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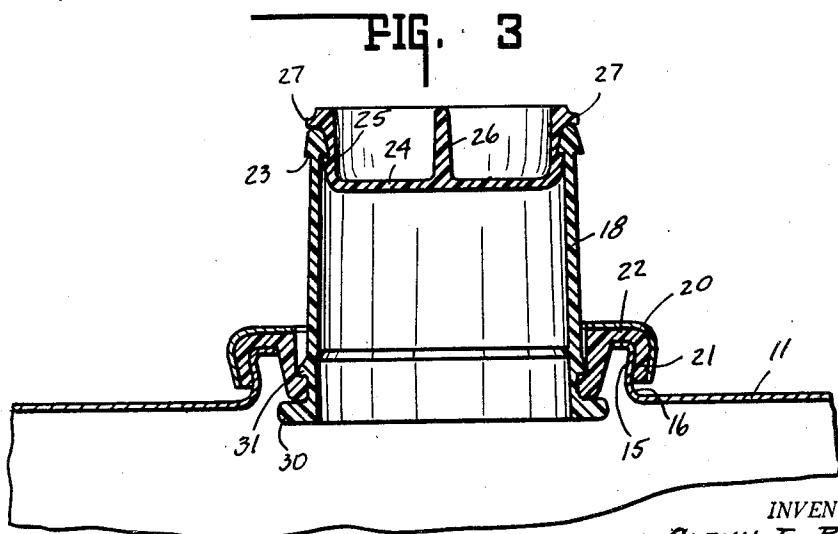
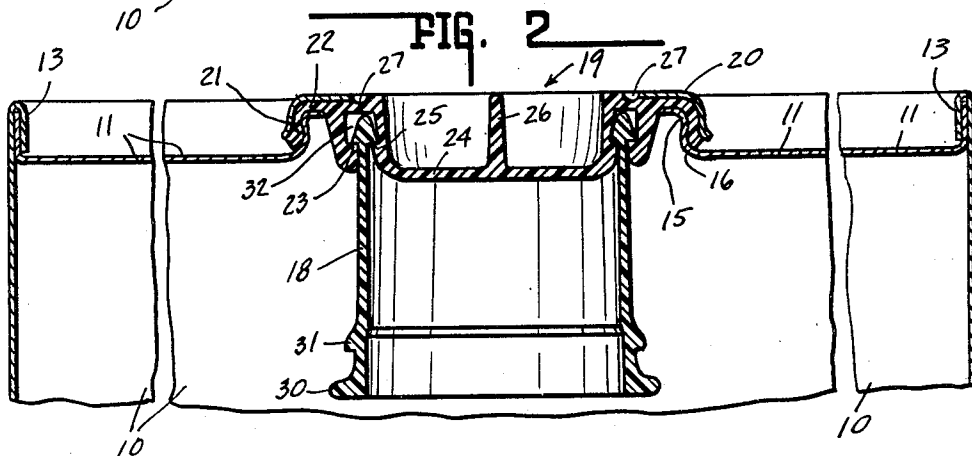
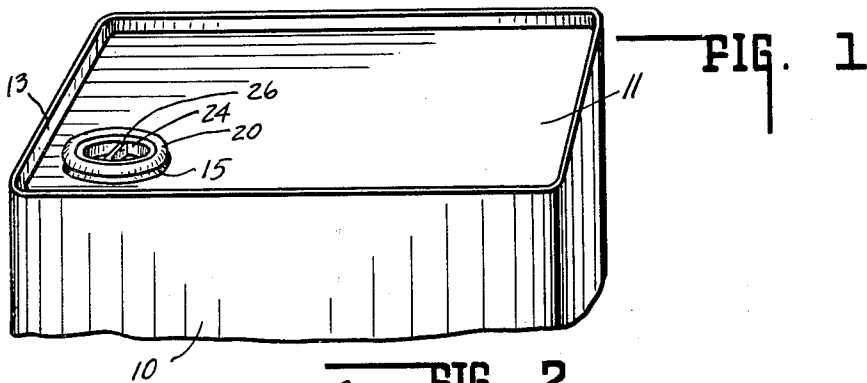
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2,774,523

