

Aug. 30, 1966

H. S. RUEKBERG

3,269,588

PLASTIC OVERCAP

Filed Jan. 10, 1964

3 Sheets-Sheet 1

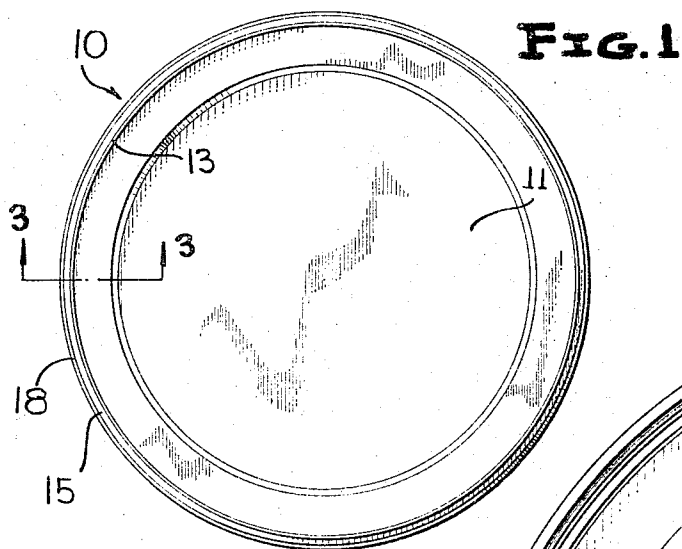


FIG. 2

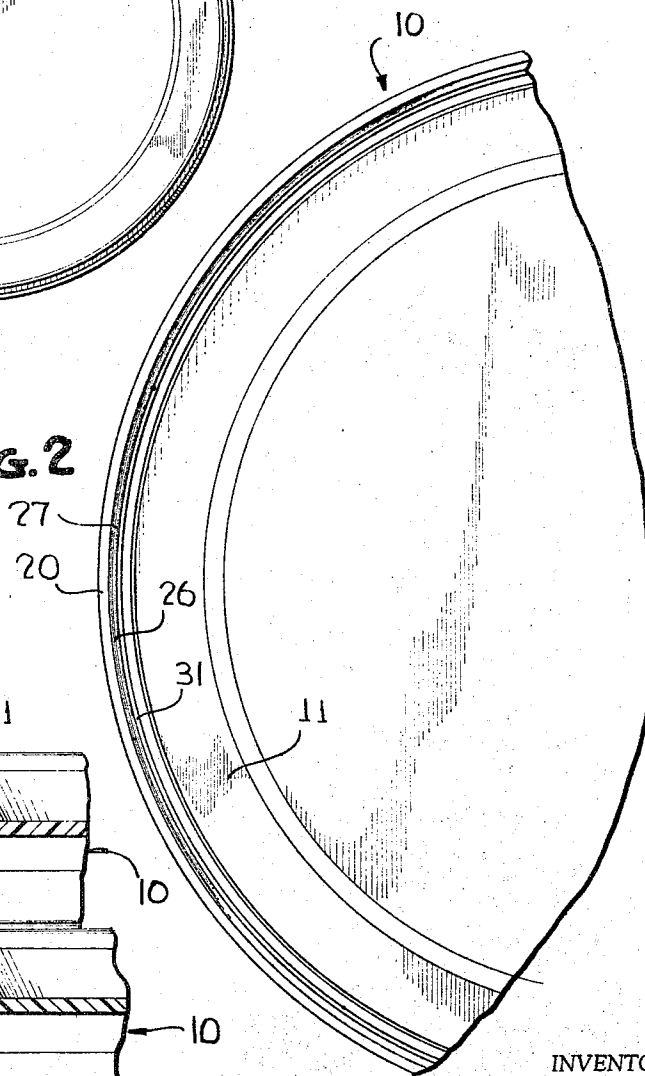
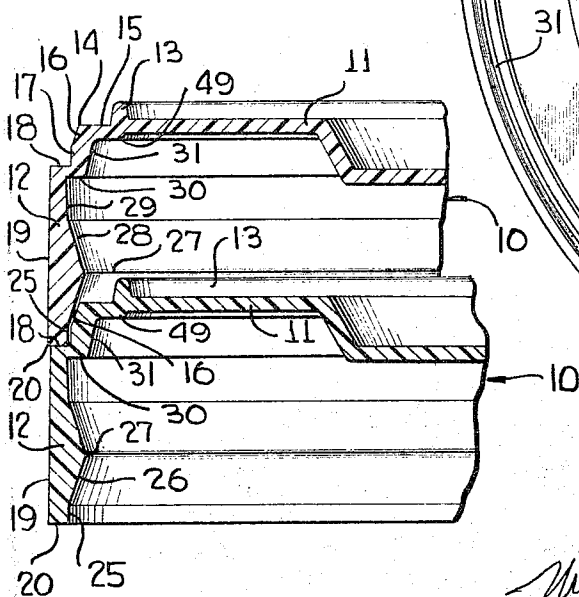


