Sept. 21, 1943. W. B. JOHNSON 2,329,716

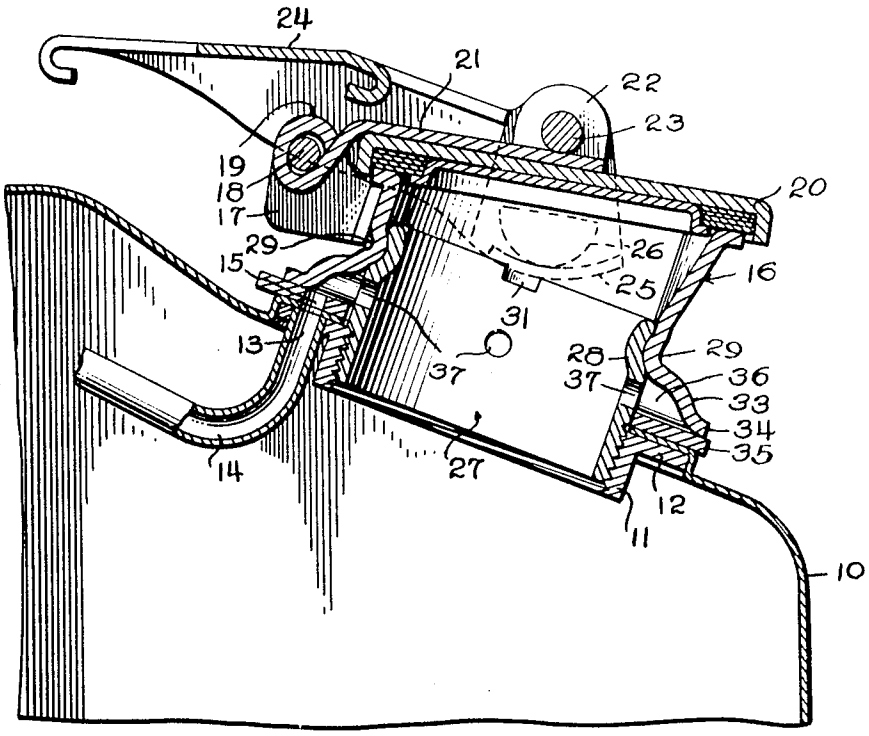
ADAPTER CLOSURE ASSEMBLY

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ADAPTER CLOSURE ASSEMBLY

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

The present invention relates to container closures. More specifically, it relates to a novel and improved adapter unit so designed and constructed that it may be attached to a conventional type of screw-threaded container mouth, to provide a quick-acting, cam-operated closure device that may be instantly opened or closed by manually shifting a hand lever.

Before describing the details of the structure of the present disclosure, it should be pointed out that in military field operations it has been found undesirable to supply water or fuel oil to troops in combat by means of large containers, and that the accepted practice is to carry fuel supplies in thousands of small rectangular containers; usually of a capacity approximately of five gallons each.

In the United States Army a form of container has been adopted that includes a relatively large screw-threaded pouring opening surrounded by a flat flange. This type of closure is admirably adapted to certain phases of military use, but some conditions require, or render desirable, the provision of a quick-acting cam-operated closure that may be instantly opened or closed by the manipulation of a hand lever.

It is accordingly proposed to provide a novel and useful adapter unit capable of being threaded into the standard pouring opening of an Army liquid container and including a hinged cap, a hand lever, and cam-operated means to open and close the cap.

Referring now more specifically to the drawing attached to and forming a part of the present specification, the single view of the drawing illustrates the present preferred embodiment of the present invention; the view constituting a central sectional view through an adapter unit illustrated in attached position on the pouring opening of a portable liquid container.

The container body 10 is of generally rectangular formation and of an approximately 5-gallons capacity, and is provided with a relatively large internally threaded pouring mouth 11 surrounded by a flat marginal flange 12. A vent port 13 is provided in the flange 12 outside of the mouth of the container and the port 13 is connected to a remote portion of the container by a metallic tube 14.

The structures, as thus far described, are not new in this application and do not constitute the subject matter of the present-claimed invention, except in so far as they act in combination with the adapter unit structure to be hereinafter described.

