Dec. 20, 1932. L. M. NARBO 1,891,315

DISPENSING DEVICE

Filed Nov. 30, 1931 2 Sheets-Sheet 1

Fig. 1

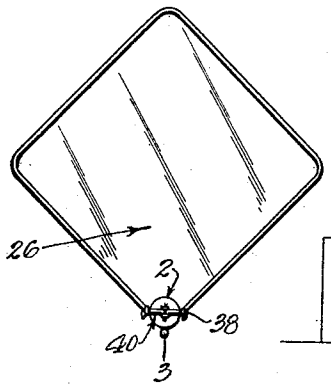
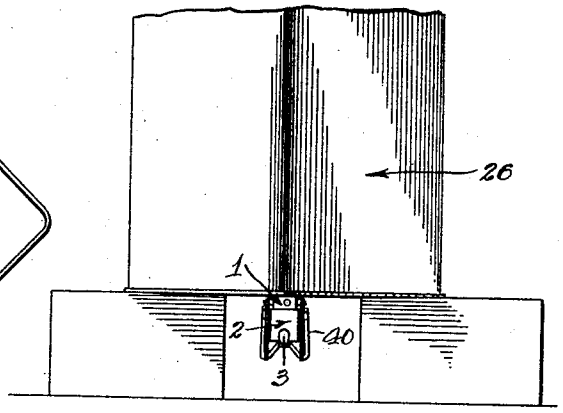


Fig. 2



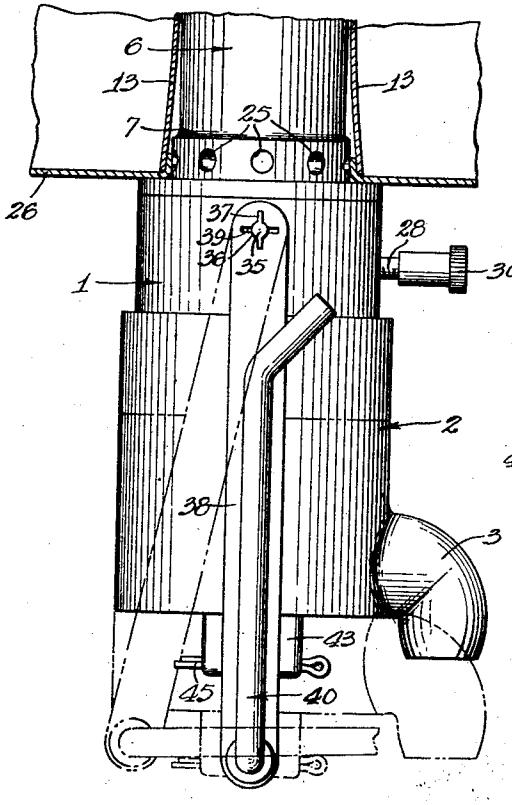


Fig. 3

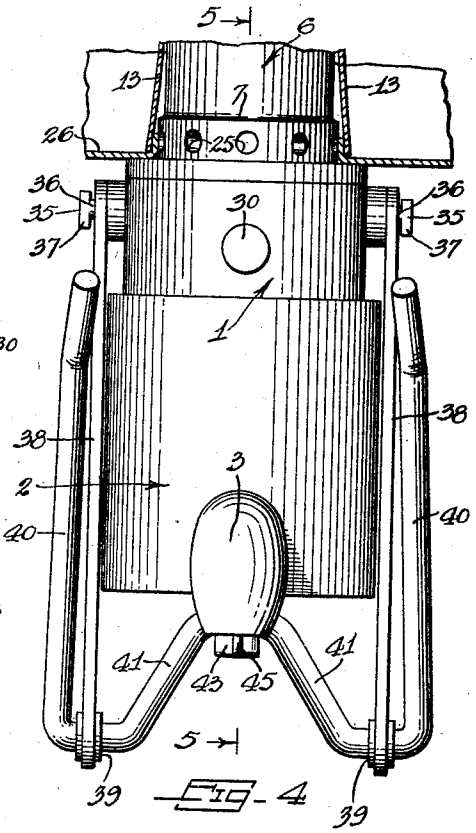


Fig. 4

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Dec. 20, 1932. L. M. NARBO 1,891,315

