Aug. 10, 1937. C. S. REED 2,089,575

POURING SPOUT FOR CANS

Filed May 17, 1935

Fig. 1.

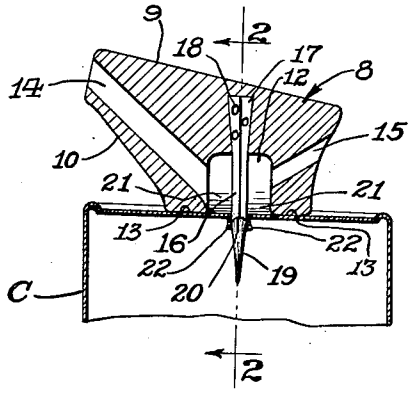


Fig. 2.

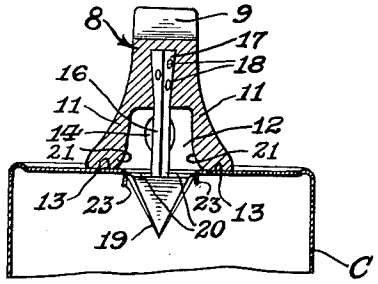


Fig. 3.

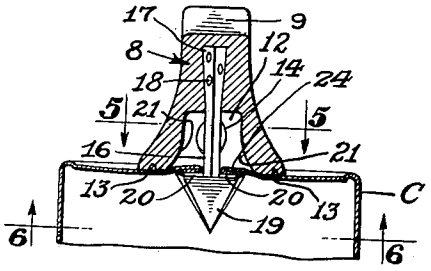


Fig. 4.

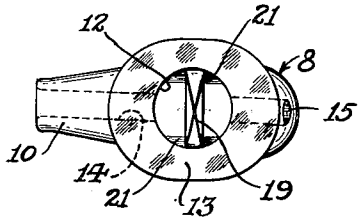


Fig. 6.

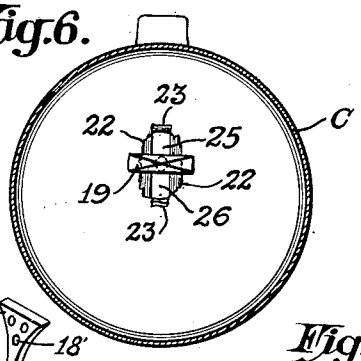


Fig. 5.

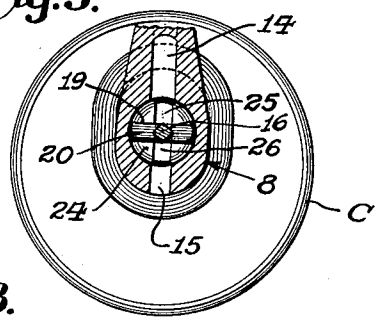


Fig. 7.

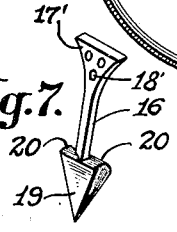
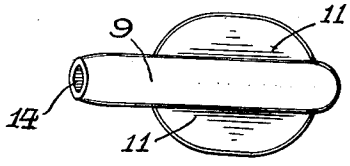


Fig. 8.



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POURING SPOUT FOR CANS

Charles S. Reed, Los Angeles, Calif.

Application May 17, 1935, Serial No. 22,058

7 Claims. (Cl. 221—23)

My present invention relates to dispensing devices, particularly to detachable nozzles or pouring spouts for closed containers.

An important object of my invention is to provide a pouring spout or nozzle embodying a body having a chamber into which communicate dispensing and vent openings, said body having a puncturing element rigidly associated therewith and adapted to pierce a container to form an opening in a wall thereof, and, upon turning of said body, to provide openings communicating with said chamber and located in predetermined relation to said dispensing and vent openings so that upon tilting of the container the contents will flow thru said dispensing opening in an even stream.

Another object of the invention is to provide a dispensing nozzle or spout of the above type, in which the puncturing element and body, or parts thereof, are so constructed and arranged as to cooperate upon turning the body to deform the punctured wall and tightly, yet removably, seal the spout or nozzle to the container without the use of supplemental sealing means or elements, such as gaskets.

A further object of the invention is to provide dispensing spouts or nozzles of the above type characterized by simplicity and sturdiness, of substantially integral construction, and devoid of relatively movable parts, whereby the spouts or nozzles may be manufactured in quantity at low cost, may be quickly applied to and removed from the containers with relatively slight effort, and may be easily and thoroughly cleansed and sterilized when and if necessary.

