May 18, 1965 K. J. KOHANZO 3,184,107

SPOUT FOR CANS

Filed April 23, 1962 2 Sheets-Sheet 1

Fig. 2.

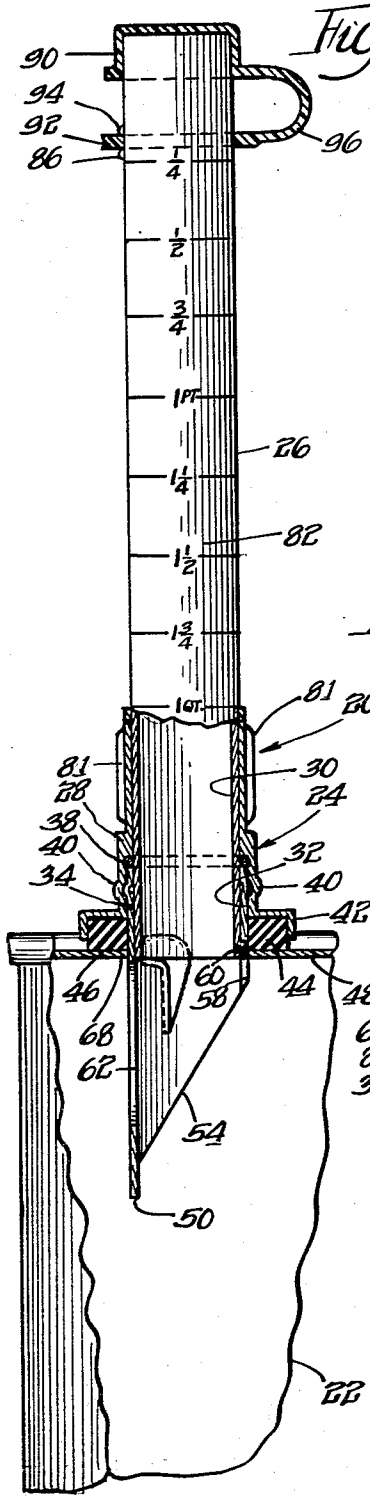


Fig. 1.

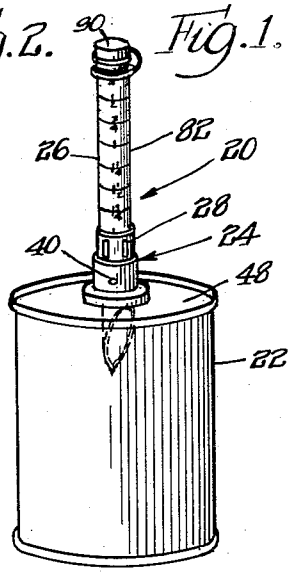


Fig. 3.

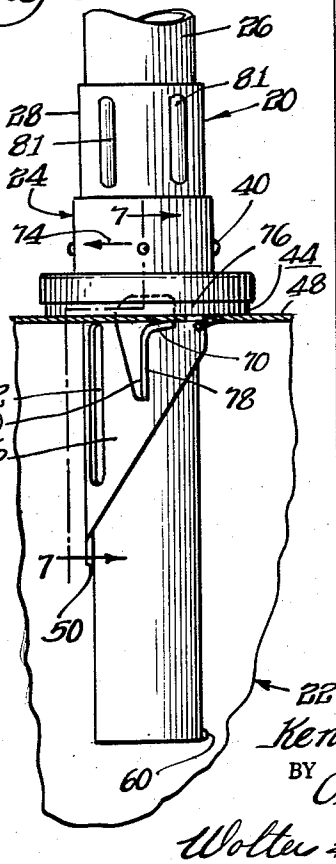
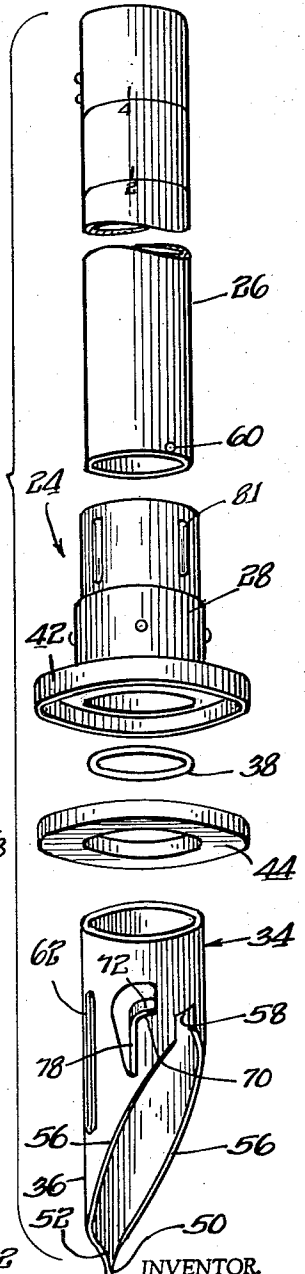


Fig. 4.