DISPENSING DEVICE

Filed Nov. 30, 1931 2 Sheets-Sheet 2

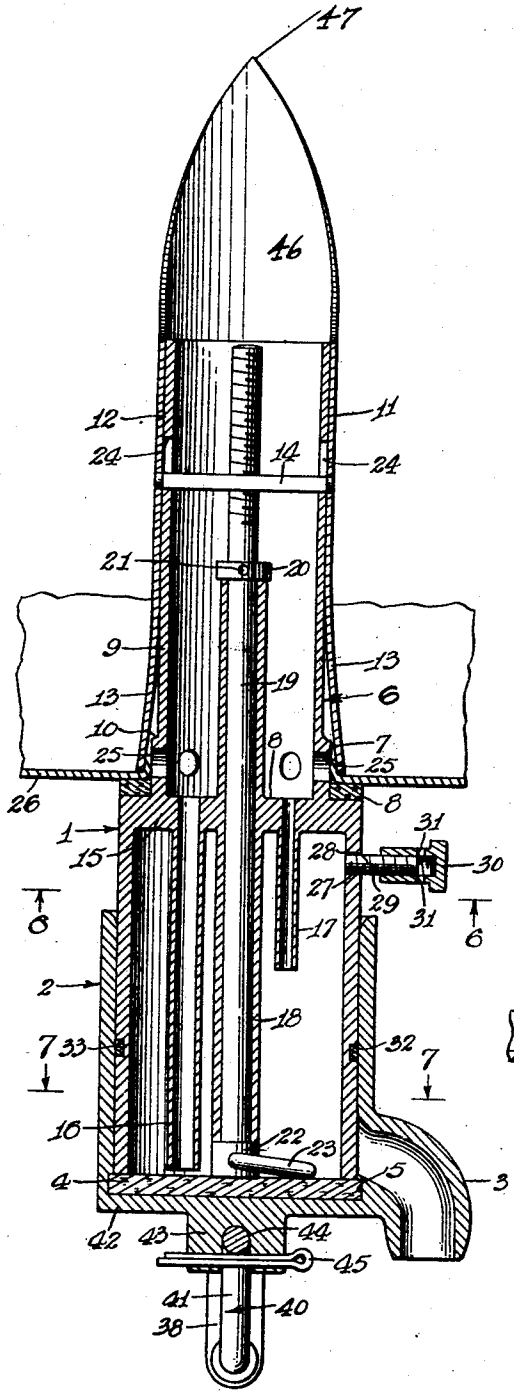


Fig. 5

Fig. 6

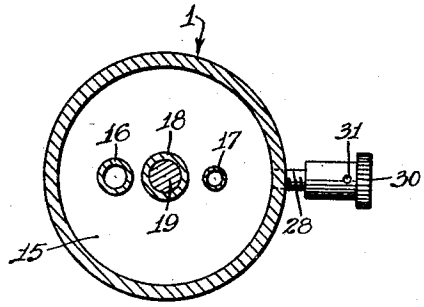


Fig. 7

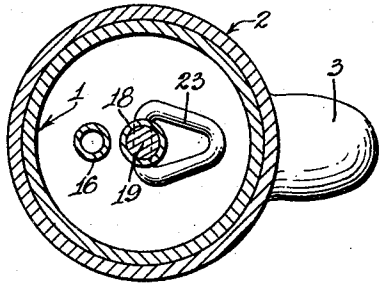
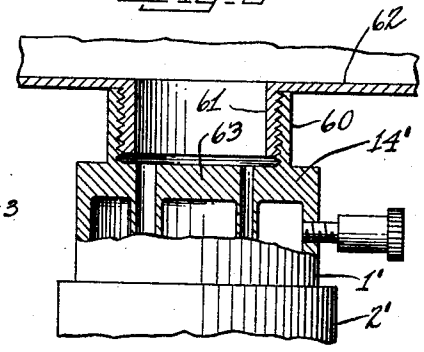


Fig. 8



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UNITED STATES PATENT OFFICE

LAURITZ MARTIN NARBO, OF MADISON, WISCONSIN

DISPENSING DEVICE

Application filed November 30, 1931. Serial No. 578,153.

My invention relates to improvements in dispensing devices, and it consists in the combinations, constructions, and arrangements herein described and claimed.

