Feb. 14, 1939. F. FUREDY 2,147,289

SPOUT UNIT FOR CONTAINERS

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Fig. 1.

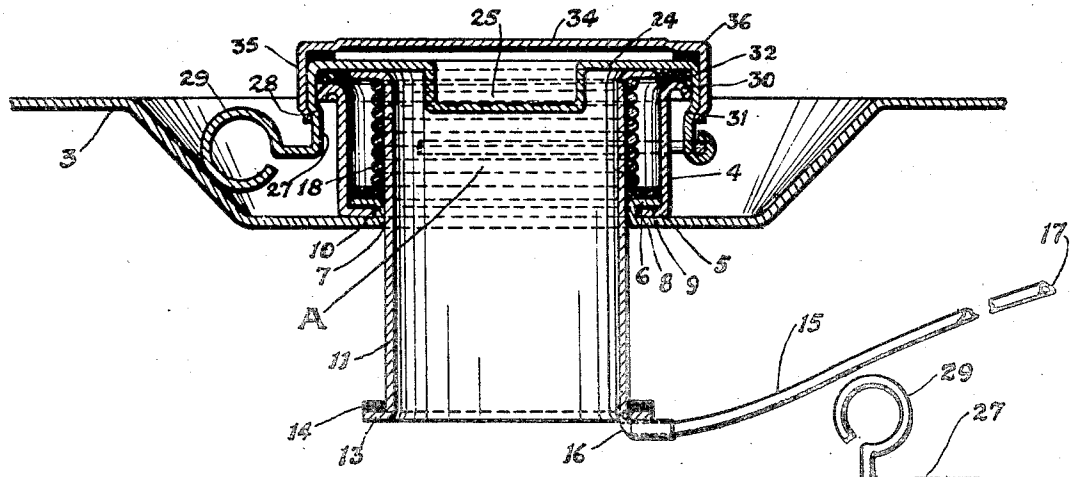


Fig. 2.

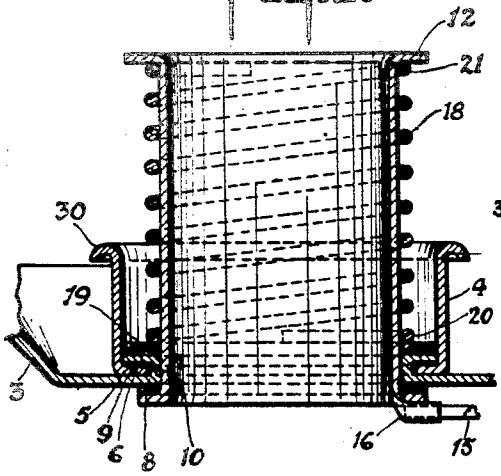


Fig. 3.

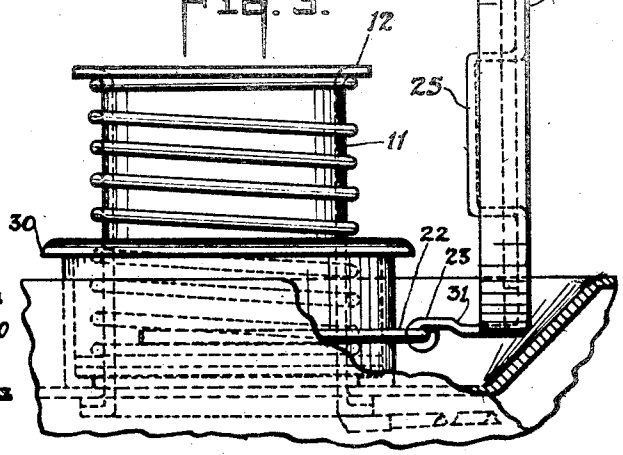
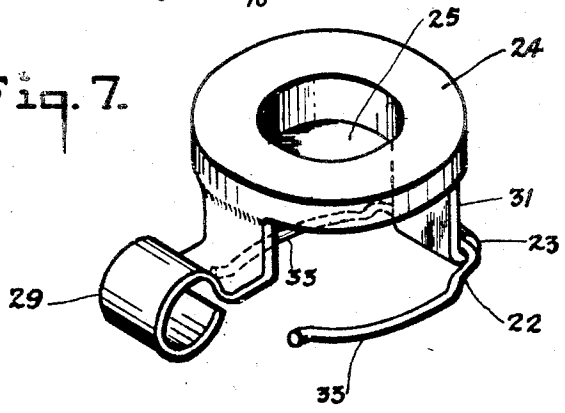


Fig. 7.