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May 18, 1965 K. J. KOHANZO 3,184,107

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Filed April 23, 1962 2 Sheets-Sheet 2

Fig. 8.

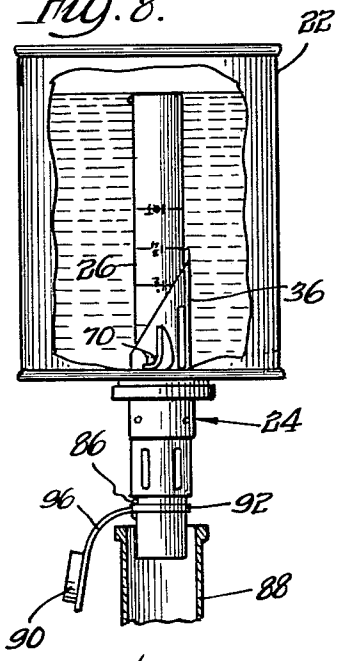


Fig. 9.

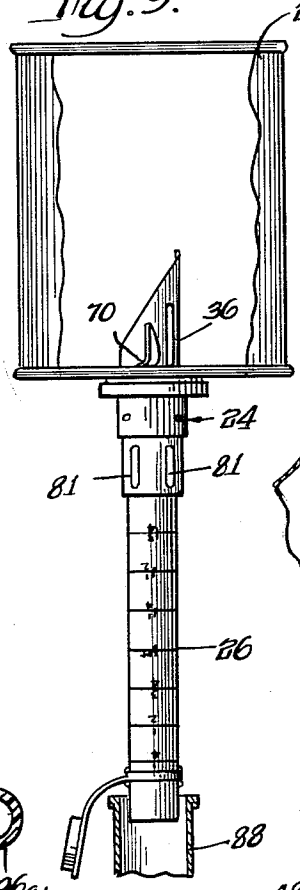


Fig. 6

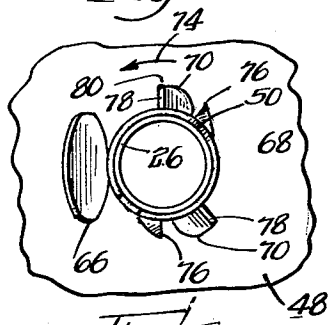


Fig. 5.

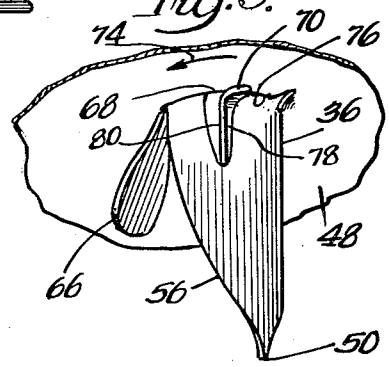


Fig. 10.

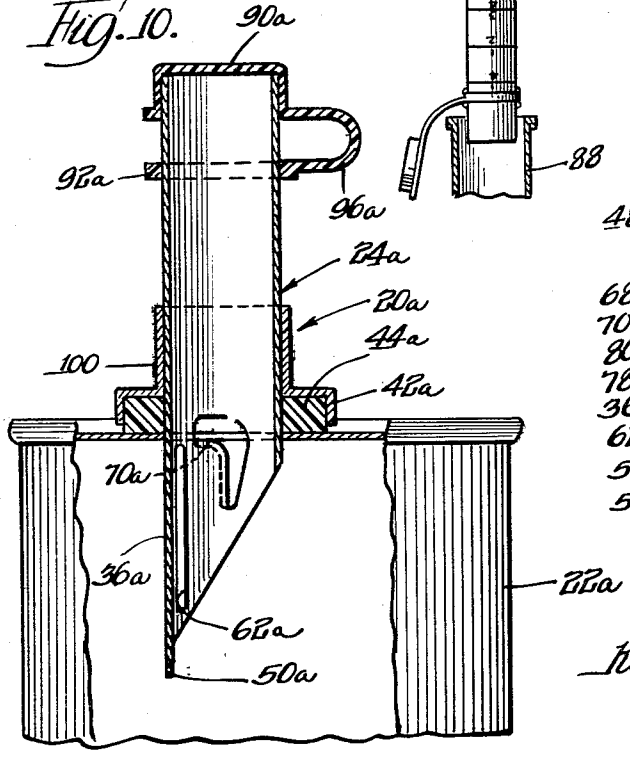
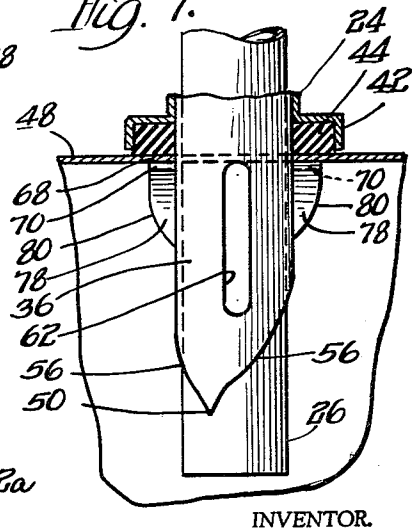


Fig. 7.