I am aware that there have been numerous proposals made for detachable pouring spouts or nozzles, but so far as I am aware, all such proposals embody serious objections, such as the provision of gaskets between the container and spout, which are unsanitary for food products, and are subject to deterioration. Furthermore, a great many of said proposals embody the use of movable clamping or tightening elements which not only increase the cost, but also make the devices unsanitary.

My invention, as above mentioned, provides a substantially unitary or integral device with the elements thereof so constructed and arranged that upon completely piercing a wall of the container and then turning the device, there will be formed a tight seal between the wall of the container and the end of the body of the device surrounding the chamber with which the various openings communicate, and without employing gaskets or other supplemental sealing means.

The foregoing and all of the objects and advantages of the invention will become apparent and will be pointed out during the following detailed description of the accompanying drawing, in which:

Fig. 1 is a longitudinal, vertical sectional view thru a device embodying my invention, and a fragment of a container showing the device in position just after the puncturing element has been inserted thru an end of the container;

Fig. 2 is a view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 showing the device and container in their relative or sealed position established by turning the device a quarter turn from the position of Fig. 1;

Fig. 4 is a bottom plan view of the device per se.

Fig. 5 is a view taken on the line 5—5 of Fig. 3 looking in the direction of the arrows;

Fig. 6 is a view taken on the line 6—6 of Fig. 3, looking in the direction of the arrows;

Fig. 7 is a perspective view of the puncturing element per se; and

Fig. 8 is a top plan view of a dispensing device per se.

Referring to the drawing the numeral 8 designates generally, the body of the dispensing device which is provided with a relatively long smooth upper surface 9, at one end of which, and the upper end of inclined end wall 10, is the pouring spout. The upper portion of the body is relatively narrow in cross-section. The side walls 11 flare outwardly and downwardly from the narrow upper portion so that the lower portion of the body is relatively wide. Within the lower portion of the body and substantially centrally thereof is a chamber 12 open at its bottom. The lower ends 13 of the wide lower portion of the body are also relatively thick and flat for the purpose hereinafter specified in connection with forming a tight seal.

The forward end of the body 8 or spout located between the front wall 10 and upper surface 9, is provided with a passage or opening 14, which communicates with the chamber 12 at one end. The inner end of the opening or passage 14, which communicates with the chamber 12, is located adjacent the bottom of chamber 12 in the lower portion of the body 8, while the other end of the opening or passage 14 is located considerably above the chamber 12, so that when the device is applied to a can or container C as shown in Figs. 1 and 4, in the manner hereinafter given, the passage 14 is inclined at an appreciable sharp angle from the outer end of the spout down to the chamber 12, while the lower end of the passage 14 is located adjacent the end of the container C to which the device is applied.

The rear end of the body 8 is provided with a passage 15 also inclined downwardly and communicating into the chamber 12. The lower end of the passage 15 is considerably above the wall or end of the container C to which the device is

applied, as compared with the position of the lower end of passage 14 relative to the container. The reasons for such relative positions are hereinafter specified.

The external shape of the body 8 is such as to comfortably and nicely fit within the hand so that it may be readily grasped to apply it to the container. For instance, the relatively long smooth surface affords a comfortable and convenient base on which to place the hand when applying the device, while the relatively narrow and elongated shape of the upper portion of the body affords a good grip in turning the body.

The body may be made of any material capable of molding or casting, such as bakelite, or metals which will not adversely affect food products such as condensed or evaporated milk. Of course the specific material used is not essential to the invention, and those mentioned are merely illustrative.

The device also includes a puncturing element shown as comprising a stem 16, preferably of non-circular shape in cross-section, that is, either angular or oval, and also preferably having its upper end 17 enlarged and provided with openings or indentations 18, notches, or equivalent elements into which the material of the body may flow to securely hold the puncturing element in the body to prevent relative longitudinal or turning movements. The stem is provided with, or has formed as an integral part thereof on its lower end, a preferably narrow puncturing prong 19, the shoulders 20 of which are shown curved on their tops, although said shoulders may obviously be in the form of an inverted V, to provide a tapered shape in cross-section. In Fig. 7 I have shown the upper end 17' of the stem as being flattened and tapered for the purpose of preventing the relative longitudinal and rotating movements when the dispensing device is being applied to and removed from a can.