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Fig. 4.

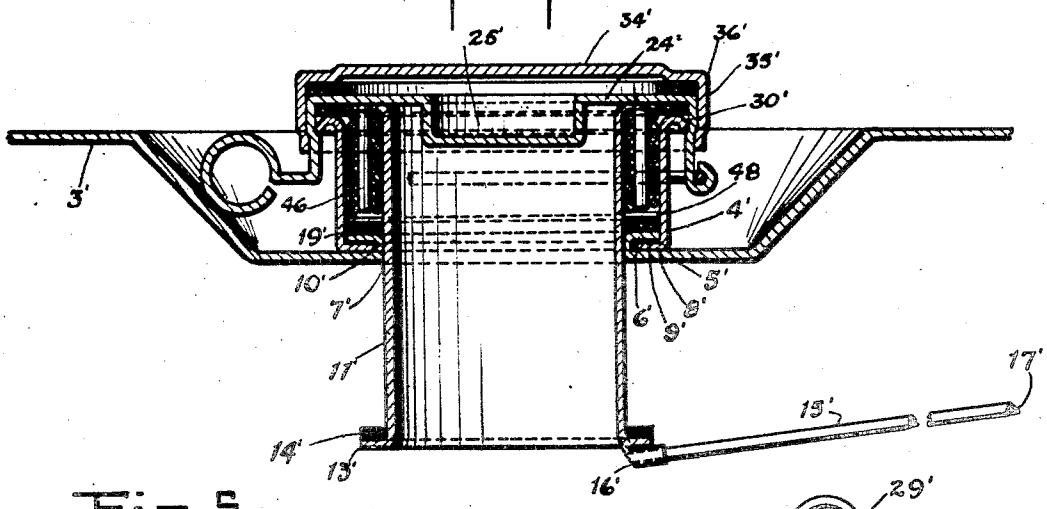


Fig. 5.

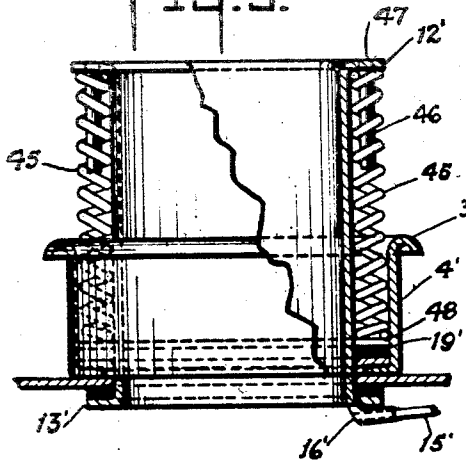


Fig. 6.

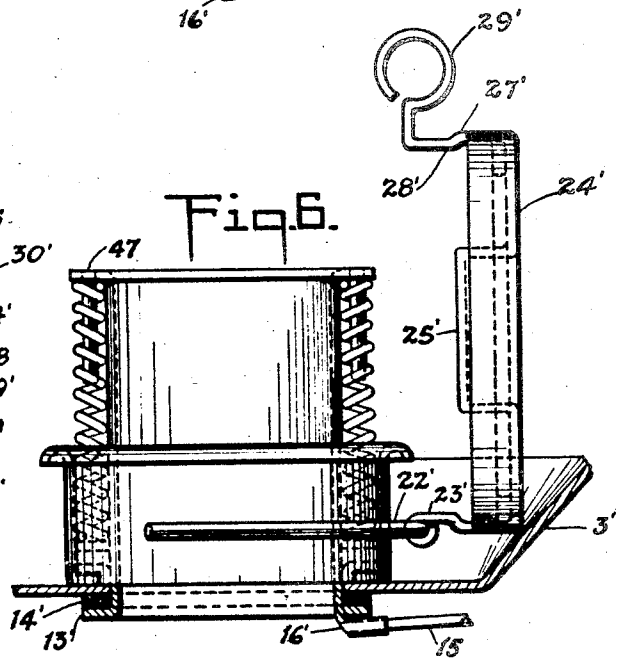


Fig. 8.