One of the principal objects of the present invention is to provide a dispensing device which in addition to affording means for puncturing and forming an outlet opening in a container includes effectual means for rigidly connecting the device within the opening and sealing the same against leakage while allowing for detachment and removal of the device when the contents of the container are completely dispensed.

Another object of my invention is to provide an improved device for drawing off and dispensing the contents of a container which includes telescopically associated axially movable tubular sections, one of which is provided with a stationary enlargement or peripheral abutment shoulder and the other of which is formed with a normally contracted expansible complementary shoulder operable upon relative axial movement of the sections in one direction to clamp between said shoulders a container wall around an outlet opening in which the device is positioned, the said section being adapted upon relative actual movement in the opposite direction to cause the contraction of the expansible shoulder to permit of its withdrawal through the opening in the container wall.

A further object of my invention is to provide a device which may be threadedly connected around the threaded open portion of a can after the cover cap has been removed therefrom.

Another object of my invention is to provide an improvement upon the device disclosed in my United States Patent No. 1,696,687 on dispensing faucet.

Another object of my invention is to provide a device of the character described having elements which may be made of cast metal.

Another object of my invention is to provide a device of the character described which may be conveniently closed in such a manner as to prevent any liquid or gases from escaping from either the container or the device.

Another object is to provide a means whereby air may be admitted to the device for the purpose of facilitating the flow of liquid out of the device.

A further object of my invention is to provide a device which is economical in construction, convenient in operation, and efficient for the purposes intended.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a top plan view of an oil can showing my dispensing device associated therewith,

Figure 2 is a fragmentary elevational view showing the oil can and device of Figure 1 inverted and supported on blocks,

Figure 3 is a fragmentary side elevational view of the device of my invention shown operatively connected with the oil can or the container shown in Figure 1,

Figure 4 is a front elevational view of the device connected as shown in Figure 3,

Figure 5 is a section taken along the line 5—5 of Figure 4,

Figure 6 is a section taken along the line 6—6 of Figure 5,

Figure 7 is a section taken along the line 7—7 of Figure 5, and

Figure 8 is a fragmentary elevational partially sectional view of a modified form of my invention.

In carrying out my invention, I provide a body section 1 of tubular and preferably cylindrical formation which is closed by a telescopically mounted faucet member 2. The faucet member 2 is provided with a curved outlet port 3 and a resilient pad 4. The pad may be held in the position shown in any suitable manner, such as by an annular groove 5.

The body section is formed with a boss 6 extending axially from its open end, which has an intermediate portion 7 of reduced diameter with respect to the body section 1 and forms at the juncture therewith a peripheral

abutment shoulder 8. The boss 6 is provided with a still further reduced portion 9 forming at the juncture with the portion 7 an inclined or frusto-conical spreader shoulder 10. A shank section 11 having an external diameter approximately equal to the diameter of the portion 7 and having an internal diameter approximately equal to the outside diameter of a reduced portion 12 of the boss 6 is carried or mounted on the boss 6 for actual movement toward and away from the annular abutment shoulder 8.

The shank section 11 which is of tubular and preferably cylindrical configuration has its outermost or forward end provided with one or more circumferentially spaced inwardly extending slits, not shown, defining fingers 13 which render the forward or outermost end radially expansible and normally contractible. The shank section 11 is provided with a transverse bar 14 having a central threaded opening, not shown. The body section 1 is provided with a wall portion 15 having a tubular liquid outlet pipe 16 and a comparatively shorter and smaller tubular air inlet pipe 17. The pipes 16 and 17 may be made integral with the body portion 1 and the central bore of each of these pipes may extend through the wall portion 15 into the interior of the boss 6. The wall portion 15 is also provided with a centrally disposed tubular member 18. The tubular member 18 provides a casing for an elongated rod 19 which may be threaded at its upper portion and extend through the threaded opening, not shown, in the bar 14. The tubular rod may be provided at its upper portion with a collar member 20 which is fixedly secured by a pin 21. The rod 19 may be provided at its lower portion with an end member 22 which is provided with a swivel ring 23. The rod 19 may be rotated angularly but is fixed horizontally with respect to the central tubular member 18.