FIG. 3



INVENTOR
HERBERT S. RUEKBERG

BY
Mason, Porter, Diller & Stewart
ATTORNEYS

Aug. 30, 1966

H. S. RUEKBERG

3,269,588

PLASTIC OVERCAP

Filed Jan. 10, 1964

3 Sheets-Sheet 2

FIG. 5

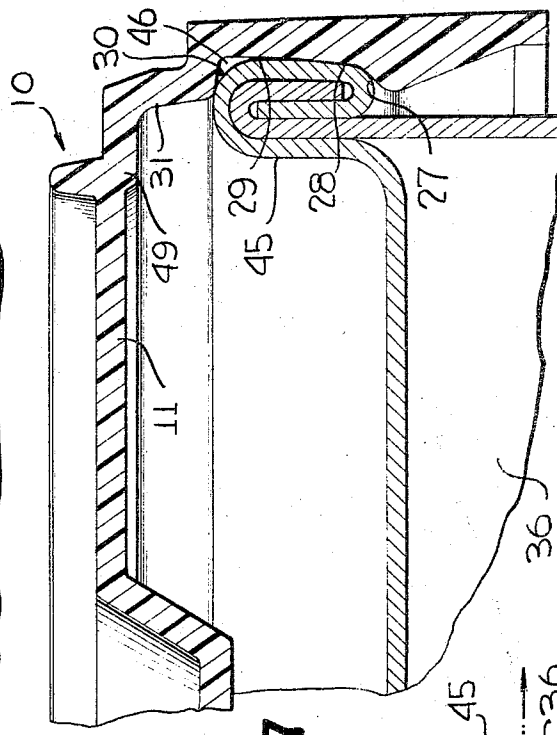
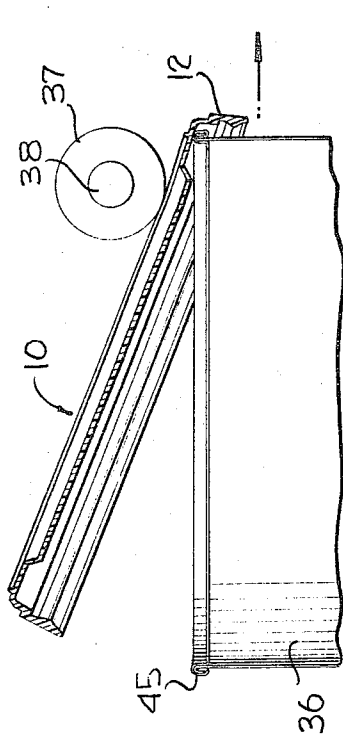