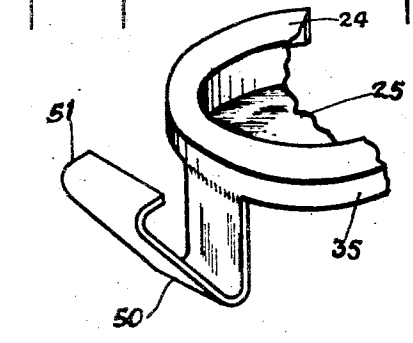
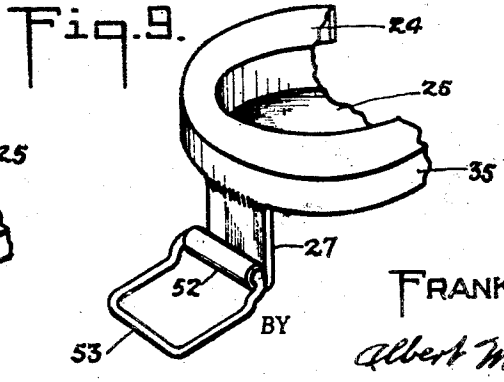


Fig. 9.



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UNITED STATES PATENT OFFICE

2,147,289

SPOUT UNIT FOR CONTAINERS

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Application March 1, 1937, Serial No. 128,365

17 Claims. (Cl. 221—27)

This invention relates to pouring spout units for containers and has to do more particularly with units of this character which provide for supporting a spout in extended and retracted positions.

An object of this invention is to provide a simple and inexpensive unit which can be readily attached to a container and which includes a pouring spout and means to urge the same into operative position.

Another object of the invention is to provide a unit of the foregoing character with wiping means to prevent leakage about the spout member during its travel.

Still another object of the invention is to relate the means for urging the spout into operative position to the wiping means in such a manner that efficient operation of the wiping means is always assured by the action of the urging means.

A further object of the invention resides in the provision of a leak-proof, detachable snap cap which will hold the spout in retracted position, and will not interfere with the installation of a seal cap over the end of the unit.

Other objects will in part be obvious and in part appear hereinafter.

Pail spout units as heretofore employed have been subject to various drawbacks which it is the purpose of this invention to overcome. In the majority of such units heretofore employed wherein the spout member was retractable, the same had to be fished out with the fingers, had no means for holding it in operative position, and though inclined to be complicated in construction was not particularly rigid. In the types of units applying spring means to urge the spout into operative position, simplicity and economy have been sacrificed whenever an attempt has been made to include rigidity and the prevention of leakage in the same structure. Another fault of this type has been that complete drainage of the container contents was precluded.

The instant invention, on the other hand, overcomes the disadvantages heretofore prevalent by providing a simple, complete unit the spout of which permits proper drainage and which can be secured to a container by a simple die pressing operation. This unit in its preferred form has a single spring, both for urging the spout into operative position and maintaining the wiper gasket in proper location, which spring holds the spout in its operative position. Furthermore, a simple but effective snap cap is employed which permits the use of the customary seal cap during shipment, and will, in and of itself, provide adequate coverage for the spout unit once the seal cap has been removed and intermittent use is made of the contents of the container.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description of the embodiments shown in the accompanying drawings in which:

Fig. 1 is a vertical cross section of a spout unit in accordance with the invention showing the unit secured to a container head and with the spout sealed in retracted position;

Fig. 2 is a view on the same section as Fig. 1 showing the spout in extended operative position;

Fig. 3 is an elevation with parts of the head stock broken away to show the manner in which the snap cap is mounted in place;

Fig. 4 is a view similar to Fig. 1 but showing a modified form of the invention;

Fig. 5 is an elevation partly in section showing the spout of Fig. 4 in extended operative position;

Fig. 6 is an elevation with the head stock and parts of the unit below it in section showing the mounting of the snap cap;

Fig. 7 shows the snap cap employed in this invention in perspective; and

Figs. 8 and 9 are perspective fragments of the cap of Fig. 7 showing modified forms of finger grips for the cap.

In Figs. 1 to 3 of the drawings there is shown at 3 a portion of the head of a container which may be a drum, a five gallon pail, or the like, normally used for the storing of gasoline, oil or some other liquid, portions of which are dispensed from time to time. Mounted in a depression in head 3 is a spout unit generally indicated at A. This unit is provided with a mounting and supporting collar 4 provided at its bottom with an inwardly extending flange 5 around which is folded a reverse flange 6 struck up from the stock of head 3 around the edge of aperture 7 formed therein. Flange 5 being pressed between flange 6 and the opposing portion 8 of drum stock 3 is held in place thereby and provides a rigid support for collar 4 which forms part of and carries the spout unit. A gasket 9 interposed between flanges 5 and 6 assures against leakage at this joint.

