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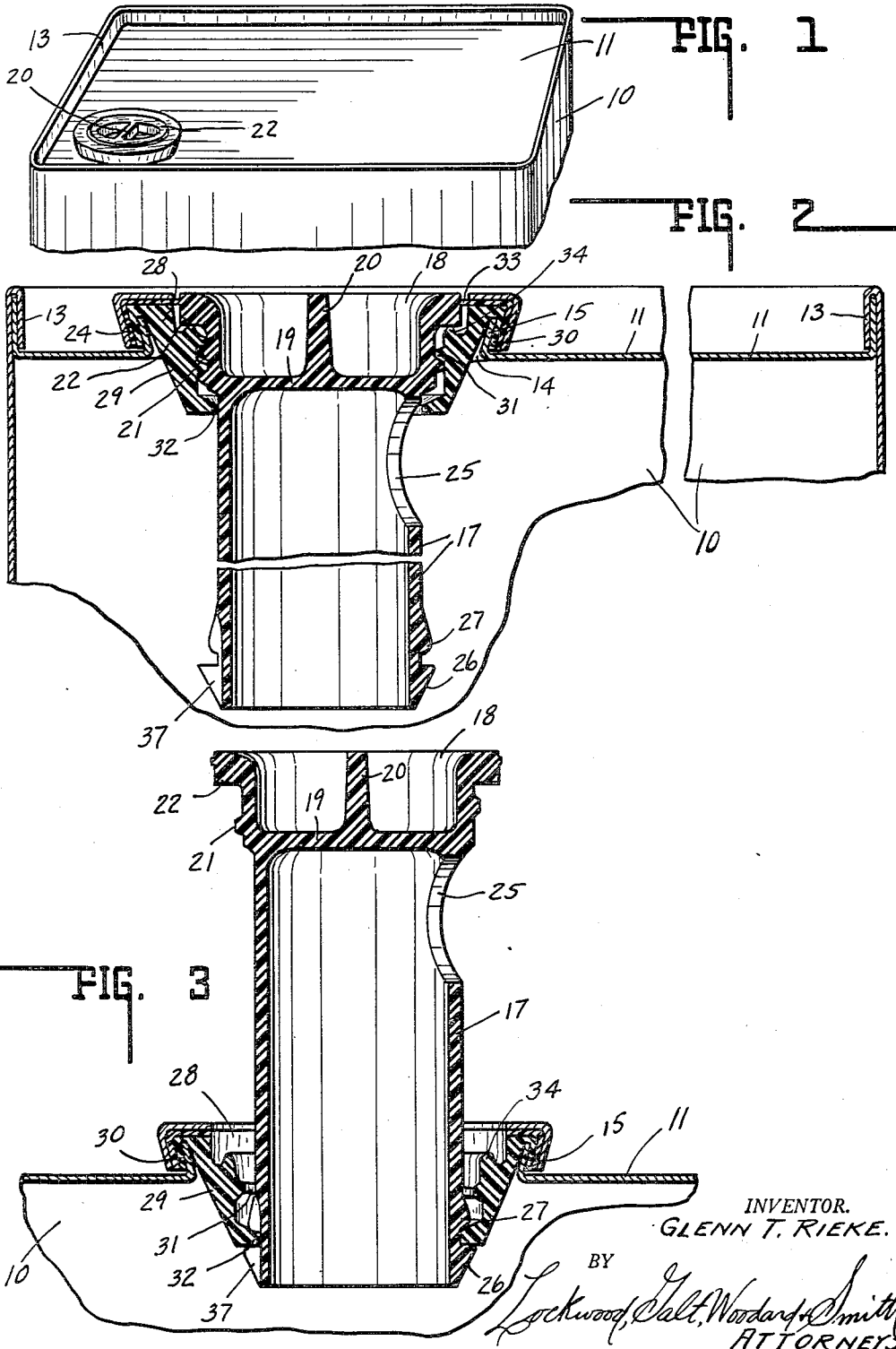
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POUR SPOUT CLOSURE FOR CONTAINERS