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3,184,107

SPOUT FOR CANS

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Filed Apr. 23, 1962, Ser. No. 189,391
4 Claims. (Cl. 222—49)

The present invention relates to can piercing spouts for opening and pouring liquid from cans.

One object of the invention is to provide a new and improved can piercing spout for opening cans and pouring from an opened can an adjustably predetermined quantity of liquid.

Another object is to provide a new and improved can piercing spout which permits the user to adjustably pregauge the volume of liquid desired from a can and pour the desired volume of liquid from the can with accuracy and confidence without measuring the liquid poured from the can, even though the can itself is opaque.

Another object is to provide a new and improved can piercing and pouring spout of the character recited which enables the user to pour a succession of pregauged volumes of liquid from a pierced can merely by effecting a simple adjustment of the pouring spout between successive pourings in accordance with the quantity of liquid desired in each successive pouring.

Another object is to provide for opening and pouring liquid from cans, a can piercing and pouring spout having new and improved means for forming a highly effective seal between the spout and a pierced can.

Another object is to provide a can piercing and pouring spout having a new and improved construction which provides for easy application of the spout to a can, while at the same time effecting a positive locking of the spout to the can and effecting a tight positive engagement of the pierced can with a highly effective seal which seals the spout to the can.

Another object is to provide a can piercing and pouring spout of the character recited in the preceding objects which by virtue of improved construction of the spout itself forms a most convenient and effective means of resealing a can which has been opened and partially emptied by means of the spout.

Another object is to provide a new and improved pouring spout of the character recited in the preceding objects which is simple in construction and inherently adapted for economical manufacture.

Another object is to provide a new and improved can piercing and pouring spout of the character recited in the preceding objects which is sturdy, even though economical, and inherently dependable and serviceable over a long service life of hard usage.

Other objects and advantages will become apparent from the following description of the exemplary embodiments of the invention illustrated in the drawings, in which:

FIGURE 1 is a perspective view showing the first illustrated embodiment of the invention assembled onto a can such as is commonly used to contain motor oil;

FIG. 2 is a partially sectioned side view of the spout and can of FIG. 1;

FIG. 3 is a fragmentary side view of the spout illustrating the relationship to the can of the structure used to form a seal between the spout and can;

FIG. 4 is an exploded perspective view of the spout of FIG. 1;

FIG. 5 is a perspective view from inside the can illustrating the relationship to the can of the structure used to lock the spout to the can and positively hold the can in engagement with a seal on the spout;

FIG. 6 is an inner end view of the spout as viewed from the bottom of FIG. 5;

FIG. 7 is a partially sectioned vertical view taken with reference to the line 7—7 of FIG. 3;

FIG. 8 is a side view showing the spout assembled to a can which has been upended to discharge liquid, the can being partially sectioned to show the manner in which the spout has been preadjusted to pour only a small predetermined quantity of liquid from the can;

FIG. 9 is a view similar to FIG. 8 but illustrating the spout adjusted to empty the can; and

FIG. 10 is a sectioned side view showing a can on which is assembled a piercing and pouring spout forming a modified embodiment of the invention which does not include the means incorporated into the first illustrated embodiment of the invention for pregauging the volume of liquid to be poured from a can.

Having reference to the drawings in greater detail, the can piercing and pouring spout 20 assembled onto a can 22, as illustrated in FIGS. 1 to 3 and forming the first illustrated embodiment of the invention, includes that feature of the invention which provides for pregauging the volume of liquid which will be discharged from the can upon upending of the can, as illustrated in FIGS. 8 and 9.

The spout 20 comprises a can opening and spout attaching sleeve or spud 24 formed preferably in two parts, as illustrated, and having substantial length. The spud or sleeve 24 is hollow and is generally cylindrical in form.

The sleeve 24 telescopically receives a generally cylindrical dispensing tube 26 which is longitudinally slidable within the sleeve 24 to different longitudinal positions relative to the sleeve for pregauging the volume of liquid which will pour from an associated can upon upending of the can, as will be described.

As shown, the two-part sleeve 24 has an outer hand grip and support section 28 having a stepped cylindrical form and defining an internal bore 30 which receives the tube 26. The sleeve 28 defines a counterbore 32 in the inner end of the bore 30 which receives the outer end of an inner or can piercing segment 34 of the sleeve 24. The sleeve section 34 extends axially inward beyond the sleeve section 28 to form a can piercing segment 36 of the sleeve which is designed to pierce and enter into a can, as will presently appear.

For convenience in description, the words "inner" and "outer" will be used to describe the relative positions of parts and components with reference to the interior of a coacting can to which the spout is applied, as illustrated in the drawings.