FIG. 4

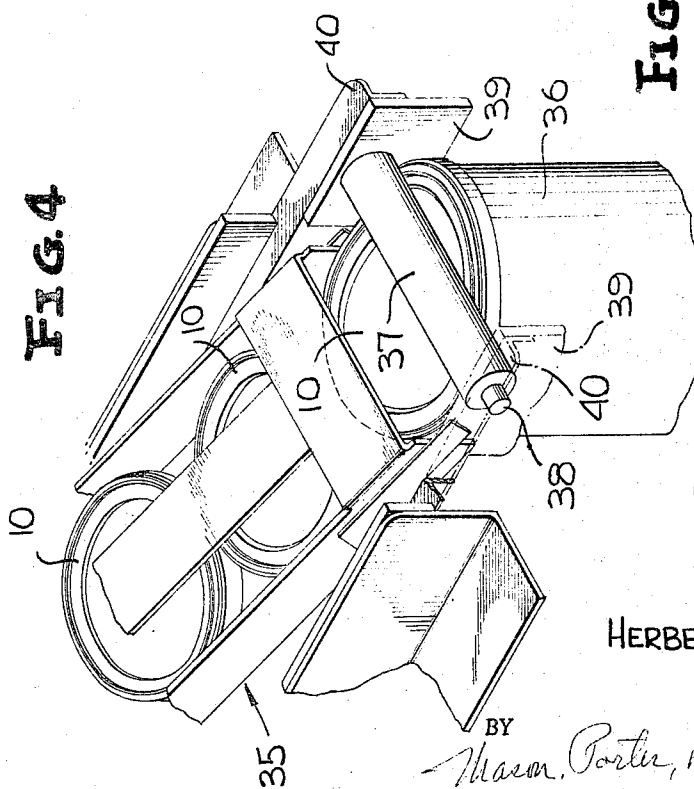
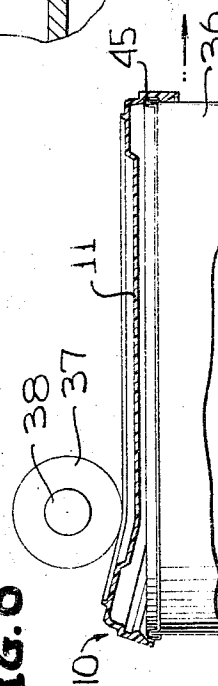