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2 Sheets-Sheet 1



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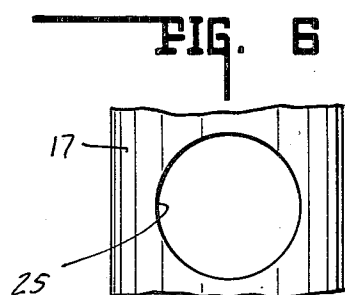
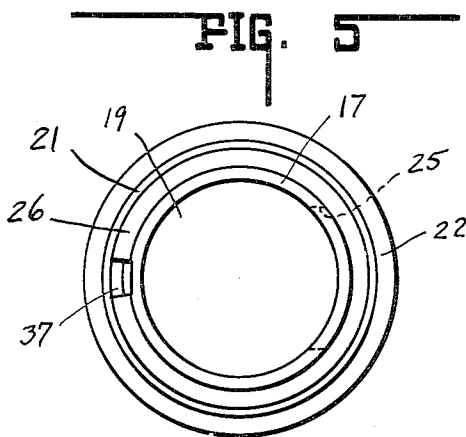
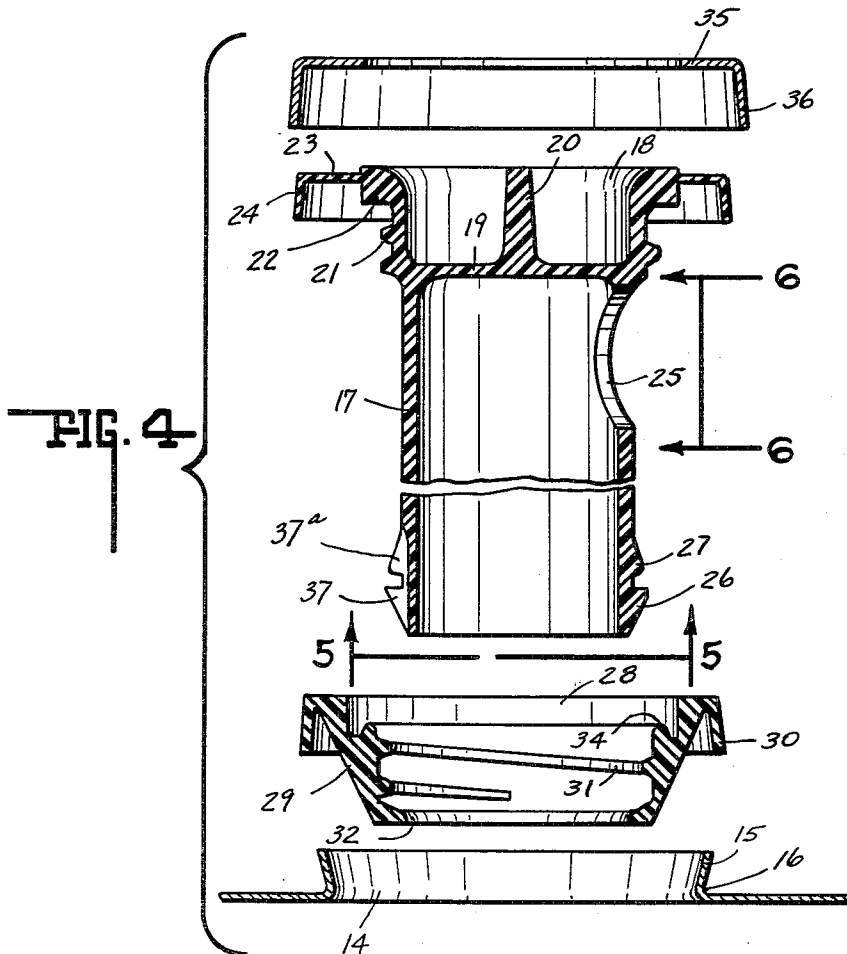
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2 Sheets-Sheet 2



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POUR SPOUT CLOSURE FOR CONTAINERS

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7 Claims. (Cl. 222—481)

This invention relates to a pour spout closure for containers, and particularly that type of metal container of from one to five gallon capacity commonly employed for packaging motor oil as well as other liquids, wherein a threaded closure spout may be pulled from retracted closing position nesting within the container to an outwardly extending position, somewhat of the character disclosed in my copending application Serial No. 360,061, filed June 8, 1953, entitled "Pull Spout Closure for Containers."

This invention contemplates a unitary pull spout and closure plug which are inseparable irrespective of the spout being in pouring or closing position, and wherein there is provided a separate internally threaded flange through which the spout is adapted to slide between closing and pouring positions and with which the integral closure plug is threadably engaged for closing and sealing.