An O-ring 38, formed of rubber or other suitable resilient sealing material, is placed in the bottom of the counterbore 32 at the outer end of the inner sleeve section 34 and forms a highly effective slidable seal with the pregauging, powering tube 26. It should be noted that engagement of the resilient O-ring 38 with the tube 26 not only forms a seal with the tube 26, but also serves as a brake of limited holding force which effectively retains the tube 26 in any longitudinal position to which it is adjusted with reference to the sleeve 24, as will be described.

The outer end of the sleeve section 34 which fits into the counterbore 32 is swaged outwardly at a number of spaced points, as indicated by the number 40, to lock the section 34 in its assembled position in relation to the section 28.

The inner end of the sleeve section 28 is spun or otherwise formed to define an annular seat 42 for supporting an annular seal 44 of rubber or other suitable resilient sealing material in encircling relation to the sleeve segment 34, as shown in FIG. 2. The seal 44 projects axially inward beyond its supporting seat 42 and defines an

annular can sealing surface 46 adapted to fit and seal against the adjacent surface of the end 48 of a can pierced by the spout 20, as shown in FIGS. 2 and 4. Preferably, the seal 44 is rather massive in size and has a long transverse sectional area, as shown in FIG. 2, so that the seal is capable of yielding to a very substantial degree to compensate for any unevenness in the opposing surface of the can end 48 engaged by the seal, to produce between the sleeve 24 and the coacting can end 48 a seal which is effective all the way around the sleeve.

The inner section 34 of the sleeve 24 extends inwardly beyond the seal 44 to form the previously mentioned can piercing segment 36 of the sleeve or spud 24.

The inner extremity of the inner sleeve section 34 forms a rather sharp can piercing point 50 designed to easily punch through the ends 48 of cans which are commonly used to contain liquid such, for example, as motor oil. Just outward of a pyramidal portion 52, FIG. 4, of the sleeve segment 34 which supports the point 50, the inner edge of the sleeve section 34 is terminated flush with an oblique plane identified in FIG. 2 by the number 54, so that the major portion of the inner edge of the sleeve section 34 defines a can cutting edge 56, FIGS. 4, 6 and 7, extending away from the point 52 substantially around the sleeve segment 34 in an oblique direction with reference to the axis of the sleeve 24.

A notch 58 cut into the inner edge of the sleeve segment 34 diagonally opposite from the piercing point 50 extends axially outwardly somewhat beyond the sealing surface 46 of the seal 44, as shown in FIG. 2. This notch 58 accommodates a small radial protuberance 60 formed on the inner end of the tube 26, as shown in FIGS. 2 and 4, and constituting a tube motion limiting abutment. The notch 58 accommodates the protuberance 60, thus allowing the tube 26 to be moved axially outward until its inner end is substantially flush with the sealing surface 46. This permits, upon assembly of the spout with a can, the inner end of the tube 26 to be substantially flush with the inner surface of a can end 48 to permit complete emptying of the can. The tube protuberance 60 bottoms in the notch 58 to preclude inadvertent removal of the tube 26 from the sleeve 24.

The notch 58 and one or more longitudinal ports 62 formed in the can piercing segment 36 of the sleeve extend outwardly into closely adjacent relation to the seal 44 to permit emptying of a coacting can when the tube 26 is fully extended, to its can emptying position shown in FIG. 2. In this connection, it will be evident that the inner end of the tube 26 opens inwardly and thereby defines an opening into the tube through which fluid flows from the can out through the tube. The notch 58 and the port 62 each forms in the sleeve 24 a radial passage through which liquid can flow into the open inner end of the tube 26 to empty the can when the can is inverted with the tube in its can emptying position.

Opening of a can 22 is effected simply by moving the sleeve 24 axially against one end 48 of the can. The point 50 pierces the can end and the cutting edges 56 shear out a flap 66 from the can end in forming an opening which receives the piercing segment 36 of the sleeve. Because of the notch 58 in the piercing sleeve segment 36, the flap 66 remains attached to the can end 48 and is turned away from the inner end of the sleeve, as shown.

The sleeve 24 is positively locked to the can and the marginal edge 68 of the can end 48 encircling the sleeve 24, FIGS. 2, 5, 6 and 7, is positively urged against the seal 44 by means of two cams 70 integrally formed on the can piercing segment 36 of the sleeve. Preferably, the cams 70 are formed by ears (also denoted by the number 70) which are partially severed from the sleeve piercing segment 36 and bent outwardly so as to extend radially outward from the adjacent portions of the sleeve segment 36.

The two cams 70 are spaced from each other circumferentially around the sleeve segment 36, as shown in FIGS. 5 and 7. Each cam 70 defines a cam surface 72 which confronts the seal surface 68.

