

July 9, 1935.

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2,007,449

SEALED FLUID DISPENSER

Filed April 6, 1934

2 Sheets-Sheet 1

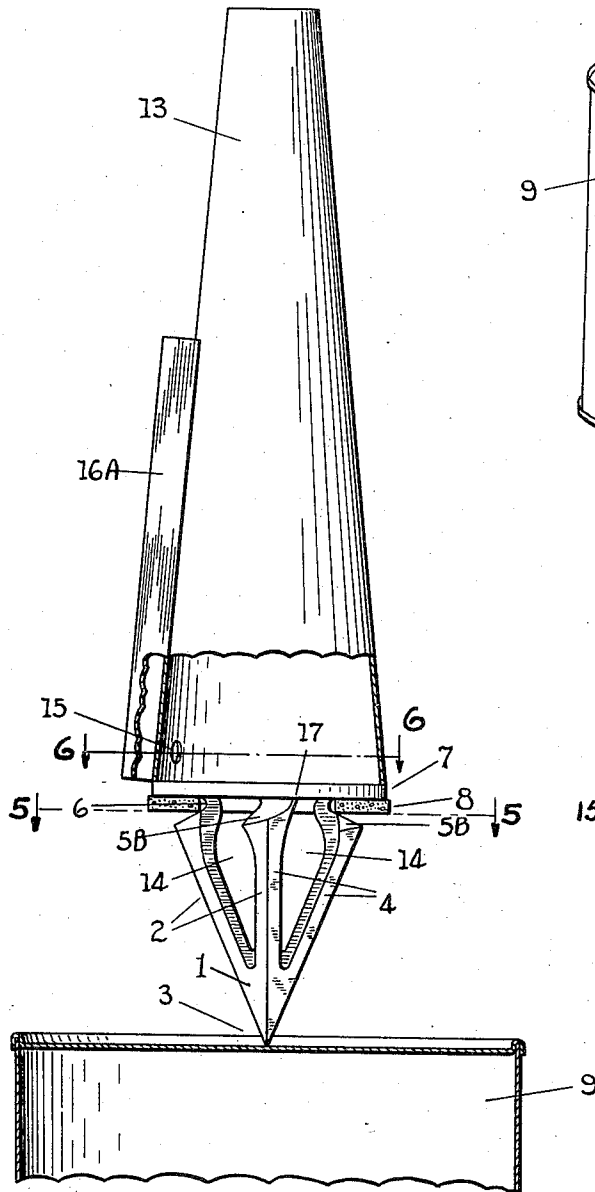


FIG. 1

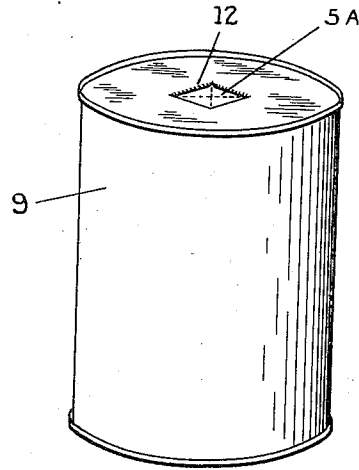


FIG. 3

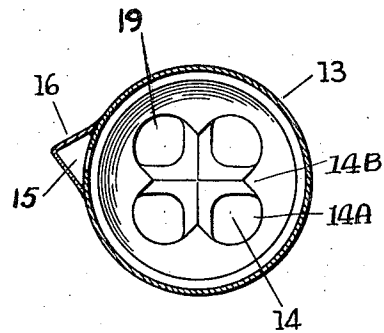


FIG. 6

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2 Sheets-Sheet 2

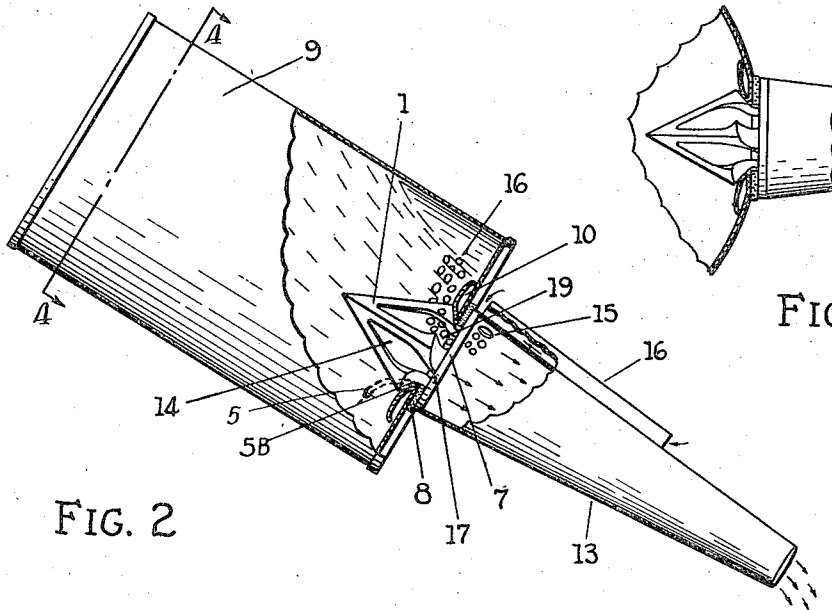


FIG. 2

FIG. 7

FIG. 4

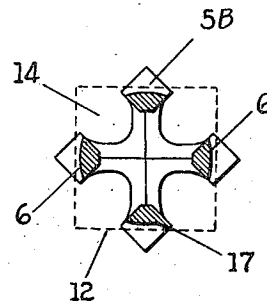
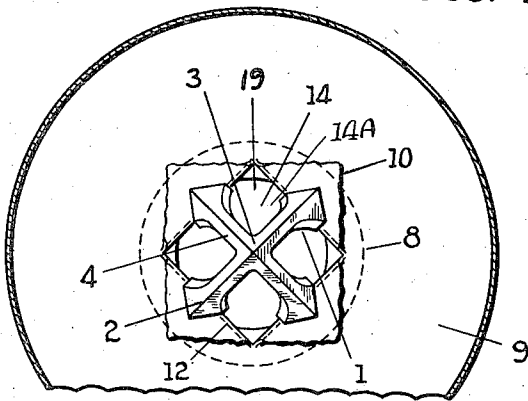


FIG. 5

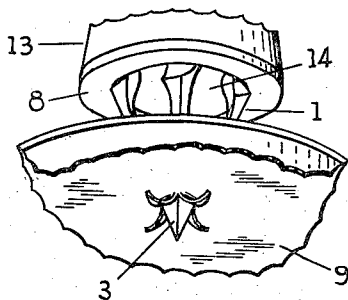


FIG. 8

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2,007,449

SEALED FLUID DISPENSER

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Application April 6, 1934, Serial No. 719,350

5 Claims. (Cl. 221—23)

The invention is a can piercing and liquid dispensing device and is used more particularly in the sale of lubricating oil which is sold at filling stations or the like, by first presenting the oil to the customers in a sealed state and then supplying the oil direct through the device into the automobile engine or the like, by which procedure the customer is assured of receiving the genuine product as designated by the brand on the container; and the invention consists substantially in the construction, combination, and arrangement of elements hereinafter pointed out and recited more particularly in the claims.

It is the main object of the invention to provide, for the purpose of dispensing liquid from containers having at least one metallic face, a sheet metal cutting means for cutting a hole in such face, said cutting means consisting of a knife having convergently related corners, and faces between such corners which serve to roll the pierced material upon itself as said cutting means is run through such face.

It is a primary object of the invention to provide, in conjunction with the dispensing of liquid from a container having at least one sheet metal face, a sheet metal cutting means consisting of a knife, having convergently related corners, and faces between said corners serving to roll the pierced material from the hole made by said cutting means into double thickness re-enforced hole edges, as said knife is run through the container wall.