PULL SPOUT CLOSURE FOR CONTAINERS

Filed June 8, 1953

2 Sheets-Sheet 1



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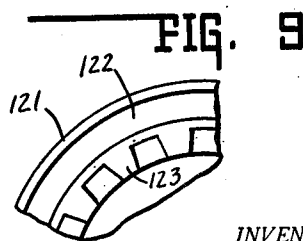
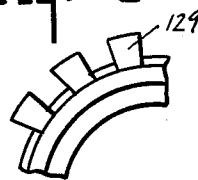
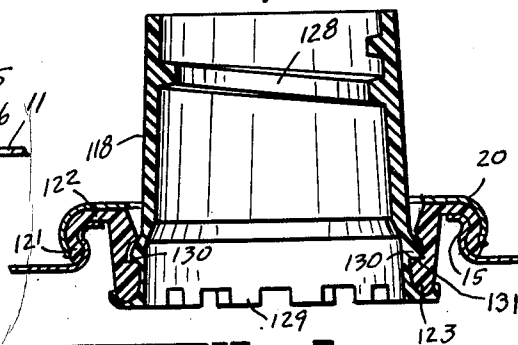
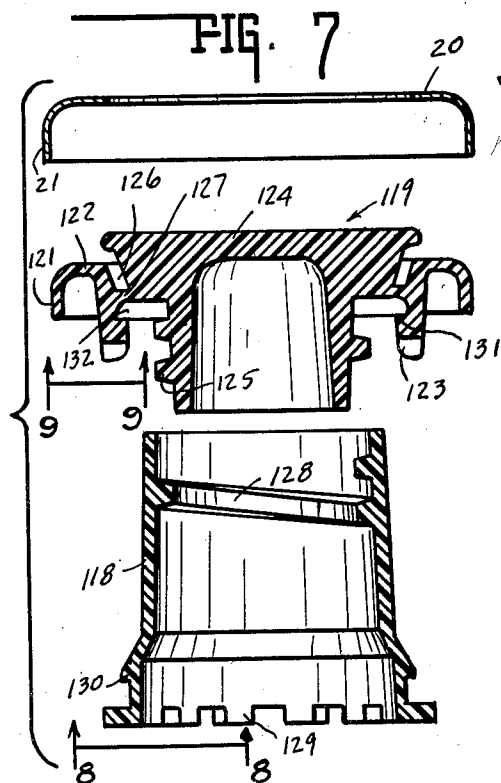
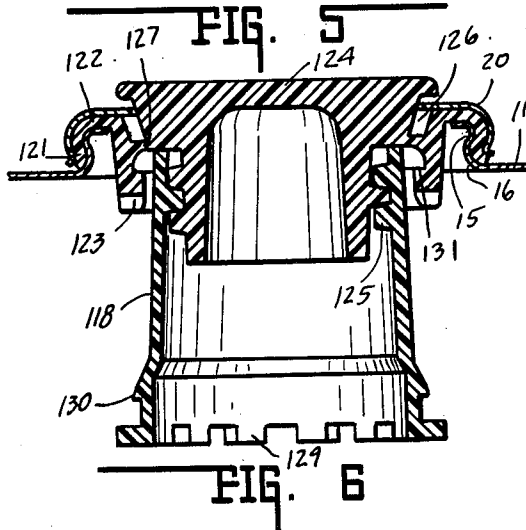
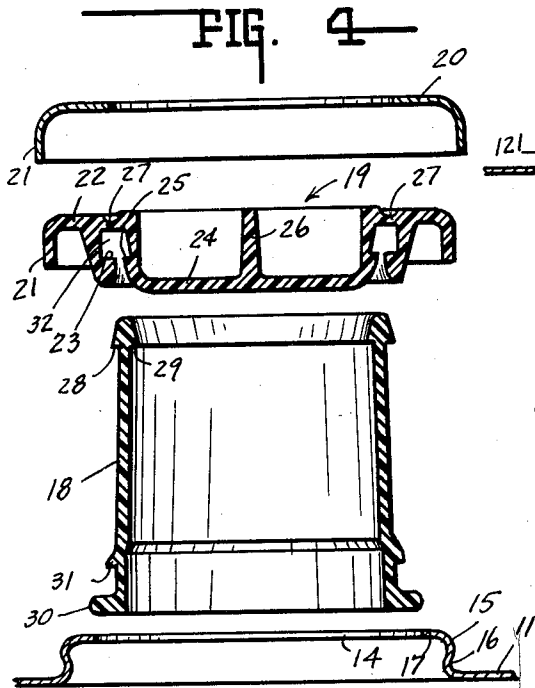
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2 Sheets-Sheet 2



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PULL SPOUT CLOSURE FOR CONTAINERS

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12 Claims. (Cl. 222—525)

This invention relates to a pull spout closure for containers, and particularly that type of metal container of the one to five gallon capacity commonly employed for packaging motor oil as well as other liquids.