As will presently appear, the cams 70 and cam surfaces 72 are designed to underlie and cam the adjacent marginal edge 68 of the can end outwardly toward the seal 44 upon rotation of the sleeve 24 after the can end has been fully pierced. For this purpose, the cam surfaces 72 are tipped or inclined axially outward in a circumferential direction opposite to the direction in which the sleeve 24 is rotated to lock the sleeve on the can end, as will presently appear. The direction in which the sleeve 24 is rotated to lock the sleeve on the can is indicated by the arrows 74 in FIGS. 3, 5 and 6. With reference to the direction 74 in which the sleeve 24 is rotated to lock it on a can end 48, the leading end of each cam surface 72 has a spacing from the seal surface 46 which is less than the spacing from the seal surface 46 of the trailing end of the cam surface.

In order to get the cams 70 into position inside of a can end 48, short radial slits are formed in the marginal edge 68 of the can end upon axial movement of the sleeve 24 to pierce the can end. A radial slit 76 is formed at the leading extremity of each cam surface 72 as an incident to piercing of the can end by a blade 78 circumferentially alined with the leading end of the coacting cam 70 and extending axially inward from the leading end of the can, as shown in FIG. 6. Preferably, the blades 78 are formed integrally with the adjacent cams 70 and integrally with the sleeve piercing segment 36 by the same ears which are struck out of the piercing segment to form the cams 70. The blades 78 define can end slitting edges 80 which are parallel to the axis of the sleeve 24 and which curve radially outward from the axially inner ends of the blades 78 to the cams 70, as shown in FIG. 7.

Hence, upon axial movement of the sleeve 24 to pierce a can 48, the blade edges 80 slit the marginal edge 68 of the can end, as indicated by the numbers 76 in FIGS. 5 and 6. Each cam 70 depresses a portion of the can end edge 68 on one side of the adjacent slit 76 so that the leading edge of the coacting cam surface 72 is moved inwardly of the adjacent portion of the can edge 68 located on the opposite side of the adjacent slit 76. Hence, upon rotation of the sleeve 24, the two cam surfaces 72 move across the slits 76 to engage the undersides of undistorted portions of the marginal can end edge 68 located adjacent the respective slits 76. Rotation of the sleeve 24 thus causes the cams 70 to act on the marginal edge of the coacting can end 48 to positively pull the seal 44 into tight sealing engagement with the marginal portion 68 of the can end encircling the sleeve, and at the same time to positively hold the marginal can edge 68 in engagement with the seal 44 so that the seal 44 securely seals the sleeve 24 to the can.

This locking and sealing of the spout to the can is produced by the simple longitudinal piercing movement of the sleeve followed by a small angular rotation of the sleeve. Rotation of the sleeve 24 is facilitated by the formation of circumferentially spaced longitudinal protuberances 81 on the outer portion of the outer sleeve which is grasped by the hand of the user. Thus, the outer portion of the sleeve 24 which includes the protuberances 81 may be regarded as being a hand grip portion of the sleeve.

It should be observed that the radial slits 76 cut in a can end 48 have a radial length less than the radial width of the seal 44, so that the seal 44 extends outwardly of the slits 76 to produce the desired sealing of the spout to the can. Also, it will be noted, with reference to FIG. 6, that whereas the cams 70 are located generally on opposite sides of the sleeve 24, the cams 70 are not diametrically opposite each other and are positioned in relation to the notch 58, so that the slits 76 are circumferentially

spaced from the flap 66 and the sleeve 24 is free to rotate a substantial distance without bringing either of the cams 70 into interfering relation to the flap 66.

As previously stated, the dispensing tube 26 is longitudinally movable within the sleeve 24 to different positions for pregauging the volume of liquid which will be dispensed from a coacting can upon upending of the can, as illustrated in FIGS. 8 and 9. A graduated scale 82 suitably produced on one longitudinal side of the tube 26, as indicated in FIGS. 1 and 2, is read in relation to the outer end of the sleeve section 28 to indicate for each adjusted longitudinal position of the tube 26 the maximum volume of liquid which will be discharged upon upending of a coacting can.

A most advantageous usage of the spout 20 is in the pouring of predetermined desired quantities of motor oil from cans of one quart capacity, particularly in instances in which the oil is mixed with fuel for use in two-cycle engines. In mixing oil with fuel, it is often desired to dispense oil in small quantities such, for example, as fractions of a pint. Use of a separate measuring vessel to measure the oil can be a nuisance. The necessity for storing and preventing contamination of the unused oil is also a nuisance. All these problems are most conveniently avoided by use of the pregauging spout 20, which as shown is dimensioned for use with a conventional quart size lubricating oil can. Accordingly, the scale 82 is graduated in quarter pint steps from one quarter pint to a full quart, as illustrated in FIG. 2.