It is also a primary object of the invention to provide a liquid dispenser having a resilient washer lined shoulder applicable to containers of any size having one metallic face, a means to pierce such face as the shoulder is moved into contact with same, said means to pierce forming cams which serve to iron the rolled edge material from the hole into double strength thickness for rigidly supporting the spout on the can, to draw said shoulder into firmer contact with said face when said knife is rotated, and which serve to underlie the hole edge portions in locking the device and can together; and a means integral with the device serving to limit the rotation of same against one edge of said hole.

It is an important object of the invention to provide a resilient washer lined shoulder applicable to substantially all sizes of containers having at least one metallic face, a means to pierce such face as the shoulder is moved into contact with same, and means to guide the oil from the pierced opening of such container into the machinery or the like to be lubricated.

It is also an important object to provide a pouring spout and an air vent through the wall of the spout, and to provide a means of piercing the container and communicating the interior thereof with said air vent through the interior of the spout and through the piercing means.

Figure 1 is a partly sectional view illustrating the device in position to be inserted in the wall structure of a can type oil container;

Fig. 2 illustrates the device as attached to a can, and in liquid-dispensing position;

Fig. 3 shows an empty fluid container, the contents of which have been dispensed by use of the device, and illustrates the hole through which the fluid was dispensed in conjunction with the device, and by which the device was locked to the can;

Fig. 4 is a partially cross-sectional view taken in the proximity of line 4—4 of Fig. 2;

Fig. 5 is a detail cross-sectional view taken in the proximity of line 5—5 of Fig. 1;

Fig. 6 is a detail cross-sectional view taken in the proximity of line 6—6 of Fig. 1;

Fig. 7 illustrates the device as applied to the round wall structure of a metal can; and,

Fig. 8 is a fragmentary somewhat perspective view showing the device partly entered in a can. Similar characters of reference designate similar parts throughout the several views.

Referring to Figure 1, the numeral 1 designates a can-piercing knife having cutting edges 2, which converge at a common point 3, and as considered in Figure 1, this example of said knife may be described as an inverted pyramid-type knife having faces, 4, between said edges, which serve to roll the can material between the lines cut by said edges into approximately the position indicated by the dotted lines, 5, of Fig. 2, said cutting lines being indicated by lines 5A of Fig. 3.

The upwardly terminating corners of said edges, as considered in Figure 1, form cooperating cam faces, 5B, said cams giving an auger characteristic to the knife, and in this example of the invention said cam faces coordinate in forming a right hand auger instrument, although it is understood that the invention may be constructed with the cam faces reversely formed with a left hand auger effect.

The cam faces, 4, merge inwardly with the reduced neck portion, 6, of the knife, which joins the knife proper with the flange-like knife shank, 7, said shank being symmetrically related to the knife as an entirety and forming a shoulder which faces co-directionally with the point 3 thereof.

The neck side of said shank is lined with the resilient washer, 8, and it will be understood that when said knife is forced through the wall structure of the can, 9, from a position indicated in Figure 1 to a depth indicated in Fig. 2, and rotated to the right, the cam faces, 5B, serve to tighten said wall structure against the washer, 8, and serve to roll the can material, 10, into the double thickness reinforcing position indicated by the solid lines, 10, in Fig. 2, by which it is obvious that the knife is firmly secured in locked position to the can, the cam faces, 5B, underlying the sides of the octagonal hole, 12, cut by the knife in the knife-inserting movement.

The shank, 7, conforms in shape to, and is secured to one end of the hollow spout, 13, the interior of which communicates with the interior of the knife, 1, which is also hollow. The openings, 14, in the faces, 4, of said knife, also communicate with the hollow interior of same, and the shank 7 having throats 14A formed therein between the inwardly extending ribs 14B, said throats being in alignment with the openings 14 respectively and forming continuous grooves therewith, by which features, it will be understood that when the knife is inserted in a can containing lubricating oil or other liquid, then turned to the right until the cam faces, 5B, tighten the adjacent wall structure of the can sufficiently against the resilient washer, 8, a leak-proof joint is made therewith, the contents of the can are quickly and easily removed by tilting the can and device together as a unit as illustrated in Fig. 2; and that the contents are readily directed into an automobile engine or other receptacle as desired through the spout, 13.