It is the purpose of this invention to provide a combination pull spout, initial tamper-proof seal and removable closure after use, all in a single unit for ready assembly in a container.

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 cost due to the increase of 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 its closure cap, will not protrude upwardly from the top surface of the can beyond its crimped marginal edges, 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 spout for pouring which may be retracted for stacking, as well as packing; the tamper-proof seal further serving not only as a gasket and support for the retractable spout, but a removable cap or closure plug readily adaptable for use after opening.

A further feature of this invention resides in providing such a retractable spout, and tamper-proof seal and closure plug, all in a single unit for convenient clamping through the can without requiring soldering or similar operations.

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

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

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Fig. 2 is a section through the upper portion of the can showing an enlarged view of the closure with the pull 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 with the closure plug in place.

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

Fig. 5 is an enlarged sectional view showing the upper part of the can having a modified form of pull spout closure of the screw plug type with the pull spout in retracted and sealed position.

Fig. 6 is the same as Fig. 5 with the pull spout in extended position and the closure plug removed.

Fig. 7 is an exploded view of the modified form of structure shown in Figs. 5 and 6 before assembly into a unit.

Fig. 8 is a view taken on the line 8—8 of Fig. 7.

Fig. 9 is a view taken on the line 9—9 of Fig. 7.

In the drawings, and referring to Figs. 1 to 4, inclusive, there is shown a metal liquid container or can 10 having a top plate 11 surrounded by the usual upwardly extending crimping flange 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 16 and an inwardly extending closure seating flange 17, said neck being adapted to receive the closure unit of this invention.

The pull spout closure unit consists of an elongated tubular pull spout 18, a closure member 19 including combined gasket, tamper-proof seal and closure plug, and a retainer ring 20. The pull spout, as well as the gasket, seal and plug, are preferably formed of a compressible material, such as natural polyethylene, although various corresponding materials may be employed, and wherein the spout may be of metal if desired.

The closure member 19 is formed with an outer sealing flange 21 formed and adapted to fit over and surround the neck 15 of the can. The upper adjacent portion 22, together with the flange 21, provides a sealing gasket for the opening upon the retainer ring 20 being mounted thereover and clamped within the undercut portion of the neck 15, as shown in Figs. 2 and 3. Inwardly of the portion 22 and extending downwardly within the opening 14 there is an annular spout sustaining shoulder 23, and inwardly thereof in spaced relation with the shoulder there is an annular cup-like closure plug 24 which is also provided about its periphery with a mating spout retaining interlocking shoulder 25. Said plug 24 is formed centrally thereof with a pull tab 26 and is additionally integrally connected with the outer sealing flange 21 and portion 22 by an annular relatively thin membrane 27.

The pull spout 18 is formed about its upper end with an outwardly protruding supporting shoulder 28 and inwardly extending plug interlocking shoulder 29. At the lower end thereof said spout is formed with an outwardly extending stop flange 30 and a camming lock shoulder 31 spaced slightly upwardly therefrom.

The pull spout closure unit is assembled by inserting the upper end of the pull spout into the annular space 32 of the closure member 19, wherein the shoulders 28, 29 of the spout become interlocked with and supported by the shoulders 23, 25 of said member. The retainer ring 20 is then seated over the outer flange 21 and portion 22 of said member. This assembly then becomes the unit with which the can manufacturer is provided. The can manufacturer having produced the can 10 with the embossed neck 15 then assembles the unit therewith by inserting the spout 18 through the opening 14, seating the flange 21 of the closure member over the neck 15 and then clamping and crimping the downturned flanges of

the retainer ring 20 thereabout under sufficient pressure to effect a permanent seal and lock between the unit and the can; and wherein the outer flange 21 and portion 22 of the closure member 19 provides the permanent sealing gasket. The container will have been filled prior to this assembly of the unit therewith and is then ready for packaging in a suitable carton for shipping. In this connection it will be observed that the contents of the can are hermetically sealed and the contents cannot be removed or tampered with unless the seal is broken.

For placing the can in use and pouring the contents therefrom, a knife or suitable cutting implement is applied to the membrane 27 which severs the closure plug 24 from the gasket portion 21, 22. Having severed the plug the pull tab 26 may be grasped and lifted up, pulling the spout 18 with it, due to the interlocking engagement between the shoulders 25, 29. When the spout has been thus fully extended to the position shown in Fig. 3 from that shown in Fig. 2, the camming lock shoulder 31 thereof will have cammed itself past the spout sustaining shoulder 23 which thereupon becomes interlocked therewith against the stop flange 30. The spout is then secured and held in its extended pouring position. Thereupon by further pull upon the pull tab and plug, the latter may be removed from the spout through the compressible disengagement of the shoulders 25, 29. The contents may then be poured from the container, after which the plug may be snapped back into spout closing position, as shown in Fig. 3, for further pouring as the occasion may arise. If it is desired to store or stack the can, the spout may be retracted to its position shown in Fig. 2 by forcibly disengaging the shoulders 23, 31. It will be observed that such forceful shoulder disengagement, both in respect to the plug and the spout, on the one hand, and the spout and sealing flange, on the other hand, is permissible by reason of the compressibility of the material of which they are made.