In the so-called metal cans of this type it has heretofore been customary to provide the flat top of the can with an opening in which there is soldered or otherwise secured an upstanding metal spout formed with external screw threads for receiving an internally threaded metal cap provided with a sealing gasket. Inasmuch as the metal spout extends upwardly above the top surface of the can, a problem arises in respect to the sealing of the cartons in which the cans are shipped. Due to this upstanding spout projection the sealing flaps of the carton are necessarily spaced above the top of the can to accommodate said spout. Since a flat surface is necessary for supporting the sealing flaps of the carton during the pressing operation for sealing them, it is customary to provide and secure to the top of the can a flat handle at the same level as the top of the spout and its cap, the flat handle providing a support for the sealing operation. Such extension of the carton also adds to its costs due to the increase in material necessary therefor. Furthermore, in such metal spout and screw cap closures there is no protection against unlawful opening of the spout and tampering with the contents of the can.

It is the purpose of this invention to provide a retractable spout, which, together with the integral externally threaded plug formed on the outer end thereof will not protrude upwardly from the top surface of the can beyond its crimped marginal edges or chimes, whereby in shipment there is no material upstanding projection and consequently no necessity of having a corresponding upstanding handle to provide a flap supporting surface in sealing a carton thereover. This effects a saving in respect to attaching a handle to the can, as well as effecting a saving in the material of the carton.

In addition to the savings effected, this invention provides for a tamper-proof seal wherein the contents of the container cannot be removed until the seal is broken, as well as providing for an extended pouring spout for pouring the liquid from the container which may be extended or retracted within the container for stacking, as well as packing; the tamper-proof seal additionally serving as a sealing gasket.

One feature of the invention resides in the pouring spout and closure plug being formed and remaining integral as a one piece single unit. By reason of this structure, after pouring the spout may be retracted and the plug screwed into the flange for closing the opening without at any time being removed from the spout or the remaining structure. Thus, there is no danger of the plug becoming lost as in the case of conventional closures with removable caps, seals or plugs. The closure plug is at all times a part of, and is never removed from, the pouring spout which in turn is never removed from the container.

Another feature of the invention resides in the plug integrally formed with the spout having initially formed integrally therewith a tamper-proof seal including a closure lip permanently clamped over the opening of the container. Said tamper-proof seal, therefore, permanently serves as a gasket, and being initially integral with the closure plug and spout prevents access to the container until it is severed from the plug.

A further feature of the invention resides in the outer end of the pour spout being permanently closed by the plug, but having a pouring opening in the side wall thereof immediately adjacent the plug.

A still further feature of the invention resides in the screw threaded relation of the permanently mounted plug with a permanently mounted flange securely clamped within the container. Thus, when the spout is extended for pouring, the closure plug serves as a convenient gripping member for sliding the spout outwardly through the flange, and when it is desired to close the container, the plug may be gripped and used to slide the spout downwardly into the container through the flange, whereupon by rotation of the plug it may be screwed home into sealing engagement therewith.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a perspective view showing the upper portion of a metal can with the spout in retracted position and the closure sealed.

Fig. 2 is a section through the upper portion of the can showing an enlarged view of the closure with the spout retracted and the tamper-proof seal in place before opening.

Fig. 3 is an enlarged section through the upper portion of the can with the pull spout extended to pouring position.

Fig. 4 is an exploded view showing the several parts of the structure before assembly.

Fig. 5 is a view taken on the line 5—5 of Fig. 4.

Fig. 6 is a view taken on the line 6—6 of Fig. 4.

In the drawings there is shown a metal liquid container or can 10 having a top plate or head 11 surrounded by the usual upwardly extending crimped flange or chime 13. Said top plate is provided in the usual manner with an annular opening indicated at 14 (Fig. 4) surrounded by an embossed neck 15 having a slight undercut indicated at 16, said neck being adapted to receive the closure unit of this invention.

The pull spout closure unit consists of an elongated tubular pull spout 17. Integral with the pull spout and permanently fixed thereto there is a closure member comprising the plug 18 having a closure diaphragm 19 and a centrally disposed finger pull member 20. The external body of the plug is threaded as at 21. The upper end of the plug is flared outwardly to provide a sealing flange 22. Integral with the sealing flange there is an outwardly and peripherally extending tamper-proof seal membrane 23 terminating in a downwardly and outwardly flared closure lip 24. The side wall of the spout 17 is provided with a pour opening 25 lying adjacent the closure dia-

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phragm 19. The lower end of the pour spout, opposed to the plug, is open and surrounded by a camming lock shoulder 26 and an upwardly spaced stop flange 27.