Difficulty is almost universally experienced in pouring liquid from a container having a spout or opening of smaller size than the respective wall of the container. This difficulty is experienced because air cannot amply and smoothly enter the container in displacing the outgoing fluid. In consideration of this problem, an air hole, 15, is provided through the wall structure of the spout, 13, at a point near the shank, 7, and when pouring from the can, the can and spout are together rotated to bring the side of the spout containing said air hole upwardly, by which manipulation the fluid-replacing air enters the can in the form of bubbles, 16, illustrated in Fig. 2, the air forming said bubbles entering said spout through said air hole, passing through the one of said throats which happens to be in the most upward position, from the hollow of said spout into the hollow of said knife, and thence through the openings, 14, in the faces, 4, of the knife shank 7.

Longitudinally with said spout, and over the air hole, 15, the rib, 16A, is formed exteriorly thereon, said rib having a hollow interior throughout its length, and being open at each end, so that said air hole receives air from the surrounding atmosphere through said rib, by which arrangement it will be understood that said rib serves with the spout as a hand-hold for grasping the spout and rotating same into cam-locking position on the can, as illustrated in Fig. 2, and Fig. 4; that said rib also serves to guide the user, by manual contact in keeping the air hole, 15, turned to an upward position; and that said rib serves to shield said air hole against being closed by casual contact of the user's hand, or being open to dust or other objects which might enter said hole or close same.

As best illustrated in Fig. 1 and Fig. 5, the stop, 17, is formed in the neck, 6, between one of the

cam faces, 5B, and the shank, 7. When the device has been rotated until said cam faces underlap the can wall structure, substantially the maximum amount, said stop strikes one edge of the hole, 12, and thus stops the rotation of same at a point to favorably maintain a rigid juncture between the can and the device, it being understood that all or any number of said cam faces may be provided with said stop in constructing the invention, as desired, said hole being indicated by dotted lines in Fig. 5.

An important feature of the invention resides in the fact that the openings, 14, of the knife, 1, continue vertically up through the shank, 7, considering the invention as positioned in Fig. 1, the continuation of said holes being in the form of throats, 19, shown in Fig. 6, formed through said shoulders. It will be evident that the flow of fluid from the container is facilitated through said throats, the air hole, 15, being substantially in line with one of said throats through which the air bubbles, 16, pass.

Another important characteristic of the invention lies in the fact that the resilient washer, 8, is retained from casual removal on the neck, 6, by the cam faces, 5B, the hole in said washer being less in diameter than the distance between the outer points of any two diagonally opposite cam faces.

The spout, 13, tapers from the shank, 7, to a comparatively small pouring end, making it convenient to be inserted in small fluid-receiving openings.

Referring to Fig. 7, in which the device is shown, engaged through the round wall structure of a sheet metal can, it will be observed that the action of the cam faces, 5B in drawing the can wall against the washer, 8, is sufficient to draw said wall structure to substantially flat form at the points contacted by said washer, from which it will be seen that the device is applicative to a round body of a metal container as well as to a flat head.

From the foregoing it will be seen that the device is readily applied to and used with a fluid container or jar having at least one sheet metal face, or a sheet metal lid, or the like; and that the device is as readily removed from any can to which it is applied, ready for application to another container. The usefulness of the invention is made more manifest in view of the fact that it is becoming more the custom to sell lubricating oil for automobile engines and the like, in sealed metallic containers, commonly referred to as "tin-cans".

While the description and drawings illustrate in a general way certain elements and arrangements thereof, which may be employed in carrying the invention into effect, it is obvious that many modifications may be made in the various details without departing from the scope of the appended claims, it being understood that the invention is not restricted to the particular example shown and described; for illustration, the knife may be constructed with 3, 5, or 6 cutting edges 2 with the corresponding number of cam faces.

The invention claimed is:

1. A container-piercing and fluid-dispensing device combined for containers having at least one sheet metal face, said device comprising a knife having edges which converge at one end, said knife serving to pierce a substantially straight-sided hole through such face and said knife forming shoulders at the other ends of said

edges, which serve to inner-lap the edge portions of the hole when said knife is inserted through said face and turned, a spout-forming shank associated with the shoulder end of said knife, a neck connecting said shank and said knife, and a stop formed in said neck serving to strike an edge of the pierced hole and stop the rotation of said knife when said shoulders are in substantially maximum inner-lapping relation with the said edge portions of the hole.