FIG. 7

FIG. 6



INVENTOR
HERBERT S. RUEKBERG

BY
Mason, Porter, Miller & Stewart
ATTORNEYS

Aug. 30, 1966

H. S. RUEKBERG

3,269,588

PLASTIC OVERCAP

Filed Jan. 10, 1964

3 Sheets-Sheet 3

FIG. 8

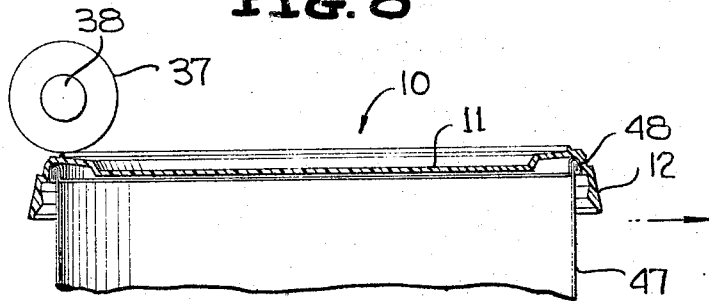


FIG. 9

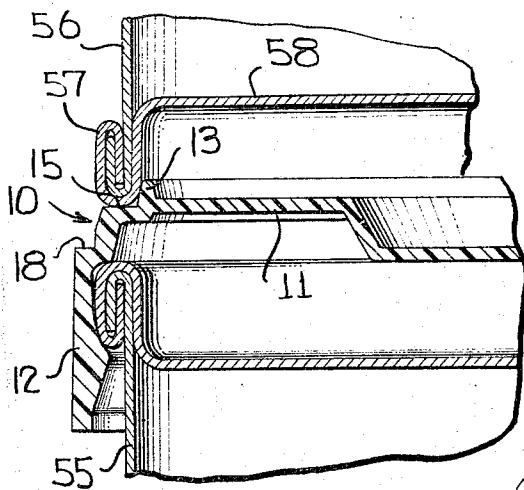
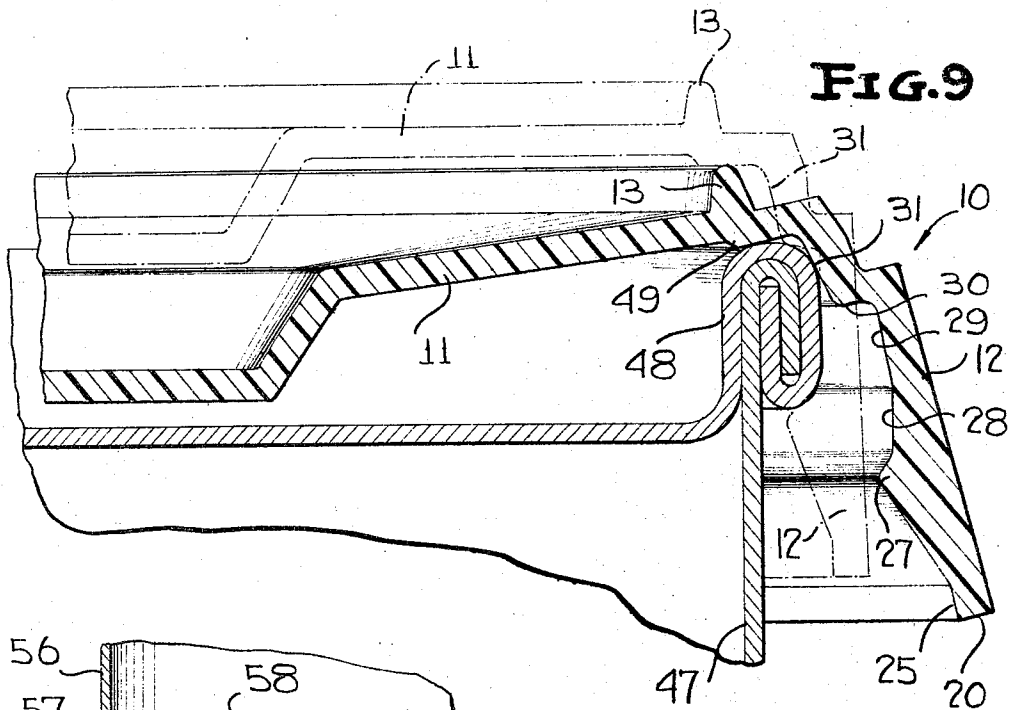


FIG. 10

INVENTOR
HERBERT S. RUEKBERG

BY
Wasm, Porter, Miller & Stewart
ATTORNEYS

1

3,269,588

PLASTIC OVERCAP

Herbert S. Ruckberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Filed Jan. 10, 1964, Ser. No. 337,029

8 Claims. (Cl. 220-60)

This invention relates to plastic overcaps for conventional containers and more particularly to a novel plastic overcap and a method of applying the overcaps to containers of varying height.

A recent innovation in the marketing of consumer commodities, such as ground coffee, is the feature of packaging the commodity in a conventional container or can of the type having the ends thereof secured by a conventional double seam, and providing such a package with a flexible plastic overcap for reclosing the container after the consumer has removed the end thereof with a conventional can opener. It is desirable that the plastic overcaps be applied to the containers or cans by using high speed capping machines; however, certain problems arise because of variations in container heights. Such variations in height exist because of manufacturing tolerances for the container body and because of variations in the placement of can ends during the usual double seaming operation. Consequently, some containers or cans are higher than normal, and some are lower than normal.

It is an object of this invention to provide a flexible plastic overcap which is particularly constructed for use with high speed capping machines and which automatically compensates for variations in the heights of the containers or cans.

Another object of this invention is to provide a flexible overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, the side wall portion being provided with an inner shoulder spaced from the end wall, and a tapered portion extending inwardly and upwardly from the inner shoulder.

Another object of this invention is to provide a flexible overcap, of the type described above, wherein the overcap is provided with a lower inner rib means extending inwardly from the side wall portion and spaced from the inner shoulder to define therewith a seam receiving concavity whereby a container seam is disposable between the lower inner rib means and the inner shoulder in spaced relation to the end wall.

Another object of this invention is to provide such a flexible overcap with an upwardly extending rib on the end wall thereof, which rib is spaced inwardly from the edge of the end wall to define a peripheral seat for receiving the peripheral edge of a superimposed container.

Another object of this invention is to provide such a flexible overcap which further includes a tapered lead-in portion extending downwardly and outwardly from the peripheral edge of the end wall, and an outwardly extending support shoulder to provide a seat for the lowermost edge of a nested overcap.