The closure flange 28 of the container is separately formed from the spout and plug with its outer wall 29 tapering downwardly and inwardly in conformity with the embossed neck 15 of the container to seat snugly therein. The upper portion of the flange is inwardly formed with a downwardly and outwardly flaring flange lip 30 dimensioned to snugly embrace the embossed neck 15 of the container. Said flange is internally threaded, as indicated at 31, to threadedly receive the threads 21 of the plug. The lower or inner end of the flange is open to provide a close fitting neck 32 for slidably receiving the spout 17. Said neck is formed to be cammed outwardly by the camming lock shoulder 26 when the spout is first assembled with the flange, and thereafter to be cammed by the stop flange 27 into sealing relation with the peripheral groove between said flange and the lock shoulder, as shown in Fig. 3.

The pour spout and plug unit with the tamper-proof seal is preferably formed of a yielding and compressible material, such as polyethylene (natural). The flange 29 is preferably formed of similar material. Thus, the neck 32 of the flange may be readily stretched and contracted in and out of the annular groove between the shoulder 26 and flange 27, as the spout is extended or retracted. Also, by reason of the character of the material from which the units are formed, the flange lip 30 and the closure lip 24 on the plug jointly serve as sealing gaskets. Also, by reason of the character of the material of which the tamper-proof seal membrane of the plug is formed, and with the spacing between the plug and flange, as indicated at 33 in Fig. 2, the tamper-proof seal membrane may be severed by a pocket knife or like instrument about the periphery of the plug. Thus, before severance and with the structure arranged as shown in Fig. 2, the closure is protected against tampering or unlawful opening due to the integral relation of the membrane 23, clamped closure lip 24 and plug 18. However, upon being severed about the plug, the spout may be extended to the position shown in Fig. 3, for pouring the liquid through the hole 25 in its wall. After pouring, the spout may be retracted to the position shown in Fig. 2, but with the membrane cut at 33. Through the medium of the finger pull member 20 the plug may then be screwed home in the flange with the sealing flange 22 of the plug bearing in sealing engagement with a sealing ring 34 (Fig. 4) formed within the flange.

For convenient filling of the container which may be shipped to the source of liquid, the filling may be accomplished through the opening 14 in the can before the closure is applied. The closure comprises the remaining three units, as shown in Fig. 4. In applying the closure after the container is filled, the flange is first seated in the opening with the flange lip 30 embracing the embossed neck 15. The spout and plug are then inserted through the flange and screwed home therein with the closure lip of the tamper-proof seal membrane embracing the flange lip 30. Thereupon the clamping ring 35 is nested about the plug with its downwardly and outwardly flaring skirt 36 embracing the closure lip 24 thereof as well as the flange lip 30 and neck 15. A suitable tool is then applied to clamp or crimp the skirt 36 thereabout to compress the said lips into sealing relation with the embossed neck. To provide a vent when the spout is extended to pouring position, the camming lock shoulder 26 and stop flange 27 of the spout are provided with registering vent slots 37, 37a (Figs. 4, 5) on the opposite side from the pouring hole 25.

From the above it will be observed that a spout closure of the above character has numerous advantages, one of which lies in the fact that the closure plug is never separated and need not be removed and replaced as usual, and cannot be lost, thus saving operators' time in pouring and

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closing. Furthermore, the integral plug provides a convenient handle with which to manipulate the spout without touching the fingers thereto or being contaminated by the liquid. The structure is tamper-proof and the tamper-proof membrane also serves as a double gasket seal. The structure nests within the elevation of the chimes of the container with the attendant advantages above discussed. Through the double gasket seal effected by both the flange and the tamper-proof membrane there is no danger of leakage in shipping or storing, and after use leakage is prevented by the double seal effected through the sealing flange 22 of the plug and the sealing ring 34 of the flange when drawn together under pressure of the screw threads.

The invention claimed is:

1. A pour spout closure for a container having an opening surrounded by an upstanding neck, an internally threaded flange extending through said opening in sealing relation with said neck, a tubular pouring spout slidable in said flange open at its inner end and provided with a pouring hole in its wall adjacent its other end, an externally threaded plug integral with said spout providing a closure at said other end for threaded sealing engagement with said flange, a flange lip integral with said flange surrounding said neck, a closure lip integral with and severable from said plug surrounding said flange lip, and a clamping ring embracing said lips crimped thereon to effect a permanent seal with said neck.

