring finger 21 which will move toward finger 20. When finger 20 is reached, that member will contact the end closure disc at a point adjacent the bead 12 and further motion, with surprisingly little force, will cause the end closure disc to break away from the wall of the container, rupturing the sealing sheet 14, if present. Once the seal is broken, the closure disc turns rather readily, and the flexed spring finger 21 will return to unflexed condition forcing the end closure disc to a position for rapid drainage of the container.

The opener, with the container therein, is then tipped in the normal manner to pour the container contents through spout 18, air moving in through hole 19 to replace the liquid flowing out.

Referring to Figure 3, and assuming a container to be in the opener, it will be seen that the spout, when in the normal discharge position shown, drains the container at a point 31 in the periphery of the end of the container, while the fingers 20 and 21 engage the end disc near a point 30 of said periphery in the opening operation. As shown in the drawing, the points 30 and 31 are separated by a peripheral arc of more than 90°, the preferred arc being about 110° as in the drawing. We have found that this relative position of the parts results in a relative position of the displaced end disc and the spout which promotes, to the greatest degree, the rapid and complete draining of the contents of the container.

It is often preferable that the opener be in the nature of a measuring type dispenser. A suitable design for this purpose is shown in Figure 7 with one portion of the opener partially broken away to show an opened container in the device. The body of the opener is of the

usual measuring dispenser type fitted with a flexible drain spout 26 fitted to the lower part of a shell 27. The opening assembly is, in this case, supported by a curved segment 28 secured to the wall of shell 27. If desired, a guiding strip 29 may also be included to aid in positioning the container.

We claim:

1. In a device of the class described, the combination of means for receiving the end of a container, of the type comprising a cylindrical body closed with an end disc, and for guiding the container for relative longitudinal movement, a member attached to said means in position to engage the end disc of the container at a point near its periphery and to press said disc inwardly at said point in consequence of said movement, and a resilient member, connected with said means in position to be pushed back by the said end disc in consequence of said movement and to press the end disc further inwardly by its resilient action after such movement of the end disc has been initiated by the positive action of the first mentioned member.

2. In a device of the class described, the combination of a shell to receive and closely embrace the end of a container of the type comprising a cylindrical body closed by an end disc and to guide the container for relative longitudinal movement, the shell being open at its receiving end and closed by an end plate at the other end, a spout opening through and projecting from the end plate, the entrance opening to the spout being located to drain the container at a point in the end periphery of the container, and means, within the shell, mounted in position to engage the end disc of the container adjacent a second point in the end periphery of the container and to press the end disc inwardly in consequence of said longitudinal movement, the two said points being separated by an arc of between 90° and 130° in the end periphery of the container.

3. In a device of the class described, the combination of means for receiving the end of a container, of the type comprising a cylindrical body closed by an end disc, and for guiding the container for relative longitudinal movement, and opening means, for displacing said end disc in consequence of such longitudinal movement, said opening means being positioned to engage said disc at a point near its periphery and comprising a resilient member and a rigid member cooperating first to displace the end disc positively, after the resilient member has been pushed back by the end disc, and thereafter to displace the end disc further by the return of the resilient member to normal position.

CHARLES B. WHITE.
JACK WINKLER.