The reduced portion 12 may be provided with two diametrically opposed slots 24. The transverse bar 14 is fixedly secured to the shank 11 but is movable within these slots 24 with respect to the boss 6. When the rod 19 is moved angularly the shank 11 is advanced or retracted on the boss 6. The boss 6 may be provided with a plurality of openings 25 through which the last portions of a fluid in a can 26 may be removed when the can is inverted as shown in Figure 2.

The body section 1 may be provided with a threaded opening 27 in which a tubular member 28 may be threadedly or otherwise secured in an air-tight manner. The tubular member 28 may be threaded exteriorly as shown at 29 and may be provided with an interiorly threaded screw cap 30 which is adapted to be threadedly secured around the tubular member 28. The cap 30 may be provided with a plurality of threaded openings 31 through which air may be admitted into the hollow interior of the tubular member 28 and the body portion 1.

The body portion 1 may be provided with an annular groove 32 for receiving a packing ring 33. The packing ring 33 provides means whereby the faucet member 3 may be slidably mounted in a water-tight manner on the body section 1. The body section I may be provided with a pair of oppositely disposed bosses 35. Each of the boss sections 35 may be provided with a shaft 36 having a transverse end portion 37. The shafts 36 provide means for pivotally securing arms 38. The arms 38 are each provided at the upper portion with a transverse slot 39 whereby the arms may be removed from the shafts 36 when held in a horizontal position. The arms 38 are each provided at their lower portion with openings. The openings are aligned with respect to each other and provide means whereby a rigid U-shaped rod 40 having a re-entrant portion 41 may be pivotally carried by the arms 38. The base portion 42 of the faucet section 32 is provided with a boss 43 having a transverse groove 44 adapted to receive the re-entrant portion 41 of the rod 40. The re-entrant portion 41 may be pivotally secured in the recess 44 by any suitable means, such as a cotter pin 45.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. In practice, the shank section 11 has its rearmost end 46 shaped to provide one or more puncturing terminals (one of which is indicated at 47) adapted to be driven through the wall 48 of the container 26 for forming an outlet or opening 49 therein. When the container has been punctured, the shank section 11 and the boss 6 are forced into the container until the wall 48 is brought into contact with the shoulder 8. Prior to this the shank 11 should have been moved as far as possible rearwardly by rotating the bar 19 in the desired direction. The shank 11 may now be retracted toward the shoulder 8 until the portion of the wall surrounding the opening 49 is clamped between the outer edge of the fingers 13 in a fluid-tight manner. The shoulder 8 may, if desired, be provided with a washer 8′ which may be made of any suitable material.

The purpose of the arcuate shoulders 10 is to spread the fingers outwardly so as to engage the punctured wall of the container around the opening 49. The faucet section 2 may now be slid inwardly around the outer portion of the body section 1 and clamped thereto by swinging the arm 38 and the rod 40 in the vertical position shown in Figures 3 and 4. The cotter pin 45 may now be placed in position and the container 26 may be inverted and placed in the position shown in Figure 2. Attention is directed to the fact

that as long as the arms 38 and the rod 40 are in the before-mentioned position, the liquid is prevented from flowing out through the outlet port 3 by reason of the fact that the outer end of the body section 1 is now being pressed firmly against the pad 4 resting on the base portion 42 of the faucet section 2. At this time the screw cap 30 should be tightly screwed upon the threaded tube 29.

After a receptacle has been placed beneath the outlet port 3, the rod 40 may be pivotally moved in the horizontal position which is indicated by dotted lines in Figure 3. The fluid in the container may now pass through the tube 16 and out of the outlet port 3. I have found it desirable that the cross sectional area of the internal bore of the air inlet tube 17 be less than that of the outlet tube 16 and that the interior opening of the faucet member 3 be greater than the combined cross sectional areas of the internal bores of the tubes 16 and 17.

Now referring to Figure 5, it will be observed that the tube 17 extends below the threaded air inlet tube 29 and that the tube 16 extends well below the tube 17 but does not necessarily extend downwardly far enough to compress the resilient pad 4. This construction has the advantage of permitting liquid to flow from the container 26 when it is inverted until it reaches the lower portion of the tube 17. When the liquid seals the lower opening of the tube 17, the air is shut off from the container 26—thus preventing the liquid from rising to the level of the threaded air inlet tube 29 and at the same time providing a reservoir of liquid which may be immediately emptied through the outlet port 3 when the faucet member is moved downwardly to its dotted line position as is indicated in Figure 3.