The lower end of the chamber 12 is bounded by curved walls 21, which merge into the relatively broad flat surface 13 forming the bottom of the body 8.

When the puncturing element is assembled with the body 8, the vertical distance between the upper surfaces of the shoulders 20 and the face of the surface 13 is substantially the same as the thickness of the tin or other material closing the ends of the cans to be punctured by prong 19. It will also be noted that the blade or arrow-head 19 is preferably disposed transversely of the body 8 and at right-angles to the plane of the openings or passages 14 and 15.

To apply the device to a can or container so as to effect pouring of the contents, the prong 19 is pushed down thru an end of the container, preferably at a point eccentric to the center of the container, so that the pouring spout or upper end of passage 14 will be located beyond the side of the container, as shown in Figs. 5 and 6. When the prong or arrow-head 19 passes thru the end of the container it creates an opening surrounded by side burs 22 located along the sides of the prong 19 as shown in Fig. 1, and end burs 23 at the ends of the prong as shown in Fig. 2. Obviously, when the surface of the end of the container is contacted by the flat end 13 of the wall bounding the chamber, the blade has been completely inserted and is substantially surrounded by the side burs 22 and end burs 23. At the same time the shoulders 20 are located substantially in alinement with the inner surface of the end closure, since the relative vertical space between the upper edges of the shoulders and the surfaces 13 is substantially the same as the thickness of the tin, or other material forming the end of the container and which the prong punctured.

To lock the device to the container and effect pouring of the contents, the body 8 is given a quarter turn to fold the burs 22 upwardly against the inner surface of the end of the container, with such force as to effect a deformation of the portion of the end of the container immediately below the chamber 12, to create a dome 24, as shown in Fig. 3. This draws the margin of the dome snugly against the rounded surface 21 at the lower end of the chamber, and also forces the relatively broad flat surface 13 tightly against the portion of the outer surface of the end of the container which it contacts or covers.

The fit or joint thus formed is so tight that it is not necessary to employ a gasket between the body 8 and the end of the container, thus eliminating an undesirable element, not only from the standpoint of manufacture, but also from the standpoint of cleanliness. I would also point out that the square inch area of the surface 13 which contacts the end of the container is preferably greater than the area of the openings at the bottom of the chamber 12, and of sufficient extent to effect an absolutely tight seal between the device and container without employing washers or gaskets.

In Figs. 1 and 2 the device is shown in the position which it occupies after the prong or arrow-head 19 has punctured or pierced the end of the container and before the device has been given the quarter turn.

In Figs. 3, 5 and 6 the device is shown in the position it occupies after it has been given a quarter turn from the position of Figs. 1 and 2, causing the folding of the burs 22 upwardly to effect the deformation of the portion of the end of the container beneath the chamber 12 to effect a tight seal. It will be noted that the prong or arrow-head 19 moves with the body, and that the same, after the quarter turn is given, is still located transversely to or at right angles to the plane of the openings or passages 14 and 15. Also the turning of the arrow-head and consequent folding of the burs 22 creates openings 25 and 26, in the end of the can, establishing communication between the chamber 12 and the interior of the can at opposite sides of the prong or arrow-head. The opening 25 is on the dispensing side of the prong in alinement with the passage 14, while the opening 26 is on the venting side of the prong in alinement with the passage 15.

I have previously called attention to the fact that the passage 14 is inclined upwardly from the chamber 12 and terminates at its lower end adjacent the bottom of the chamber 12, hence it is adjacent the opening 25. On the other hand, the passage 15 terminates in the chamber 12 substantially above the opening 26. The result is that when the can with the device applied thereto as just described, is tilted to lower the spout or dispensing end of the device the contents of the can immediately flow thru the opening 25 and into the passage 14, while the passage 15 and opening 26 effect the venting by admission of air. The relative positions of the passages and openings, and the formation and arrangement of the chamber 12 are such that the second the can is tilted to effect pouring, an even stream flows thru opening 25, chamber 12, which is tilted, and

passage 14 into the receptacle receiving the contents of the can. It is impossible for the chamber 12 to be filled to the extent that the vent opening 15 will be closed to prevent such even flow because of the relative positions of the passages 14 and 15, openings 25, 26, and design and arrangement of the chamber 12. Another result of this relative construction is that the very split second the can is tilted back or restored to vertical position, the fluid flows rapidly down the passage 14 so that it does not drip off of the forward or spout end of the dispensing device.