When the spout 20 is applied to a full can 22, the tube 26 is positioned longitudinally until the scale 82 indicates the volume of oil desired. If only one quarter pint is desired, for example, the tube 26 is pushed to its innermost position, indicated in FIG. 8, in which a protuberance 86 on the outer end portion of the tube 26 engages the outer end of the sleeve 24 to locate the tube 26 so that its inner end has a spacing from the bottom of the cylindrical can equal to one-eighth of the height of the can. It will be appreciated that the spout can be adapted to pour less than one-quarter pint from a full can as a pregauged volume. This can be done simply by increasing the effective length of the tube 26 inwardly of the stop 86.

After the tube 26 is moved inwardly to its innermost position, in which instance the scale 82 reads "¼ pt.," the container 22 is upended, as shown in FIG. 8. Oil pours out through the tube 26 into a receiver 88 until the oil level in the can reaches the inner end of the tube 26. The user directs the oil into the receiver 88 with confidence that the desired quantity of oil will be dispensed.

Then, the can 22 is turned rightside up and the open end of the tube 26 is covered and sealed by a cap 90 formed preferably of a yieldable plastic material. It will be appreciated that placement of the cap 90 on the tube 26 completes resealing of the can. The tube 26 covered by the sealing cap 90 is sealed by the O-ring 38 to the sleeve 24 which is sealed to the can by the seal 44, as described.

Misplacement of the cap 90 when it is removed from the end of the tube 26 is prevented by a continued attachment of the cap to the tube by a retaining ring 92 encircling the tube between the stop 86 and an abutment 94, FIG. 2, and connected to the cap by a flexible web 96 integral with both the ring 92 and cap 90. See FIGS. 2 and 8.

To dispense another pregauged volume of oil from a previously opened can 22 to which the spout 20 is assembled, the user notes the volume of liquid previously dispensed by reading the scale 82 and then resets the tube 26 longitudinally to a new position such that the difference between the new reading of the scale 82 and the previous reading of the scale 82 equals the desired volume of oil. The cap 90 is removed and the can again upended, as indicated in FIG. 9, to dispense the desired quantity of liquid.

This dispensing procedure is repeated until the can is completely emptied. When the tube is fully extended to its one-quart position, the inner end of the tube is substantially flush with the adjacent can end 80 to permit the complete draining of the can, as previously described.

A spout 20*a* forming a simplified embodiment of the invention is illustrated in FIG. 10. Component elements of the spout 20*a* similar to those of the spout 20 previously described are identified with the same numbers with the addition of the suffix "*a*."

The spout 20*a* differs from the spout 20 previously described essentially by the elimination of the adjustable gauging tube of the spout 20 and by simplification of the sleeve or spud 20*a*. The spud 24*a* of the spout 20*a* is formed in one piece, as illustrated. The seat 42*a* for the seal 44*a* is formed by a shaped ferrule 100 fixed in encircling relation to the spud 24*a*, as illustrated. Seal 44*a* is advantageously fabricated from a material, such as certain polyamide resins, which do not have a tendency to add off-flavors to the contents of can 22*a*.

The spout 20*a* is assembled onto a can 22*a* in the same manner as the spout 20 and is effectively sealed to the can 22*a* in the same maner that the spout 20 is sealed to a can. Liquid is poured out of an opened can 20*a* through the outer end of the simplified spud 24*a*. Placement of the cap 90*a* on the outer end of the spud 24*a* effectively seals the opened can 22*a* and protects any remaining contents of the can from contamination.

It will be appreciated that the invention is not necessarily limited to use of the particular construction illustrated, but includes the use of structural alternatives and equivalents within the spirit and scope of the invention as defined by the claims.

The invention is claimed as follows:

1. A can opening and liquid dispensing device for opening a generally flat topped can containing liquid and effecting upon upending of the can the dispensing by gravity of the liquid contents of the can except for a residual volume of liquid retained in the can by the dispensing device and being determined in volume by preadjustment of the dispensing device to equal any desired volumetric portion, including zero, of the volume of the can; comprising, in combination, an elongated dispensing and gauging tube cylindrical in shape and being straight throughout the length of the tube, a generally cylindrical can piercing sleeve closely encircling said dispensing and gauging tube for longitudinal sliding movement with respect to the tube and having an overall length that is much shorter than the length of the tube; said sleeve including means extending along an adjacent segment of the tube of substantial axial length and having a slidable, closely encircling fit with said tube to form a seal therewith and hold the tube securely in coaxial alignment with the sleeve and to hold the tube firmly with limited frictional force in any longitudinal position to which it is moved with respect to the sleeve, said sleeve having thereon a circular seal seat encircling a medial portion of the sleeve, a resilient annular seal supported on said seat in adjacent encircling relation to said sleeve and defining an annular can sealing surface facing axially inward with reference to the sleeve, said sleeve including a can piercing segment thereof extending axially inward beyond said sealing surface and having a can piercing shape defining a can piercing point and a can cutting edge, said can piercing segment of the sleeve being of radially thin construction and having an inner diameter that conforms closely to the outer diameter of said tube so that said sleeve piercing segment has a radial clearance from said tube that is limited substantially to that required for easy longitudinal movement of the tube with respect to the sleeve, said piercing segment of the sleeve having retaining lugs struck out from the sleeve and defining cam surfaces confronting said sealing surface and being inclined axially outward in a common rotary direction from leading portions of the respective cam surfaces, cutting blades struck out of said piercing segment of said sleeve and forming radially protruding can slitting edges extending axially inward