Referring to Figs. 5 to 9, inclusive, while the structure of Figs. 2 to 4, inclusive, employs the pull type of closure plug, it may be desired to employ a screw type of plug. With respect to a screw type of plug it is necessary to effect an interlocking of the spout and gasket to prevent relative rotation during the screwing and unscrewing of the plug.

Thus, in said Figs. 5 to 9, inclusive, there is shown the top plate 11 of the can having the embossed neck 15 surrounding the opening 14. The pull spout closure unit in this instance includes the tubular spout 18 and a closure member 119, together with the said retainer ring 20. The closure member 119 is provided with the outer sealing flange 121, with the top sealing portion 122 adapted to be mounted over the neck 15 of the can and clamped thereto in permanent sealed relation by the clamping ring 20. Said member is provided with an inwardly offset and downwardly extending skirt portion terminating in an annular series of inwardly projecting teeth 123. Integral therewith there is formed the closure plug or screw cap 124 which is formed with a downwardly and inwardly extending skirt portion surrounded by the screw threads 125 and terminating in an annular opening 132. Between the screw cap and sealing flange there is an inwardly and downwardly extending undercut slot 126 terminating in the thin membrane portion 127. This undercut slot arrangement is such that upon the membrane being cut when the can is put in use, the upper overhang of the cap will prevent the cap from falling or passing through the gasket portion of the closure member.

The spout 118 is provided with internal screw threads 128 for receiving the external screw threads 125 of the screw cap. At the lower end of the spout there is provided an annular series of teeth 129 formed to mesh and interlock with the teeth 123 of the gasket portion of the closure member when the spout is extended for arresting rotation thereof when the screw cap is screwed therein. Spaced upwardly from the teeth there is provided a cam-

ming flange 130 adapted to interlock with the interlocking shoulder 131 of the screw cap 124.

In this modified form of the invention the arrangement is in all respects the same as above described in connection with Figs. 1 to 4, inclusive, in that the spout 118 and closure member 119 are assembled by screwing the cap thereon and placing the retainer ring thereabout. The unit is then inserted through the opening in the can and sealed in crimped position as shown in Fig. 5, whereby the contents will be hermetically sealed against tampering.

To place the can in use for dispensing the liquid when the membrane 127 is severed, the cap is pulled upwardly carrying with it the spout until the interlocking shoulders 130, 131 are engaged as well as the intermeshing teeth 123, 129; the interlocking shoulders retaining the spout in its projected position for pouring. The cap may be readily unscrewed and screwed back in place in the usual manner while the spout is held against rotation by the teeth. For storage or packing purposes the spout may be retracted by forcible disengagement of said interlocking shoulders.

From the above it will be observed that one of the advantages of this invention lies in the fact that the spout may be pulled out into pouring position or pushed back into retracted position without touching it. The spout is projected and retracted solely by gripping the closure plug or cap and thereby grasping an oily or liquid coated spout, as in the usual structures, as avoided. Manipulation of the spout by the plug or cap is made possible due to the fact that the interlocking of the shoulders between the plug and spout is stronger than the camming and interlocking action between the lower end of the spout and the flange. Thus, the interlock between the spout and the flange may be made or released without disturbing the effectiveness of the interlock between the upper end of the spout and the closure plug.

The invention claimed is:

1. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, and a tubular pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position upon said diaphragm being severed.

2. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, a tubular pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position upon said diaphragm being severed, and means for removably securing said plug to the projected end of said spout as a closure therefor.

3. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, and a tubu-

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lar pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position with said plug as a removable closure therefor upon said diaphragm being severed.

4. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, a tubular pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position upon said diaphragm being severed, and disengageable interlocking elements on the projected end portion of said spout and on said plug for permitting said spout to be slidably projected by said plug and said plug removably secured thereto as a closure therefor.

5. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, a tubular pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position upon said diaphragm being severed, and disengageable interlocking elements on the inner portion of said spout and on said sealing flange respectively for interengagement upon said spout being projected into pouring position whereby said spout will be held in its projected position subject to forcible retraction.

6. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member having a closure plug and an outer sealing flange adapted to embrace said neck, said flange surrounding said closure plug and integrally connected therewith through an annular and severable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, a tubular pull spout adapted to be suspended by said sealing flange at one end to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its opposite end to project outwardly from said container in pouring position upon said diaphragm being severed, disengageable interlocking elements on the projected end portion of said spout and on said plug for permitting said spout to be slidably projected by said plug and said plug removably secured thereto as a closure therefor, and disengageable interlocking elements on the inner portion of said spout and on said sealing flange respectively for interengagement upon said spout being projected into pouring position whereby said spout will be held in its projected position subject to forcible retraction.

7. A pull spout closure unit for a container having an opening surrounded by an upstanding neck, comprising a closure member of yielding compressible material having an outer sealing flange formed integrally therewith adapted to embrace said neck, said member including a closure plug of said material integral with and connected to said sealing flange through a severable diaphragm,

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means for engaging and clamping said sealing flange about said neck to provide a permanent seal therebetween, a tubular spout of said compressible flexible material adapted to be suspended at one end by said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange to projected pouring position upon said diaphragm being severed, a projection on the inner end of said spout to limit its sliding movement to projected position, and disengageable interlocking elements on the outer pouring end of said spout and plug respectively to provide a pull and closure for said spout when in projected position and permit forcible removal of said plug for pouring.

8. A pull spout closure unit for a container having an opening therein, including a sealing flange, means for securing said sealing flange about said opening, a closure plug integral with said sealing flange severable therefrom about its periphery, a tubular spout adapted to be suspended within said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange to projected bearing position upon said closure plug being severed from said sealing flange, a projection on the inner end of said spout for limiting its outer projected position, and disengageable interlocking shoulders on the outer end of said spout and said closure plug respectively to permit said spout to be drawn to projected position by said plug, removal and replacement of said plug therein when in projected pouring position.

9. A pull spout closure unit for a container having an opening therein, including a sealing flange, means for securing said sealing flange about said opening, an inner lock shoulder formed on said flange extending into said opening, a closure plug integral with said sealing flange severable therefrom about its periphery, a tubular spout adapted to be suspended within said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its inner end to projected bearing position upon said closure plug being severed from said sealing flange, a projection formed on the inner end of said spout for limiting its projection to pouring position, and a camming lock shoulder in adjacent spaced relation therewith for interengagement with the lock shoulder on said sealing flange for removably sustaining said spout in its extended pouring position while permitting forcible retraction thereof.

10. A pull spout closure unit for a container having an opening therein, including a sealing flange, means for securing said sealing flange about said opening, a closure plug integral with said sealing flange severable therefrom about its periphery, a tubular spout adapted to be suspended within said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its inner end to projected pouring position upon said closure plug being severed from said sealing flange, a lateral projection on the lower end of said spout for limiting its sliding movement to projected position, and means for preventing relative rotation between said spout and sealing flange, said closure plug having threaded engagement with the outer pouring end of said spout.

11. A pull spout closure unit for a container having an opening therein, including a sealing flange, means for securing said sealing flange about said opening, a closure plug integral with said sealing flange severable therefrom about its periphery, a tubular spout adapted to be suspended within said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its inner end to projected pouring position upon said closure plug being severed from said sealing flange, an annular series of locking teeth formed about the lower portion of said sealing flange, and an annular series of teeth formed about the lower end of said spout for inter-

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engagement with said flange teeth upon said spout being projected to pouring position for preventing relative rotation therebetween, said closure plug and spout having interengaging screw threads therebetween.

12. A pull spout closure unit for a container having an opening therein, including a sealing flange, means for securing said sealing flange about said opening, an inner lock shoulder formed on said flange extending into said opening, a closure plug integral with said sealing flange severable therefrom about its periphery, a tubular spout adapted to be suspended within said sealing flange to extend into the container when in retracted position and slidable through said opening into sealing engagement with said sealing flange at its inner end to projected pouring position upon said closure plug being severed from said sealing flange, an annular series of locking teeth formed about the lower portion of said seal-

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ing flange, an annular series of teeth formed about the lower end of said spout for interengagement with said flange teeth upon said spout being projected to pouring position for preventing relative rotation therebetween, a camming lock shoulder positioned adjacent to and in spaced relation with the teeth on said spout for removable interengagement with the lock shoulder on said sealing flange to retain said spout in extended position while permitting forcible retraction thereof, and screw thread connections between said closure plug and the pouring end of said spout.

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