Mounted to slide with no more clearance than is necessary between its surface and the facing 10 of aperture 7 is spout 11. The top end of this spout is flanged outward at 12, while the bottom or inner end is flanged outward at 13 and supports a gasket 14 which aids in the prevention of leakage by engaging the undersurface of portion 8

when the spout is in extended position. Supported on the lower side of flange 13 in any desired manner is a vent pipe 15. This pipe as shown is triangular in cross section for economy of construction but, of course, may be of any desired shape. The lower end of this pipe at 16 is in open communication with the bore of spout 11, while the extension of the pipe angularly upward from point 16 assures that the upper end 17 will be above the level of the liquid in the container while pouring is taking place.

Surrounding spout 11 is a coil spring 18 which is shown in Fig. 1 as compressed between the underside of flange 12 and a gasket 19. Said gasket 19 is seated upon the upper face of flange 6 and surrounds spout 11 in the form of an annulus which occupies the space between the inner surface of collar 4 and the outer surface of spout 11. This gasket 19 is in wiping contact with the outer wall of spout 11. Spring 18, as shown in Figs. 1 to 3, has its end coils 20 and 21 bent into substantially horizontal planes whereby it will tend to move spout 11 in a straight line path rather than produce a tilting action which might occur were the ends of the spring not engaging all around flange 12 and gasket 19. Spring 18, as shown in Fig. 2, is always compressed to some extent so has its ends always in contact with the undersurface of flange 12 and the uppersurface of gasket 19 even when the spout is in its extended operative position. Thus it will be obvious that the bottom coil 20 of the spring will tend to retain gasket 19 seated upon the upper surface of flange 6 and in wiping relation to spout 11, while the upper horizontal coil 21 of spring 18 in its engagement with the under surface of flange 12 will tend to prevent tilting of the spout even should the container be rested on the spout while pouring is taking place.

Pivotally mounted on collar 4 by means of a resilient clip 22 and a return bent tab 23 which surrounds the clip 22 is a snap cap 24. This cap is in the form of a disc with a depressed center 25 and with a dependent collar 26 therearound. Opposite tab 23 and extending down parallel thereto is retaining tab 27 which is inset slightly along its length to provide a shoulder 28 for purposes which will appear hereinafter. At its lower end tab 27 is bent outwardly and formed to provide a finger engaging ring 29. The upper end of collar 4 is curled outwardly as shown at 30 forming a seat whose diameter is substantially that of the inner surface of depending collar 26 of cap 24.

As shown in Fig. 1 shoulder 28 on tab 27 and a similar shoulder 31 on tab 23 extend inwardly under seat 30 when the snap cap 24 is in closed position. Tab 27 is rigid enough to hold the cap in closed position against the action of spring 18 tending to force the spout up, but will yield to a moderate lifting action to allow the cap to be opened and the spout to be projected upwardly. An annular gasket 32 carried by cap 24, around inside the collar 26 thereof, engages the top of curled-over seat 30 and, on its inner side, engages the outer peripheral edge of flange 12 thereby providing double security against leakage. Resilient clip 22, as best shown in Fig. 7, is formed of a piece of relatively rigid spring wire having legs 33 which are bent to embrace collar 4, but which fall short of completing a circle, so that the clip may be snapped onto or removed from the collar at any desired time. While this snap cap has been shown to be of particular advantage as an element of the spout unit of this invention it is obvious that it would find ready application as a closure for any opening provided with a neck and a seat for the cap gasket.

To secure the contents of the container against tampering while the same is in transit and until the purchaser is ready to use such contents, there is employed a seal cap 34. This may be of the type disclosed in U. S. Patent No. 1,982,145, issued to John W. Shera, or may be of any other desired type which will fit the situation. Said seal cap has a depending flange 35 which is crimped around and under seat 30, while a gasket 36 is carried by a depressed portion around the head of the seal cap and engages around the outer edge of the top of snap cap 24 to act as another guard against leakage. If score lines are provided across the top of the seal cap as is customary in this type, the cap may be punctured along such lines without damage to snap cap 24 by the puncturing implement since sufficient leeway is allowed by depression 25 in snap cap 24. This depressed portion, as shown in Fig. 1, seats in the mouth of spout 11.

