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[45] Patented **July 6, 1971**  
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[56]

## References Cited

### UNITED STATES PATENTS

|           |         |                     |        |
|-----------|---------|---------------------|--------|
| 944,166   | 12/1909 | Anstead et al. .... | 215/52 |
| 2,677,459 | 5/1954  | Ritzenberg .....    | 220/48 |
| 3,203,295 | 8/1965  | Sauer .....         | 30/355 |

### FOREIGN PATENTS

|           |         |                     |        |
|-----------|---------|---------------------|--------|
| 1,052,570 | 12/1966 | Great Britain ..... | 220/48 |
|-----------|---------|---------------------|--------|

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[54] **BOTTLE OPENER**  
6 Claims, 15 Drawing Figs.

[52] U.S. Cl. .... **215/46,**  
215/1

[51] Int. Cl. .... **B65d 1/00,**  
B65d 17/18

[50] Field of Search ..... 215/42, 32,  
46, 46.5, 28; 220/48, 59, 55.1

**ABSTRACT:** A throwaway bottle for use with plastic bottles having a cap or end closure integrally molded thereon, to open these bottles by removing the caps or end closures.

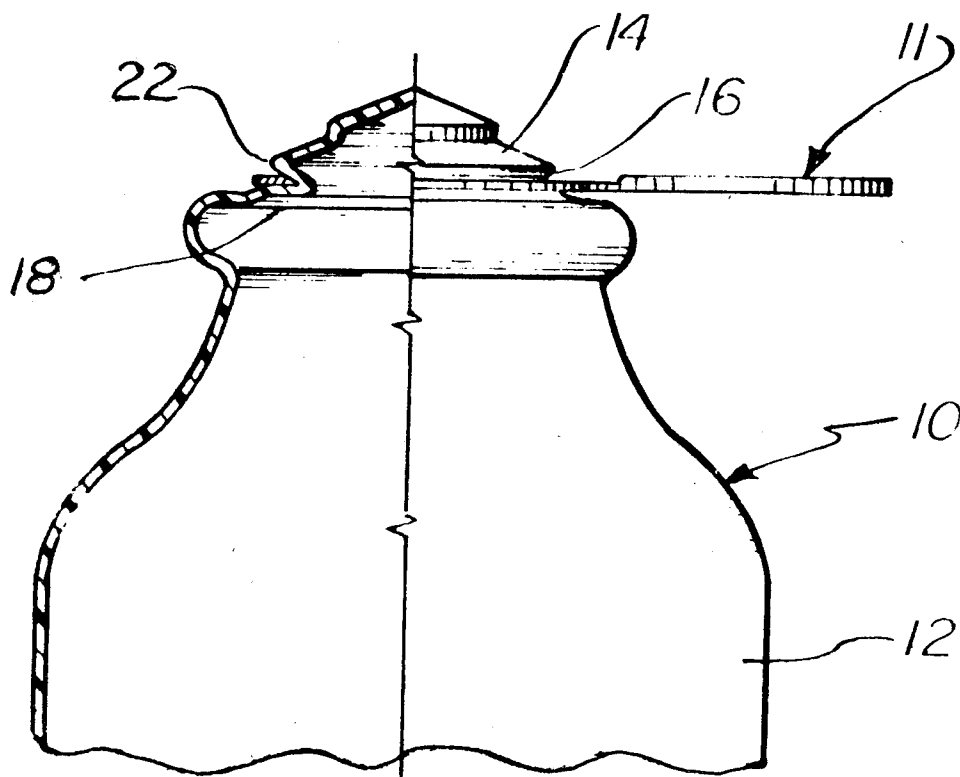


**FIG. 1**

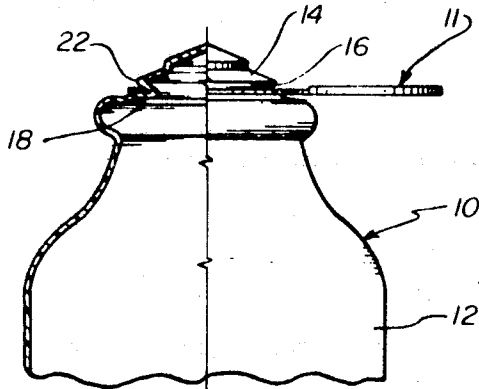


**FIG. 2**

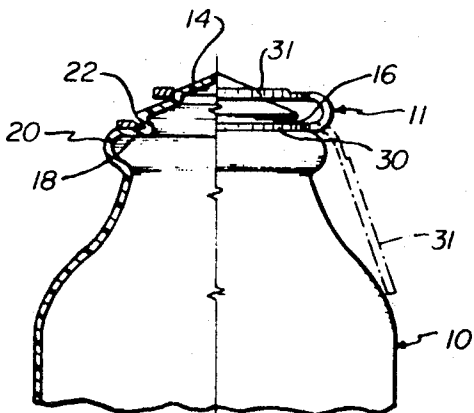


**FIG. 3**

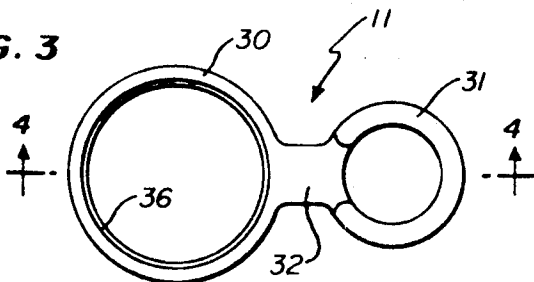


**FIG. 4**

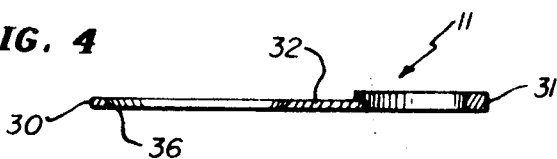


**FIG. 5**

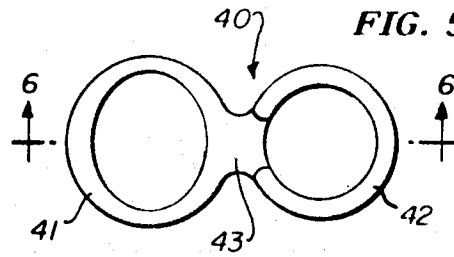


**FIG. 6**

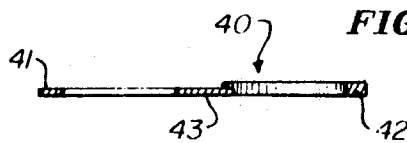


**FIG. 7**

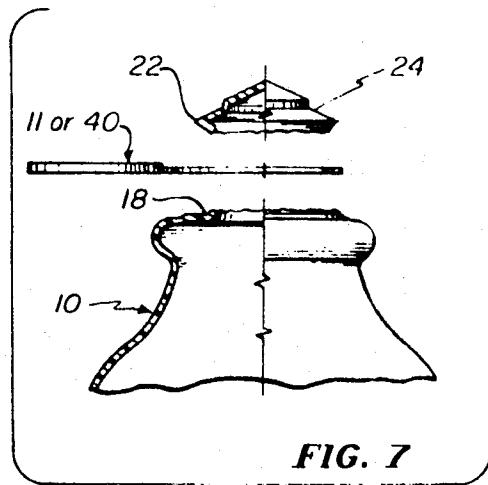
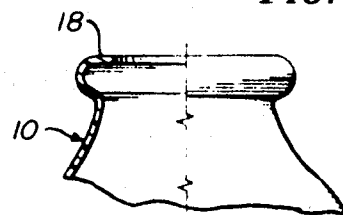