The adapter unit includes a spout portion 16 arranged to be permanently clamped onto the container by means of a sleeve 27 and to have its upper end closed by a cap 20, arranged to be manipulated by a hand lever 24. All of the foregoing structures are permanently connected to each other to form a closure assembly unit having no loose parts that may be lost or mislaid in shipping or in use, so that the entire structure may be attached or removed from the container as a unit. Obviously, it may be attached either at the time the container is manufactured, or when in use in the field, as occasion arises. The spout 16 includes a hinge bracket 17 carrying a hinge pin 18 on which the cap 20 is mounted by means of the hinged plate 21. The hinged plate, as illustrated in the drawing, includes a flat portion welded or otherwise secured to the cap and an elongated loop 19 that fits loosely around the pin 18, so that when cam-operated clamping devices (to be hereinafter described) force the cap into engagement with the spout the engagement will be uniform around the top surface of the spout. The cap 20 will thus seal the top of the spout 16, and, to facilitate this sealing action, the cap 20 is provided with any conventional type of sealing gasket and gasket retainer.

The hinged plate 21 extends across the top of the cap 20 and is provided at its opposite sides with a pair of upwardly extending ears 22, each of which is perforated to receive a cross pin 23 on which the hand lever 24 is mounted. The hand lever 24 includes a pair of flanges extending downwardly on either side of the cap 20 and terminating in curved cam portions 25. Each of the cam portions 25 is arranged to engage in locking relationship with cam anchors 26 positioned on each opposite side of the spout 16.

The spout 16 and the sleeve 27 are operatively united with each other by a rotatable connection consisting of an annular groove 28 extending around the top of the sleeve 27 and engaged at several points around the circumference by indented portions 29 on the interior surface of the spout 16. The arrangement is such as to permit free rotation of the sleeve 27 within the spout 16 and yet secure the two members firmly together, so that when the sleeve 27 is screwed into the threads of the pouring opening 11 of the container the spout 16 will be forced into firm engagement with the flange 12 surrounding the

filling opening. The upper edge of the sleeve 27 is provided with suitable notches 31 so that sleeve 27 may be rotated to clamp the closure unit in position on the container.

The lower edge of the spout 16 includes a marginal offset portion, or bead 33, extending completely around the spout and terminating in a relatively flat flange 34 adapted to seal against the outer edge of the sealing flange 12 of the container. A gasket 35 is interposed between the flange 34 and the flange 12 to prevent leakage of fluid between the flange and the spout. The gasket includes a perforation 15 in communication with the vent port 13. The configuration of the lower edge of the spout is such as to provide an annular chamber 36 extending completely around the filling opening of the container, and (since the vent port 13 communicates with the perforation 15 of the gasket 35) the chamber 36 establishes communication between the vent tube 14 and side vent ports 37 disposed at intervals around the walls of the sleeve 27.

The operation of the device is as follows: The closure unit is attached to the container by simply removing the usual threaded container cap and threading the sleeve 27 into the threaded opening 11 of the container. This may be easily done by positioning the cap 20 in open position with respect to the spout 16 and tightening the sleeve 27 into position by means of a spanner wrench or other tool inserted in the notches 31. As this operation takes place, the outer edge of the flange 34 will seal against the gasket 35 and establish leak-proof connection between the spout and the flange 11. The closure unit may then be closed by pivoting the cap 20 around the hinged pin 18 to the position illustrated in the drawing and moving the cam surfaces 25 under the cam anchors 26 by manual manipulation of the handle portion 24. Thus, when the several parts of the device assume the position illustrated in the drawing, the spout will be secured in leak-proof position on the mouth of the container and the cap will be in turn secured in leak-proof engagement with the top of the spout. To fill or empty the container, it is only necessary to raise the handle 24 until the cam surfaces 25 disengage the cam anchor 26, and to lift the cap 20 in a pivotal movement around the hinge pin 18 so as to permit liquid to be poured into or from the container 10. It is to be noted, however, that, although the sleeve 27 is threaded into the flange 11 of the container and the vent port 13 is outside of the sleeve, a complete venting arrangement is provided by the annular channel 36 of the spout 16, which communicates with the vent port 13 and in turn communicates with the side portion 37 on the sleeve. The arrangement is such that whenever the cap 20 is open and liquid is being poured into the container one or more of the vent openings 37 is uncovered to permit entrance of air through the channel 36 and into the vent tube 14 so that sufficient air may be admitted to the container to allow unrestricted flow of liquid from the spout.

From the foregoing it will be apparent that the teachings of the present invention provide a simple, compact and rugged adapter unit whereby a conventional screw-threaded container closure may be provided with a quick opening cam type closure. Further, the structure illustrated in the drawing of the present application provides a novel and useful improvement in devices of this character, so that they may be successfully used in connection with screw-threaded container closures having their vent port outside of the dimensions of the pouring opening, as one the flat flange surrounding the container opening.