2. A pour spout closure for a container having an opening, a flange extending through said opening in sealing relation therewith, a tubular spout slidable in said flange open at its inner end and provided with a pouring hole in its wall adjacent its other end, a plug integral with said spout providing a closure at said other end for sealing engagement with said flange upon said spout extending therethrough in its retracted position and releasable from said flange to permit said spout to be extended to its pouring position, a tamper-proof seal membrane formed integral with said plug to extend outwardly from the periphery thereof and terminating in a closure lip surrounding said flange, and a clamping ring embracing said lip and crimped thereagainst to force it into gasket-like sealing relation with said flange upon said plug being positioned in sealing engagement therewith, said membrane being severable from said plug to permit withdrawal from said flange.

3. A pour spout closure for a container having an opening surrounded by an upstanding neck, an internally threaded flange extending through said opening in sealing relation with said neck, a tubular pouring spout slidable in said flange open at its inner end and provided with a pouring hole in its wall adjacent its other end, an externally threaded plug integral with said spout providing a closure at said other end for threaded sealing engagement with said flange, a flange lip integral with said flange surrounding said neck, a closure lip integral with and severable from said plug surrounding said flange lip, a clamping ring embracing said lips crimped thereon to effect a permanent seal with said neck, and locking and sealing members at the open end of said spout and the inner end of said flange for limiting the extended position of said spout relative to said flange and effecting a seal therebetween.

4. A pour spout closure for a container having an opening surrounded by an undercut upstanding neck, an internally threaded flange of yielding material extending through said opening in sealing engagement with said neck, a tubular pouring spout of said material slidable in said flange open at its inner end and provided with a pouring hole in its wall adjacent its other end, an externally threaded plug of said material integral with said spout providing a permanent closure at said other end for threaded sealing engagement with said flange, a flange lip integral with said flange surrounding said neck, a tamper-proof seal membrane integral with and extending outwardly from said plug formed with a closure lip sur-

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rounding said flange lip, a clamping ring embracing said lips crimped thereon to effect a permanent gasket seal with said neck, and interlocking stopping and sealing means formed on the said open inner end of said spout and the inner end of said flange for limiting the sliding movement of said spout to extended position and effecting a seal with said flange, said membrane being severable about and adjacent said plug to permit movement of said spout to said extended position.

5. A pour spout closure for a container having an opening surrounded by an undercut upstanding neck, an internally threaded flange of yielding material extending through said opening in sealing engagement with said neck, a tubular pouring spout of said material slidable in said flange open at its inner end and provided with a pouring hole in its wall adjacent its other end, an externally threaded plug of said material integral with said spout providing a permanent closure at said other end for threaded sealing engagement with said flange, a flange lip integral with said flange surrounding said neck, a tamper-proof seal membrane integral with and extending outwardly from said plug formed with a closure lip surrounding said flange lip, a clamping ring embracing said lips crimped thereon to effect a permanent gasket seal with said neck, and interlocking stopping and sealing means formed on the said open inner end of said spout and the inner end of said flange for limiting the sliding movement of said spout to extended position and effecting a seal with said flange, said membrane being severable about and adjacent said plug to permit movement of said spout to said extended position, said plug being externally recessed, and an outwardly extending exposed finger pull member integrally formed on said plug within said recess.

6. A pour spout closure for a container having an opening surrounded by an upstanding embossed neck, a closure flange mounted in said opening having an out-

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wardly and downwardly extending sealing flange portion embracing said neck in sealing relation therewith, a tubular spout slidable through said opening and neck between retracted closure position and extended pouring position, a plug closure for said spout secured at its outer end and movable therewith when caused to slide between its retracted and extended positions, a severable tamper-proof sealing membrane integral with said plug to extend laterally therefrom over and into sealing engagement with the neck of said container, and means embracing said membrane to secure it in permanent sealing engagement with said neck whereby it will retain said spout and plug in retracted closed position relative thereto and be severable from said plug to permit said spout to be extended to pouring position.

7. A pour spout closure for a container having an opening surrounded by an upstanding embossed neck, a tubular pouring spout slidable through said opening and neck, a closure plug secured to said spout to provide a closure therefor at the outer end thereof, a sealing closure membrane having a downturned lip integral with and severable from said plug and extending laterally therefrom into surrounding and sealing relation with said upstanding neck, a clamping ring embracing said closure and sealing lip crimped thereon to effect a permanent seal thereof with said neck, and means on the inner end of said spout for limiting its movement to extended position.

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