from the leading portions of said respective cam surfaces to provide for slitting of marginal portions of a can being pierced by said piercing segment whereby the leading portions of said respective cam surfaces are moved inwardly of adjacent marginal edges of can structure pierced by said piercing segment to effect upon rotation of said sleeve means in a direction opposite from said common rotary direction a camming against said seal of the marginal edge structure of a can pierced by said sleeve means to produce a tight seal between said sleeve means and the can, said tube having an inner end defining an opening into the tube; said tube being movable longitudinally within said sleeve to different gauging positions with respect to the sleeve, including a fully extended can emptying position in which said opening in the inner end of the tube is substantially flush axially with said sealing surface and positions in which the inner end of said tube projects inwardly beyond said sleeve; said piercing segment of the sleeve defining therein a passage opening axially inward and extending axially outward into proximate relation to said seal, the inner end of said tube having thereon an abutment shaped to move through said passage and engage the sleeve to stop outward movement of the tube in a position of the tube in which said opening in the tube is proximate to said sealing surface to permit emptying through said passage and said tube opening of a can engaged by said sealing surface, and means on said tube forming a graduated scale extending longitudinally along the tube for determining the longitudinal position of the tube with reference to the sleeve.

2. A can opening and liquid dispensing device for opening a generally flat topped can containing liquid and effecting upon upending of the can the dispensing by gravity of the liquid contents of the can except for a residual volume of liquid retained in the can by the dispensing device and being determined in volume by preadjustment of the dispensing device to equal any desired volumetric portion, including zero, of the volume of the can; comprising, in combination, an elongated dispensing and gauging tube cylindrical in shape and being straight throughout the length of the tube, a generally cylindrical can piercing sleeve closely encircling said dispensing and gauging tube for longitudinal sliding movement with respect to the tube and having an overall length that is much shorter than the length of the tube; said sleeve including means extending along said tube for a substantial axial distance and having a slidable, closely encircling fit with the tube to form a seal therewith and hold the tube securely in coaxial alignment with the sleeve and to hold the tube firmly with limited frictional force in any longitudinal position to which it is moved with respect to the sleeve, said sleeve having thereon a circular seal seat encircling a medial portion of the sleeve, a resilient annular seal supported on said seat in adjacent encircling relation to said sleeve and defining an annular can sealing surface facing axially inward with reference to the sleeve, said sleeve including a can piercing segment thereof extending axially inward beyond said sealing surface and having a can piercing shape defining a can piercing point and a can cutting edge, said can piercing segment of the sleeve being of radially thin construction and having an inner diameter that conforms closely to the outer diameter of said tube so that said sleeve piercing segment has a radial clearance from said tube that is limited substantially to that required for easy longitudinal movement of the tube with respect to the sleeve, said piercing segment of the sleeve having retaining lugs thereon defining cam surfaces confronting said sealing surface and being inclined axially outward in a common rotary direction from leading portions of the respective cam surfaces, said piercing segment of the sleeve having can deforming elements thereon extending axially inward from the leading portions of said respective cam surfaces to effect passage of the leading portions of said respective cam surfaces to positions inward of adjacent marginal edges of can structure pierced by said piercing segment to effect upon rotation of said sleeve means in a direction opposite from said common rotary direction a camming against said seal of the marginal edge structure of a can pierced by said sleeve means to produce a tight seal between said sleeve means and the can, said tube having an inner end defining an opening into the tube; said tube being movable longitudinally within said sleeve to different gauging positions with respect to the sleeve, including a fully extended can emptying position in which said opening in the inner end of the tube is substantially flush axially with said sealing surface and positions in which the inner end of said tube projects inwardly beyond said sleeve, said sleeve defining therein a radial passage positioned axially with reference to the sleeve to register with said tube opening when the tube is in said can emptying position thereof, and reference means on said tube for determining the longitudinal position of the tube with reference to said sleeve.