I claim:

1. A pouring spout of the class described, comprising a body having an open chamber bounded by an annular wall the under surface of which is adapted to make contact with the end of a can, said body being provided with a pouring opening and a vent opening each leading from said chamber, and a puncturing element carried by the body and extending axially through and beyond the chamber, said element including a prong having outwardly extending shoulders located above the point thereof and having surfaces on their tops to contact the inner surface of said end of the can, the said contact surfaces of the said shoulders and the under surface of the body being spaced apart in a vertical plane a distance substantially equal to the thickness of said end of the can to which the device is applied for the purpose specified.

2. A pouring spout of the class described, comprising a body having an open chamber bounded by an annular wall the under surface of which is adapted to contact the outer surface of the end of a can, said body being provided with a pouring opening and a vent opening each leading from said chamber, and a puncturing element carried by the body and extending through and beyond the chamber, said element including a prong having outwardly extending shoulders of sloping formation on their tops and located above the point of the prong, the upper edges of said sloping shoulders and the under surface of said body which contacts the outer surface of the end of the can being spaced apart in a vertical plane a distance substantially equal to the thickness of said end of the can to which the device is applied for the purpose specified.

3. A dispensing device of the class described, comprising a body having a chamber open at one end, said chamber being bounded by the wall of the body, the end of said wall around the open end of the chamber being substantially flat and relatively thick to make flush contact with a portion of an end of a can, a vent opening thru said body at one side of the chamber, a pouring opening thru the body at the opposite side of the chamber, a puncturing element rigidly associated with the body and having a stem extending axially thru said chamber, a substantially V-shaped prong on said stem below said flat end of the wall, and having lateral shoulders of less length than the width of said chamber, the upper contacting surfaces of said shoulders and the lower contacting surface of the body being spaced apart in a vertical plane a distance substantially equal to the thickness of the wall of the can to which the device is applied for the purpose specified.

4. A dispensing device of the class described, comprising a body having a chamber open at one end, said chamber being bounded by the lower portion of the wall of the body, the end of said wall around the open end of the chamber being substantially flat and relatively thick to make direct contact with a portion of an end of a can, a vent opening thru said body at one side of the chamber, a pouring opening thru the body at the opposite side of the chamber, a puncturing element rigidly associated with the body and having a stem extending axially thru said chamber, a substantially V-shaped prong on said stem below said flat end of the wall, and having lateral shoulders of less length than the width of said chamber, the upper contacting surfaces of said shoulders and the lower contacting surface of the body being spaced apart in a vertical plane a distance substantially equal to the thickness of the wall of the can to which the device is applied, said upper surfaces of the shoulders being oppositely tapered for the purpose specified.

5. A pouring spout of the class described, comprising a body having an open chamber bounded by an annular wall the under surface of which is adapted to make direct contact with the top of a can, said body being provided with a pouring opening and a vent opening leading outwardly from said chamber, and a puncturing element carried by the body and extending through and beyond the chamber, said element including a relatively flat V-shaped puncturing prong having outwardly extending shoulders located above the point thereof, the upper contacting surfaces of said shoulders and the lower contacting surface of the body being spaced apart in a vertical plane a distance substantially equal to the thickness of the wall of the can to which the device is applied, and said V-shaped puncturing element being located transversely to the plane of said openings in the body for the purpose specified.

6. A dispensing device of the class described comprising, a molded body provided with an open chamber in its lower end bounded by an annular wall, a puncturing element rigidly anchored at one end in said body and extending through and beyond said chamber to pierce the end of a can, said body being provided with oppositely disposed dispensing and venting openings communicating with said chamber, and said puncturing element having shoulders so shaped and spaced vertically from the under surface of the said annular wall that they will engage and bend outwardly when the device is turned axially any "burr" metal that may be formed on the inside of a can head to which the device is applied during the puncturing operation.

7. A dispensing device of the class described comprising, a molded body provided with an open chamber in its lower end bounded by an annular wall, a puncturing element rigidly anchored at one end in said body and extending through and beyond said chamber to pierce the end of a can, said body being provided with a dispensing and a venting opening communicating with said chamber, and said body gradually diminishing in width upwardly from said annular wall to provide opposed relatively broad hand grasping surfaces, and the top of the body presenting a relatively smooth surface throughout its length.

CHARLES S. REED.