Another object of this invention is to provide a new and novel combination of a container and a flexible overcap, the container being of the type including a seam for joining the end of the container to the side wall thereof, the overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, the side wall portion being provided with an inner shoulder spaced from the end wall, a tapered portion extending inwardly and upwardly from the inner shoulder, the tapered portion extending circumferentially about the inner surface of the overcap and having a mean diameter slightly smaller than the diameter of the container, whereby the container

2

and overcap cooperate such that when the overcap is forced onto the container and the tapered portion is brought into engagement with the container seam, the resiliency of the flexible overcap causes the tapered portion thereof to automatically slide off of the container seam so that the inner shoulder properly seats on the container seam.

A further object of this invention is to provide such a combination of a container and a flexible overcap wherein the side wall portion of the overcap is further provided with lower inner rib means extending inwardly from the side wall portion and spaced from the inner shoulder to define a container seam receiving concavity whereby the container seam is snugly engaged between the lower inner rib means and the inner shoulder in spaced relation to the end wall.

A still further object of this invention is to provide a novel method of applying an overcap to an end portion of a container wherein the method comprises the steps of moving the container along a predetermined path, placing an overcap upon the end of the container, applying a force to seat the overcap beyond the normal seated position of the overcap and the container, and removing the force so that the overcap seats itself in its normal seated position.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claimed subject matter and the several views illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a plan view of a plurality of flexible plastic overcaps embodying the present invention.

FIGURE 2 is an enlarged fragmentary bottom view of the novel overcap.

FIGURE 3 is an enlarged fragmentary sectional view, taken on line 3-3 of FIGURE 1, and illustrates a pair of overcaps disposed in nested relation.

FIGURE 4 is a fragmentary perspective view of a high speed capping machine and illustrates a portion of the feed mechanism for feeding overcaps to a line of containers.

FIGURE 5 is a fragmentary vertical sectional view and illustrates a first position of an overcap and container and a fixedly mounted roller for applying the overcap to the container.

FIGURE 6 is a fragmentary vertical sectional view, similar to FIGURE 5, and illustrates the overcap and container just prior to the final positioning of the overcap on the container which has a less than normal height.

FIGURE 7 is an enlarged fragmentary vertical sectional view and illustrates the flexible overcap in its normally seated position in snug engagement with the double seam of the container.

FIGURE 8 is a fragmentary vertical sectional view, similar to FIGURE 6, and illustrates an overcap applied to a container having a higher than normal height.

FIGURE 9 is a greatly enlarged fragmentary vertical sectional view of the overcap and container illustrated in FIGURE 8 and shows the overcap pressed beyond its normal seated position prior to the overcap automatically snapping back to its normal seated position (as shown in dotted lines) after the overcap and container are displaced from the fixed roller.

FIG. 10 is an enlarged vertical sectional view showing an overcap in its normally seated position on a container, and illustrates a stacking feature embodied in the present invention wherein a second container is fixedly positioned and supported by the overcap.

Referring to the drawings in detail, there is illustrated

3

in FIGURE 1 a flexible plastic overcap, generally designated by the numeral 10, which overcap 10 is preferably molded and formed of a suitable plastic material such as polyethylene or other suitable polyolefin resin. While the overcap 10 is shown as being circular, it will be apparent that the various novel features of this invention may be embodied in overcaps of various shapes.

The flexible overcap includes a top end wall 11 and a depending integral peripheral skirt or side wall portion 12. An annular upwardly extending stacking rib 13 is provided on the end wall 11 inwardly spaced from an edge 14, of the end wall 11, so as to provide a peripheral seat 15. The overcap 10 further includes a tapered lead-in portion 16 which extends outwardly and downwardly from the edge 14 and terminates so as to be spaced by a wall portion 17 from an outwardly extending support shoulder 18, which support shoulder 18 provides a seat for a purpose to be later described. The outer surface of the peripheral skirt or side wall portion 12 is completed by a wall 19 which extends downwardly and slightly outwardly from the support shoulder 18 and terminates at a lowermost edge 20.