When the user receives a container equipped with a spout of this character, the first thing he must do is puncture the seal cap 34 on one or more of the score lines thereof and remove such cap by tearing along the score lines. Then, all he need do is to grasp ring 29 giving the same a slight outward pull to disengage shoulder 28 from seat 30, whence the snap cap 24 can be swung on its pivot to the position illustrated in Fig. 3. As soon as spout 11 is released it is obvious that it will spring to the operative position as shown in Figs. 2 and 3 and will be held there somewhat firmly since spring 18 is still acting on it through horizontal end coils 20 and 21.

Thus, even though the spout be rested on something while the contents of the container are poured therethrough, the spout will tend to maintain its proper position. As the container is to be tilted away from the direction of extension of vent pipe 15, sufficient air will enter the side of the spout adjacent the end 16 of pipe 15 to allow a current of air to run through pipe 15 and be emitted at upper end 17 to substantially prevent pulsations in the pouring action. This is due to the fact that containers of this type when filled normally have an air space equal to about 4% of their cubic capacity above the fluid therein. When the user has dispensed all of the contents desired at one time he may retract the spout against the action of the spring 18 and again close the container by swinging cap 24 to its closed position wherein shoulder 28 snaps over seat 30. When this has been done the container may be moved from place to place without any spilling due to careless handling since gaskets 19 and 32 provide a safe lock against leakage.

A slightly modified form of the invention is shown in Figs. 4 to 6 where parts similar to those in Figs. 1 to 4 are designated by the same reference characters with primes affixed thereto. In this modification head 3' is provided with a mounting and supporting collar 4' whose inwardly extending flange 5' is engaged between reverse flange 6' and portion 8' of the head stock. A gasket 9' lies between 5' and 6' the same as in the form of Fig. 1. Likewise a spout 11' slides through an aperture 7' past surface 10' and has at its ends flanges 12' and 13'. The latter carries gasket 14' and vent pipe 15' with lower and upper end openings 16' and 17'.

Instead of the single spring completely embracing the spout, as in the form of Fig. 1, two

or more individual springs 45 are employed at equally spaced points about the periphery of spout 11'. Guide pins 46 are secured to flange 12' in any desired manner are provided to keep the springs 45 in alignment. The manner illustrated for securing these guide pins in place, as shown in Fig. 5, is by pressing the upper ends 47 thereof into apertures in flange 12'. As shown in Fig. 4, guide pins 46 stop short of engagement with a washer 48 formed of rigid material which rests upon the top of gasket 19', while springs 45, fully compressed when the spout is retracted, are received in the annular channel between the inner wall of collar 4' and the outer wall of spout 11'.

From the showing of Fig. 5, it is seen that even in the extended position of the spout, springs 45 engage both the underside of flange 12', where they surround guide pins 46, and the upper side of washer 48. In doing this they retain the spout in extended operative position with substantial rigidity. Washer 48, engaged by the lower ends of springs 45, surrounds the spout and distributes the downward pressure of springs 45 around the circumference of wiping gasket 19', so that the same cannot at any point ride up with the spout.

The snap cap 24' with its depressed center 25', its tabs 23' and 27', its shoulder 28' and its resilient clip 22' is in all respects the same as the cap employed in the form of Figs. 1 to 3. Likewise the finger ring 29' and the sealing cap 34' are the same in both forms. Hence depending flange 35' and gasket 36' of the sealing cap are the same throughout. These latter engage curled end 30' the same as in the embodiment of Figs. 1–3.

The operation of the form shown in Figs. 4–6 is the same as that in the form of Figs. 1–3, so that repetition of the same is not necessary. As pointed out above even the horizontally distributed thrust provided by the flattened end coils 20 and 21 of spring 18 is provided for in the form of Figs. 4–6 by means of flange 12' and washer 48.

Figs. 8 and 9 show slight modifications of the finger grip feature of the snap cap. In Fig. 8 the retaining tab 27 is bent up against itself at 50 and hooked over inwardly to form a ledge 51 which is readily engageable by the fingers. In the form shown in Fig. 9 the end of tab 27 is rolled upon itself as shown at 52 and retains in the roll a wire loop 53 which can be readily grasped when it is desired to open the cap.