3. Can opening and liquid dispensing device for opening a generally flat topped can containing liquid and effecting upon upending of the can the dispensing by gravity of the liquid contents of the can except for a residual volume of liquid retained in the can by the dispensing device and being determined in volume by preadjustment of the dispensing device to equal any desired volumetric portion, including zero, of the volume of the can; comprising, in combination, an elongated dispensing and gauging tube cylindrical in shape and being straight throughout the length of the tube, a generally cylindrical can piercing sleeve closely encircling said dispensing and gauging tube for longitudinal sliding movement with respect to the tube and having an overall length that is much shorter than the length of the tube; said sleeve including means extending along an adjacent segment of the tube of substantial axial length and having a slidable, closely encircling fit with said tube to form a seal therewith and hold the tube securely in coaxial alignment with the sleeve and to hold the tube firmly with limited frictional force in any longitudinal position to which it is moved with respect to the sleeve, said sleeve having thereon a circular seal seat encircling a medial portion of the sleeve, a resilient annular seal supported on said seat in adjacent encircling relation to said sleeve and defining an annular can sealing surface facing axially inward with reference to the sleeve, said sleeve including a can piercing segment thereof extending axially inward beyond said sealing surface and having a can piercing shape defining a can piercing point and a can cutting edge, said can piercing segment of the sleeve being of radially thin construction and having an inner diameter that conforms closely to the outer diameter of said tube so that said sleeve piercing segment has a radial clearance from said tube that is limited substantially to that required for easy longitudinal movement of the tube with respect to the sleeve, said piercing segment of the sleeve having retaining lugs struck out from the sleeve and defining cam surfaces confronting said sealing surface and being inclined axially outward in a common rotary direction from leading portions of the respective cam surfaces, cutting blades struck out of said piercing segment of said sleeve and forming radially protruding can slitting edges extending axially inward from the leading portions of said respective cam surfaces to provide for slitting of marginal portions of a can being pierced by said piercing segment whereby the leading portions of said respective cam surfaces are moved inwardly of adjacent marginal edges of can structure pierced by said piercing segment to effect upon rotation of said sleeve means in a direction opposite from said common rotary direction a camming against said seal of the marginal edge structure of a can pierced by said sleeve means to produce a tight seal between said sleeve means and the can, said tube having an inner end defining an opening into the tube; said tube being movable longitudinally within said sleeve to different gauging positions with respect to the sleeve, including a fully extended can emptying position

in which said opening in the inner end of the tube is substantially flush axially with said sealing surface and positions in which the inner end of said tube projects inwardly beyond said sleeve; said piercing segment of the sleeve defining therein a passage opening axially inward and extending axially outward into proximate relation to said seal, the inner end of said tube having thereon an abutment shaped to move through said passage and engage the sleeve to stop outward movement of the tube in a position of the tube in which said opening in the tube is proximate to said sealing surface to permit emptying through said passage and said tube opening of a can engaged by said sealing surface, reference means on said tube for determining the longitudinal position of the tube with reference to said sleeve, a retaining ring encircling said tube adjacent the outer end thereof, a removable cap covering the outer end of said tube, and a connecting element connecting said cap to said retaining ring to prevent loss of the cap when it is removed from the tube.

4. A can opening and liquid dispensing device for opening a generally flat topped can containing liquid and effecting upon upending of the can the dispensing by gravity of the liquid contents of the can except for a residual volume of liquid retained in the can by the dispensing device and being determined in volume by preadjustment of the dispensing device to equal any desired volumetric portion, including zero, of the volume of the can; comprising, in combination, an elongated dispensing and gauging tube cylindrical in shape, a can piercing sleeve closely encircling said dispensing and gauging tube for longitudinal sliding movement with respect to the tube and having an overall length that is much shorter than the length of the tube; said sleeve including means having a slidable, closely encircling fit with the tube to form a seal therewith and to hold the tube in different longitudinal positions to which it is moved with respect to the sleeve; an annular seal supported on said sleeve in adjacent encircling relation thereto and defining an annular can sealing surface facing axially inward with reference to the sleeve, said sleeve including a can piercing segment thereof extending axially inward beyond said sealing surface and having a can piercing shape defining a can piercing point and a can cutting edge, said can piercing segment of the sleeve being of radially thin construction and having an inner diameter that conforms closely to the outer diameter of said tube so that said sleeve piercing segment has a radial clearance from said tube that is limited substantially to that required for easy longitudinal movement of the tube with respect to the sleeve, said piercing segment of the sleeve having retaining lugs thereon defining cam surfaces confronting said sealing surface and being inclined axially outward in a common rotary direction from leading portions of the respective cam surfaces, said piercing segment of the sleeve having can deforming elements thereon extending axially inward from the leading portions of said respective cam surfaces to effect passages of the leading portions of said respective cam surfaces to positions inward of adjacent marginal edges of can structure pierced by said piercing segment to effect upon rotation of said sleeve means in a direction opposite from said common rotary direction a camming against said seal of the marginal edge structure of a can pierced by said sleeve means to produce a tight seal between said sleeve means and the can, said tube having an inner end defining an opening into the tube; said tube being movable longitudinally within said sleeve to different gauging positions with respect to the sleeve, including a fully extended can emptying position in which said opening in the inner end of the tube is substantially flush axially with said sealing surface and positions in which the inner end of said tube projects inwardly beyond said sleeve; said sleeve defining therein a radial passage positioned axially with reference to the sleeve to register with said tube openinig when the tube is in said can emptying position thereof, and reference means on said tube for determining the longitudinal position of the tube with reference to said sleeve.

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