I claim:

1. As an article of manufacture, an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of a container, a spout surrounding said sleeve; an interlocking rotatable connection between said spout and sleeve, the interlocking rotatable connection including an annular shoulder at the upper end of the sleeve and inwardly extending indentations on said spout adapted to interlock with and establish rotatable connection with the aforementioned shoulder on the said rotatable sleeve and a hinged cap associated with said spout.

2. An an article of manufacture, an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of a container, a spout surrounding said sleeve; an interlocking connection between said spout and sleeve, a hinged cap associated with said spout; cam-operated locking means for said cap, and a manually operatable handle for said cam-locking means; said spout having an annular bead at the lower edge thereof, said bead extending outwardly from the sleeve at a point spaced above the bottom of the spout and terminating in a marginal flange, said flange adapted to bear against the outer edge of the flange of a container to establish an annular channel extending completely around the sleeve.

3. As an article of manufacture, an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of a container, a spout surrounding said sleeve; an interlocking rotatable connection between said spout and sleeve, the interlocking rotatable connection including an annular shoulder at the upper end of the sleeve and inwardly extending indentations on said spout adapted to interlock with and establish rotatable connection with the aforementioned shoulder on the said rotatable sleeve; a hinged cap associated with said spout; cam-operated locking means for said cap, and a manually operatable handle for said cam-locking means; an annular bead at the lower edge of the spout, said bead extending outwardly from the sleeve at a point spaced above the bottom of the spout and terminating in a marginal flange said flange adapted to bear against the outer edge of the flange of a container to establish an annular channel extending completely around the sleeve; together with side ports extending through the aforementioned sleeve and in communication with said annular channel.

4. In a container closure, in combination, a portable container for liquids consisting of a sheet metal body portion including a filling opening having a central threaded mouth surrounded by a relatively flat marginal sealing flange normal to the axis of the mouth, together with an adapter unit consisting of a pouring spout, an interlocking connection to secure said spout to the container; a hinged cap associated with said spout; cam-operated locking means for said cap, and a manually operatable handle for said cam-locking means; an annular bead at the lower edge of the spout, said bead extending outwardly at a point spaced above the bottom of the spout and above the container flange, and terminating in a marginal flange said flange adapted to bear against the outer edge of the flange of the container to establish an annular

channel extending completely around the opening of the container and adapted to communicate with vent ports in the flange of the container mouth.

5. In a container closure, in combination, a portable container for liquids consisting of a sheet metal body portion including a filling opening having a central threaded mouth surrounded by a relatively flat marginal sealing flange normal to the axis of the mouth, together with an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of the container, a spout surrounding said sleeve; an interlocking rotatable connection between said spout and sleeve, the interlocking rotatable connection including an annular shoulder at the upper end of the sleeve and inwardly extending indentations on said spout adapted to interlock with and establish connection with the aforementioned shoulder on the said rotatable sleeve and a hinged cap associated with said spout.

6. In a container closure, in combination, a portable container for liquids consisting of a sheet metal body portion including a filling opening having a central threaded mouth surrounded by a relatively flat marginal sealing flange normal to the axis of the mouth, together with an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of the container, a spout surrounding said sleeve; an interlocking rotatable connection between said spout and sleeve; the interlocking rotatable connection including an annular shoulder at the upper end of the sleeve and inwardly extending indentations on said spout adapted to interlock with and establish rotatable connection with the aforementioned shoulder on the said rotatable sleeve; an annular bead at the lower edge of the spout, said bead extending outwardly from the sleeve to establish an annular channel extending completely around the opening of the container and adapted to communicate with vent ports in the container; together with side ports extending through the aforementioned sleeve and in communication with said annular channel.

7. In a container closure, in combination, a portable container for liquids consisting of a sheet metal body portion including a filling opening having a central threaded mouth surrounded by a relatively flat marginal sealing flange normal to the axis of the mouth, together with an adapter unit consisting of a threaded sleeve adapted to be threaded into the mouth of the container, a spout surrounding said sleeve; an interlocking rotatable connection between said spout and sleeve; the interlocking rotatable connection including an annular shoulder at the upper end of the sleeve and inwardly extending indentations on said spout adapted to interlock with and establish rotatable connection with the aforementioned shoulder on the said rotatable sleeve; a hinged cap associated with said spout; an annular bead at the lower edge of the spout, said bead extending outwardly from the sleeve at a point spaced above the bottom of the spout and above the container flange, and terminating in a marginal flange said flange adapted to bear against the outer edge of the flange of the container to establish an annular channel extending completely around the opening of the container and adapted to communicate with vent ports in the flange of the container mouth; together with side ports extending through the aforementioned sleeve and in communication with said annular channel.

WILLIAM B. JOHNSON.