It can be seen from the above that the invention provides a leakproof spout which is fully automatic in operation and fool proof. Furthermore it obviates the necessity of groping with the fingers to find the spout and extend it to operative position. In combining with this the particular type of snap cap employed, which not only holds the spout in closed position and prevents leakage but also allows the use of a tamper-proof seal, the invention provides a most effective and advantageous construction.

The herein disclosed embodiments are merely illustrative of the manner in which the invention can be put into practice so are not to be interpreted in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a spout unit for containers, a spout member forming part of said unit and slidably mounted therein for movement into extended or retracted position, and means for urging said spout member into fully extended position, said means operating throughout substantially the entire length of the member.

2. In a spout unit for receptacles, a retractible spout member, means for preventing leakage about said spout member, and means for simultaneously projecting said spout member into fully operative position and retaining said leakage preventing means in effective position during said projecting.

3. In a spout unit for containers, a spout member forming part of said unit and slidably mounted therein for movement into extended or retracted position, and means operating throughout substantially the entire length of said member for supporting the same against tilting laterally when it is in extended position.

4. In a spout construction, a spout member mounted for sliding movement into extended and retracted position, means for urging said spout member into extended position and vent means operably associated with said spout member in all positions of its movement.

5. In a spout unit for containers, means for mounting said unit on a container, a spout member carried by said mounting means and slidable with respect thereto and means surrounding said spout member and operable throughout the length thereof for urging said spout member into operative position and supporting it in said position.

6. In a spout unit for containers, means for mounting said unit on a container, a spout member carried by said mounting means and slidable with respect thereto and means for urging said spout member into fully operative position and supporting it in said position, said means engaging a portion of said spout member on one end and engaging leakage preventing means on the other end to retain the same in leakage preventing position.

7. In a spout unit for containers, means for mounting said unit on a container, a spout member carried by said mounting means and slidable with respect thereto, means surrounding said spout member for urging the same into fully operative position and vent means carried by one end of said spout member.

8. In a spout unit for containers, means for mounting said unit on a container, a spout member carried by said mounting means and slidable with respect thereto and means acting at spaced points about said spout for urging the same to operative position.

9. In a retractible spout device, a conduit member forming a spout, means for mounting said spout slidably with respect to a container and separate spring means for urging said spout to operative position.

10. In a retractible spout device, a conduit member forming a spout, means for mounting said spout slidably with respect to a container and separate spring means operating at spaced positions about said spout for urging said spout to operative position.

11. In a spout unit for containers, a spout, spring means about said spout, a gasket retained in place by one end of said spring means, said gasket surrounding said spout and engaging thereagainst, and a lip on said spout for engaging the other end of said spring means, said gasket being retained in place by said spring means in all positions of said spout whereby leakage around said spout is prevented.

12. A spout unit for containers comprising concentric spout and mounting members forming an annular channel therebetween, a gasket supported in the bottom of said channel and arranged in

wiping relationship to said spout member, a lip on the upper end of said spout member partially closing said channel when said spout member is in retracted position and means in said channel engaging said gasket and said lip for retaining said gasket in position and for urging said spout member to extended position.

13. In combination, a retractible spout, means for mounting the spout in a wall of a container, means tending to move said spout into extended position, a readily openable cap for holding said spout in retracted position pivotally mounted on said mounting means and co-mating means on said cap and mounting means for releasably retaining said cap in closed position.

14. In combination a retractible spout, means for mounting the spout in a wall of a container, a readily openable cap for holding said spout in retracted position pivotally mounted on said mounting means, co-mating means on said cap and mounting means for releasably retaining said cap in closed position, and a seal cap secured on said mounting means over said openable cap to lock the same in closed position and provide a seal for the mounting.

15. A readily installed cap for receptacles comprising a disc like member, tabs extending laterally from said disc like member, a resilient mounting member pivoted to one of said tabs and another of said tabs being provided with means for releasably retaining said cap in closed position.

16. A readily installed cap for receptacles comprising a disc like member having a depressed center portion, tabs extending laterally from the periphery of said member, means associated with one of said tabs for removably and pivotally mounting said cap on a receptacle and means on another of said tabs for releasably holding said cap in closed position.

17. A readily installed cap for receptacles having an opening in the form of a neck, comprising a disc like element having a lateral flange thereabout, tabs extending from said flange at spaced points, one of said tabs carrying means for detachably and pivotally mounting said cap about said neck and another of said tabs having means for releasably retaining said cap in closed position.

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