The invention relates to the manufacture of closures of the general type disclosed in my U. S. application Serial No. 719,961, filed April 10, 1934, and while closures of this type embody a lever- and-toggle-action snap disk, the present invention relates only to formation of a closure disk to fit under the snap disk and to a flanged retaining ring for the two disks. For this reason, it will be obvious that the same method may be practiced in forming closures which do not include a snap disk but do embody a flanged retaining ring therefor.

The object of the invention is to provide a novel method whereby the closure disk and the retaining ring therefor may both be formed from a single piece of sheet metal, without waste. With the above object in view, the invention resides in the novel method hereinafter described and claimed and shown in the accompanying drawing.

Fig. 1 is a sectional view showing a cap stamped from thin sheet metal and embodying a top and a side wall, the formation of this cap being the first step in forming the closure disk and flanged retaining ring from a circular piece of sheet metal.

Fig. 2 is a vertical sectional view showing the top cut from the side wall of the cap so that said cut-out top constitutes the desired closure disk.

Fig. 3 is a sectional view illustrating the portion of the cap which was previously joined to the closure disk, bent inwardly to provide a flange and showing the cap side wall threaded, so that this threaded side wall and its flange constitutes the desired retaining ring.

Fig. 4 is a sectional view showing a complete closure secured upon a container such as a fruit jar.

The first step in practicing the method upon a circular piece of thin sheet metal to provide the desired closure disk and flanged retaining ring, is to press a cup from the metal as shown in Fig. 1, said cup having a top 5 and a continuous side wall 7. Preferably, at the same operation with forming the cup, the top 5 is given the shape which is to be imparted to the completed closure disk, and the portion of the side wall 7 which joins the top 5, is slightly reduced in diameter by tapering it as shown at 8. In the present disclosure, the top 5 is given a shallow upwardly flared form as shown at 9 throughout the greater part of its area, is formed with a bead 10 near and concentric with its peripheral edge, and declines to said peripheral edge from said bead, as shown at 11. The line of juncture between the inclined top portion 11 and the side wall 7, is given the reference character 12 for reference hereinafter. The central portion of the top 5 is, in the present showing, provided with a depressed portion 13.

After forming the cap 5, its top 6 is cut out to provide the desired closure disk, and in the present showing, the cutting is done along the line 12 where the top 8 joins the reduced portion 5 of the side wall 7.

After cutting out the top 8 of the cap, the portion of the cap which was previously joined to said top, is bent inwardly to provide a flange 14. In the present showing, this flange is formed by 15 inwardly bending the reduced tapered portion 8 of the side wall 7. The side wall 7 and the flange 14 thereof constitute the flanged retaining ring for the disk 6 and in the present instance, this retaining ring also holds a snap disk 16 in place (Fig. 4).

Either before or after forming the flange 14, the side wall 7 is pressed to provide it with screw threads 16 for attaching purposes, if the closure is to be used upon a threaded fastener such as 23 an ordinary fruit jar 17.

By forming the closure disk and the flanged retaining ring in the manner herein disclosed, there is no waste of material whatever, so that inexpensive manufacture is greatly facilitated.

In Fig. 4, a sealing ring 18 of rubber or other desired material is shown resting upon the neck of the jar or other container 17, the peripheral portion of the closure disk 6 rests upon this sealing ring, the snap disk 15 rests upon the bead 10 of the closure disk 6, and the flange 14 lies upon the peripheral portion of said snap disk 15. When a suitable tool is inserted through the opening 15 in the snap disk 15, and allowed to fulfill upon the depressed portion 13 of the closure disk 6, said snap disk may be pivoted upwardly slightly past dead center, whereupon it will quickly snap upwardly to a released position, allowing easy unthreading of the retaining ring from the container. In applying the closure, the retaining ring is threaded upon the container with the snap disk 18 in its upwardly snapped released position. Then, this snap disk is downwardly snapped so that it fulfills against the flange 14 and pushes downwardly upon the bead 10, causing intense compression of the sealing ring 18 against the closure neck to form a tight seal. Due to the thin nature of the closure disk 6, it may readily adapt itself to any imperfections in the neck of the container.
If so desired, the closure disk 6 could of course be shaped differently than herein shown and the snap disk 18 could be omitted, whereupon the flange 14 would lie directly upon the closure disk to hold it in position. This modification in construction is not considered a part of the present invention, nor is the structure shown in Fig. 4, but it is mentioned only to show that the method herein claimed is not restricted to use in producing the exact construction shown.

I claim:

1. A method of making a sheet metal closure and a flanged retaining ring therefor, comprising the steps of pressing out a cap having a continuous side wall and a top and inclining the upper portion of said side wall inwardly to its line of juncture with said top, cutting the top from the side wall along said line of juncture to provide a closure receivable within the confines of said wall, inwardly bending the previously inclined portion of said wall forming a flange to overlie

the closure and threading said wall to provide the desired flanged retaining ring.

2. A method of making a sheet metal closure and a flanged retaining ring therefor, comprising the steps of pressing out a cap having a top and a continuous side wall, inclining the upper portion of said side wall inwardly to its line of juncture with said top, giving said top a shallow upwardly flared form from its central portion to a line spaced inwardly from and concentric with said line of juncture and outwardly and downwardly slanting the portion of the top between said lines, cutting said top from said side wall along said line of juncture to provide a closure receivable within the confines of said side wall, inwardly bending the previously inclined wall portion providing a flange to overlie the closure and threading said wall to provide the desired flanged retaining ring.

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