Should the air inlet tube 17 terminate above the threaded tube 29 and the cap 30 be inadvertently left untightened, the liquid will escape through the openings 31. Besides losing the liquid, this would constitute a fire hazard should the liquid be inflammable.

After the can has been inverted and the faucet member 2 moved into its discharge position, a vacuum or reduced air pressure produced by removing the liquid from the can may restrict the flow of the liquid through the outlet port 3 and cause an undesirable gurgling effect well known to all who have inverted an open bottle full of liquid.

This gurgling effect may be obviated and an increased flow of the liquid obtained by opening the cap member 30 sufficiently to permit the air to pass into the interior of the body section 1 through the openings 31 and the hollow tube 29. The flow of the liquid may be stopped by elevating the end portion of the rod 40 to the full line position shown in Figures 3 and 4. Should it be desired to prevent the escape of any vapors, the cap 30 may now be screwed tightly on the threaded tube 29. The cap 30, however, may be left in its open position and no liquid will flow through the openings 31 due to the fact that the air inlet tube 17 extends well below these openings.

The modified form of my invention depicted in Figure 8 may be similar in construction to the preferred form illustrated in Figures 1 to 7, inclusive, except that the boss 6, the shank 11, the central tube 18, the rod 19, the bar 14, and the end portion 22 of the preferred form are omitted in the modified form and the body section is provided with an annular internally threaded flange 60 which is adapted to be fitted to a hollow externally threaded fluid outlet member 61 of the container 62. A wall portion 14′ is provided which is similar to the wall portion 14 except that its central port 63 is solid. The modified form is provided with a faucet section 2′ which may be similar in construction to the faucet section 3.

The modified form is adapted for containers which have a threaded opening. The body section 1′ and the faucet section 2′ may be curved, if desired, for the purpose of enabling the modified form to be used for emptying a container which is placed in a horizontal position instead of in the inverted vertical position shown in Figure 2.

I claim:

1. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section.

2. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter

over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section, the body portion being provided with an outwardly extending liquid outlet pipe and an outwardly extending air inlet pipe.

3. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section, the body portion being provided with an outwardly extending liquid outlet pipe and an outwardly extending air inlet pipe, the air inlet pipe being shorter and having a smaller bore than said liquid outlet pipe.

4. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section, the body portion being provided with an outwardly extending liquid outlet pipe and an outwardly extending air inlet pipe, the air inlet pipe being shorter and having a smaller bore than said liquid outlet pipe, said body section being also provided with a radially extending air inlet tube, and means for opening and closing the air inlet tube.

5. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section, the body portion being provided with an outwardly extending liquid outlet pipe and an outwardly extending air inlet pipe, the air inlet pipe being shorter and having a smaller bore than said liquid outlet pipe, said body section being also provided with a radially extending air inlet tube, and means for opening and closing the air inlet tube, the air inlet tube being disposed opposite the air outlet pipe.

6. A dispensing device for containers comprising a tubular body section having an open inner end and an open outer end, a tubular shank metal puncturing section, and a cylindrical faucet section movably mounted on the body section, said body being provided with a peripheral abutment shoulder, an intermediate portion of less diameter than said shoulder, and a third portion of still less diameter over which said shank section telescopes, said shank having a radially expansible and normally contracted end, means on said intermediate portion coacting with the contractible and expansible end of the

shank section upon movement thereof toward the peripheral abutment shoulder for radially expanding said end to approximately the diameter of the abutment shoulder, means for moving said shank section and said body section longitudinally of each other for gripping the container wall around an outlet opening in the container, and pivotally connected means for telescopically moving said faucet section for closing the outer end of said body section, the body portion being provided with an outwardly extending liquid outlet pipe and an outwardly extending air inlet pipe, the air inlet pipe being shorter and having a smaller bore than said liquid outlet pipe, said body section being also provided with a radially extending air inlet tube, and means for opening and closing the air inlet tube, the air inlet tube being disposed opposite the air outlet pipe, the body section being also provided in its interior with a threaded rod, the shank section being provided with a rigidly secured cross member, said rod being threadedly connected to the cross member in a manner whereby said shank is moved telescopically on the third portion of said body portion when the threaded rod is rotated.

LAURITZ MARTIN NARBO.