2. A container inserting and fluid dispensing device combined for containers having at least one sheet metal face, said device comprising a hollow piercing knife having edges which converge at one end thereof, said knife serving to pierce a substantially straight sided hole through such face and curl the material from said hole within the can, and said knife forming a set of shoulder cams at the other ends of said edges which serve to under bear the sides of the pierced hole, said knife having openings between said edges which establish communication between the interior of the can and the hollow of said knife; a hollow shank having a neck connecting the same to said knife, centrally with said set of shoulder cams, said shank having a shoulder serving to stop the inserting movement of said knife by contact against such face, in opposition to said shoulder cams, when the device is inserted and turned; and interiorly extending ribs in said shank forming a plurality of fluid conveying grooves continuous with said openings, respectively, alternately between said cam shoulders, said grooves serving as throats through which fluid runs in straight streams from the hollow of said shank to said openings.

3. A container inserting and fluid dispensing device combined for containers having at least one sheet metal face, said device comprising a hollow piercing knife having edges which converge at one end thereof, said knife serving to pierce a substantially straight sided hole through such face and curl the material from said hole within the can, and said knife forming a set of shoulder cams at the other ends of said edges which serve to under bear the sides of the pierced hole, said knife having openings between said edges which establish communication between the interior of the can and the hollow thereof; a hollow shank having a neck connecting the same to said knife, centrally with said set of shoulder cams, said shank having a shoulder serving to stop the inserting movement of said knife by contact against such face, in opposition to said shoulder cams, when the device is inserted and turned; and interiorly extending ribs formed in said shank forming a plurality of fluid conveying grooves continuous with said openings, respectively, alternately between said cam shoulders, said grooves serving as throats through which fluid runs in straight streams from the hollow of said shank to said openings, the one of which throats which chances to be in the most upward position serv-

ing to admit air into the can in replacement of the dispensed fluid.

4. A container inserting and fluid dispensing device combined for containers having at least one sheet metal face, said device comprising a hollow piercing knife having edges which converge at one end thereof, said knife serving to pierce a substantially straight sided hole through such face and curl the material from said hole within the can, and said knife forming a set of shoulder cams at the other ends of said edges which serve to under bear the sides of the pierced hole, said knife having openings between said edges which establish communication between the interior of the can and the hollow of said knife; a hollow shank having a neck connecting the same to said knife, centrally with said set of shoulder cams, said shank having a shoulder on the other side of said shoulder cams from said openings serving to stop the inserting movement of said knife by contact against such face, in opposition to said shoulder cams, when the device is inserted and turned; and interiorly extending ribs formed in said shank forming a plurality of fluid conveying grooves continuous with said openings, respectively, alternately between said cam shoulders, said grooves serving as throats through which fluid runs in straight streams from the hollow of said shank to said openings, the one of which throats which chances to be in the most upward position serving to admit air into the can in replacement of the dispensed fluid.

5. A container inserting and fluid dispensing device combined for containers having at least one sheet metal face, said device comprising a hollow piercing knife having edges which converge at one end thereof, said knife serving to pierce a substantially straight sided hole through such face and curl the material from said hole within the can, and said knife forming a set of shoulder cams at the other ends of said edges which serve to under bear the sides of the pierced hole, said knife having openings between said edges which establish communication between the interior of the can and the hollow of said knife; a hollow shank having a neck connecting the same to said knife, centrally with said set of shoulder cams, said shank having a shoulder on the other side of said shoulder cams from said openings serving to stop the inserting movement of said knife by contact against such face, in opposition to said shoulder cams, when the device is inserted and turned; and interiorly extending ribs formed in said shank forming a plurality of fluid conveying grooves continuous with said openings, respectively, said grooves serving as throats through which fluid runs in straight streams from the hollow of said shank to said openings, the one of which throats which chances to be in the most upward position serving to admit air into the can in replacement of the dispensed fluid.

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