The inside surface of the peripheral skirt or side wall portion 12 includes a short inner wall section 25 extending upwardly from the lowermost edge 20 and having a diameter which is slightly larger than the wall portion 17. A tapered lead-in section 26 extends inwardly and upwardly from the inner wall section 25 and merges with a smoothly rounded lower inner rib 27. Tapered walls 28 and 29 extend upwardly from the inner rib 27 and terminate at an inner shoulder 30 which extends radially inwardly of the overcap 10 and is spaced from the inner surface of the end wall 11 by a tapered portion 31 that extends inwardly and upwardly from the inner shoulder 30.

It is desirable for handling and shipping, and essential for use in high speed capping machines, that the overcap 10 be so designed as to include a nesting feature wherein a plurality of the overcaps may be symmetrically positioned such as shown in FIGURE 3. As pointed out above, each of the overcaps 10 is provided with a tapered lead-in portion 16 and an outwardly extending support shoulder 18. The tapered lead-in portion 16 cooperates with the short inner wall section 25, of an adjacent overcap, such that the lowermost edge 20 of a first overcap is guided to a seated position on the outwardly extending support shoulder 18 of a second overcap.

In FIGURE 4, there is illustrated a fragmentary portion of a capping machine which includes an inclined chute, generally indicated by the numeral 35, which sequentially feeds a plurality of overcaps 10 into position to be engaged by a moving line of containers or cans 36. Also shown in FIGURE 4 is a roller 37 mounted for rotation on an axle 38 which is fixedly mounted in suitable supporting braces 39 and 40 so as to be fixed relative to the chute 35 and the fixed supporting surface (not shown) for the container 36.

The containers or cans 36 are fed horizontally beneath the chute 35 and into engagement with the skirt portion 12 of an inclined overcap 10, as is shown in FIGURE 5, and continued horizontal movement of the container or can 36 moves the overcap 10 and the container or can 36 beneath the fixedly mounted roller 37.

It is an important feature of this invention that the particular construction and design of the overcap 10 make it possible that the roller 37 may be fixedly positioned at a fixed distance from the container supporting surface (not shown). With this construction, it is unnecessary to resiliently mount the roller 37 and, thus, avoids the problems of making spring-adjustments and also simplifies maintenance problems. In order to facilitate the use of the capping machine with containers or cans 36 of other than normal height, the roller 37 is spaced from the container supporting surface (not

4

shown) such that the roller 37 will force the overcap 10 to a normal seated position on containers or cans 36 which are of slightly less than normal height. As is shown in FIGURE 6, and more clearly in FIGURE 7, the normal seated position of the overcap on the container is such that a double seam 45 is snugly received within a container seam receiving concavity 46 which lies between the inner rib 27 and the inner shoulder 30, and is defined by the tapered walls 28 and 29.

FIGURES 8 and 9 illustrate the manner in which an overcap 10 is positioned upon a container or can 47 which has a slightly greater than normal height. Since the container or can 47 is higher than normal height, and since the distance between the roller 37 and the container supporting surface remains constant, the roller 37 presses the overcap 10 down beyond its normal position such that the inner shoulder 30 is forced past the top of the double seam 48 such that the double seam 48 contacts the overcap 10 along the tapered portion 31 and along a ledge 49 which is formed on the underside of the end wall 11. As a result, the side wall portion 12 is flared out and down, to the full line position shown in FIGURE 9, such that the tapered portion 31 is disposed at an angle over the double seam 48 which will cause the overcap 10 to snap upwardly, when pressure is released, to the normal seated position which is shown in dotted lines in FIGURE 9.

It will be apparent from the foregoing that when the overcaps 10 are applied to containers or cans of correct normal height, the overcaps 10 will be pressed down to a position mid-way between the normal seated position illustrated in FIGURE 7 and the fully seated snap-back position which is illustrated in full lines in FIGURE 9.

Another feature which is performed by the overcap 10 is that of holding containers or cans stable when they are placed one on top of another in a stack. As is shown in FIGURE 10, an overcap 10 is properly seated on the double seam of a first container or can 55, and a second container or can 56 is held stable by having a double seam 57 thereof supported on the peripheral seat 15 of the overcap 10. The upwardly extending stacking rib 13, which is provided on top of the end wall 11 of the overcap 10, has an outside diameter which is slightly smaller than the diameter of a can end 58 inside of the double seam 57.

