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 upward standing 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 can, in which the cans are shipped. Due to this upward standing spout projection the sealing flaps of the can 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 can 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 can add to its cost due to the increase of material necessary therefor. Furthermore, in such metal spouts for 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 upward projection and consequently no necessity of having a corresponding upstanding handle to provide a flap supporting surface in sealing a can thereover. This effect a saving in respect to attaching a handle to the can, as well as effecting a saving in the material of the can.

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 containing 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.
the retainer ring 29 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 invention 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 therewith, a knife or similar implement is applied to the membrane 27 which severes 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 thereafter becomes interlocked therewith against the stop flange 30. The spout is then secured and held in its extended pouring position. To return upon 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 surrounding 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 119 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 camming 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 119 and closure member 123 are assembled by screwing the cap thereto 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 member 119 is several the spout is put 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 seizable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, and a tubular pull said 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 a position opposite such 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.

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 seizable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, and a tubular pull said 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 seizable diaphragm, a retainer ring adapted to surround and clamp said flange in permanent sealing relation with said neck, and a tubu-
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 therefore 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 separable 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 slidable projected by said plug and said plug removably secured thereto as a closure therefore.

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 separable 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 separable 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 projected by said plug and said plug removably secured thereto as a closure therefore, 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 separable diaphragm, means for engaging and clamping said sealing flange about said neck to provide a permanent seal therebetween, a tubular plug 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 projection on the inner end of said spout to limit 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 pull 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 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 suspending 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 pull 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 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 thread engaged 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 pull 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-
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 slideable 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, 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.

References Cited in the file of this patent

UNITED STATES PATENTS

211,783 Quigley ------------ Jan. 28, 1879
1,947,915 Marschall --------- Feb. 20, 1934