While preferred forms and arrangements of parts have been shown in illustrating the invention, and a preferred method has been disclosed for assembling the parts, it is to be clearly understood that various changes in details and arrangement of parts may be made without departing from the spirit and scope of the invention as defined in the appended claimed subject matter.

I claim:

1. A flexible overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, said side wall portion being provided with an inner shoulder spaced from said end wall, and a tapered portion extending inwardly and upwardly from said inner shoulder, said inner shoulder providing means for normally engaging the topmost portion of a container seam, said tapered portion having a diameter which is smaller than the outside diameter of said container seam.

2. A flexible overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, said side wall portion being provided with an inner shoulder spaced from said end wall, a tapered portion extending inwardly and upwardly from said inner shoulder, and lower inner rib means extending inwardly from said side wall portion and being spaced from said inner shoulder to define therewith a container seam receiving concavity whereby a container seam is disposable between said lower inner rib means and said inner shoulder in spaced relation to said end wall, said inner shoulder providing means for normally engaging the topmost portion of a container seam, said tapered portion

5

having a diameter which is smaller than the outside diameter of said container seam.

3. The overcap as defined in claim 2 wherein an upwardly extending rib is provided on said end wall spaced inwardly from the edge thereof to define a peripheral seat for receiving the peripheral edge of a superimposed container.

4. The overcap as defined in claim 2 wherein a tapered lead-in portion extends downwardly and outwardly from the peripheral edge of said end wall, and an outwardly extending support shoulder providing a seat for the lowermost edge of a nested overcap.

5. A flexible overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, said side wall portion being provided with an inner shoulder spaced from said end wall, a tapered portion extending inwardly and upwardly from said inner shoulder, lower inner rib means extending inwardly from said side wall portion and being spaced from said inner shoulder to define therewith a container seam receiving concavity whereby a container seam is disposable between said lower inner rib means and said inner shoulder in spaced relation to said end wall, an upwardly extending rib on said end wall spaced inwardly from the edge thereof to define a peripheral seat for receiving a peripheral edge of a superimposed container, a tapered lead-in portion extending downwardly and outwardly from the peripheral edge of said end wall, and an outwardly extending support shoulder providing a seat for engaging the lowermost edge of a nested overcap, said inner shoulder providing means for normally engaging the topmost portion of a container seam, said tapered portion having a diameter which is smaller than the outside diameter of said container seam.

6. The combination of a container and a flexible overcap, said container including a seam for joining the end of the container to the side wall thereof, said overcap comprising an end wall and an integral peripheral skirt depending to form a side wall portion, the improvement

6

comprising; said side wall portion being provided with an inner shoulder spaced from said end wall, a tapered portion extending inwardly and upwardly from said inner shoulder, said tapered portion extending circumferentially about the inner surface of said overcap and having a mean diameter slightly smaller than the outside diameter of said container seam, whereby when said overcap is forced onto said container and said tapered portion is brought into engagement with said container seam the resiliency of said flexible overcap causes the tapered portion to automatically slide off of the container seam so that said inner shoulder properly seats itself on said container seam.

7. The structure as defined in claim 6 wherein said side wall portion is further provided with lower inner rib means extending inwardly from said side wall portion and being spaced from said inner shoulder to define a container seam receiving concavity whereby the container seam is snugly engaged between said lower inner rib means and said inner shoulder in spaced relation to said end wall.

8. The method of applying an overcap to an end portion of a container comprising the steps of moving the container along a predetermined path, placing an overcap upon the end of the container, applying a force to seat the overcap beyond the normal seated position of the overcap and the container, and removing the force so that the overcap seats itself in its normal seated position.

References Cited by the Examiner

UNITED STATES PATENTS

3,173,574	3/1965	Goldsmith	220—60
3,178,051	4/1965	Edwards	220—60

LOUIS G. MANCENE, *Primary Examiner*.

THERON E. CONDON, *Examiner*.

G. T. HALL, *Assistant Examiner*.