**FIG. 8**



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**FIG. 9**

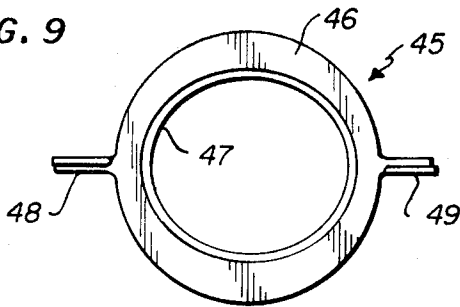


**FIG. 10**

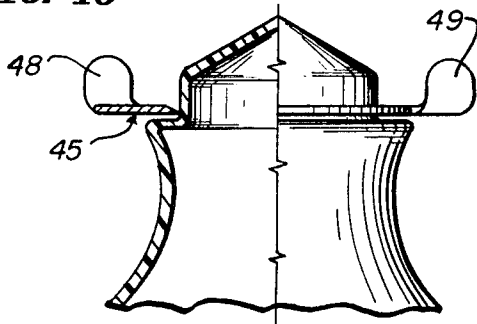


**FIG. 11**

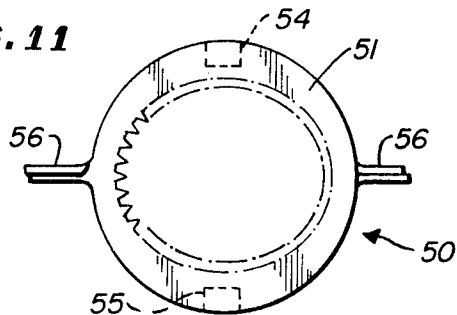


**FIG. 12**

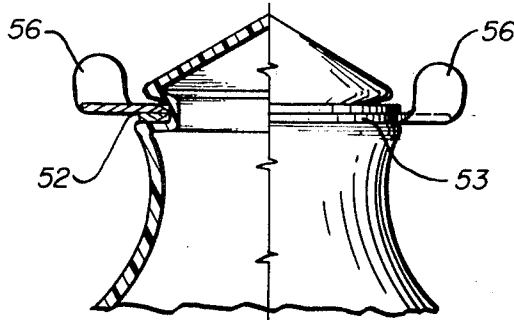


**FIG. 13**

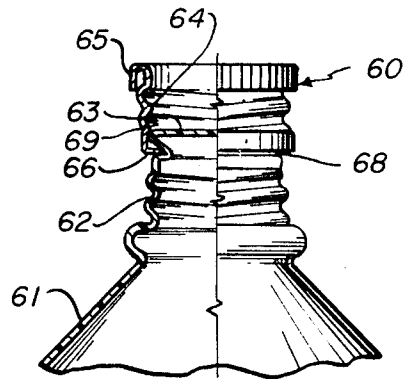


**FIG. 14**

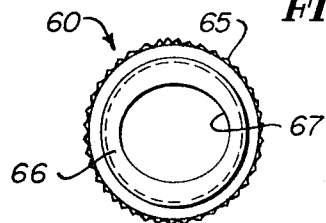
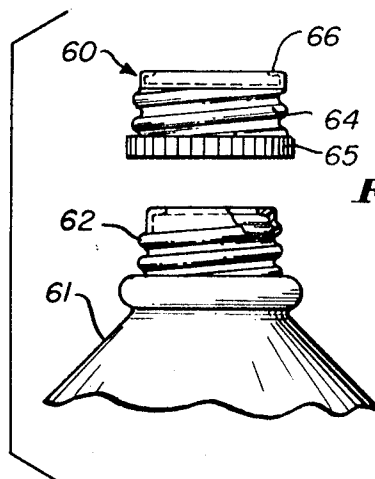


**FIG. 15**



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**BOTTLE OPENER**

This invention relates, in general, to bottle openers and, in particular, to throwaway bottle openers which are affixed to and supplied with the bottles, for opening them.

The throwaway bottle openers of the present invention are particularly adapted to open plastic bottles of the type having the caps or end closures thereof integrally molded therewith, either on the necks of the bottles where they are commonly located or on the end of pour spouts located on the bottles. A bottle opener is supplied with each bottle, and the bottle openers can be affixed to the bottles either during the molding cycle or after the bottles have been formed and filled. The cap or end closure is easily and quickly removed simply by simultaneously pulling and rotating the bottle opener back and forth or, alternatively, according to a second embodiment, by simply rotating the bottle opener with respect to the bottle.

Accordingly, it is an object of the present invention to provide a throwaway bottle opener for use with plastic bottles having a cap or end closure integrally molded thereon, to open these bottles by removing the caps or end closures.

Another object is to provide a throwaway bottle opener of the above type which is affixed to and supplied with each bottle.

Still another object is to provide improved bottle openers of the above type which can be easily affixed to the bottles.

A still further object is to provide improved bottle openers of the above type which are easily operated to open a bottle.

Another object is to provide improved bottle openers of the above type which when affixed to the bottles do not interfere with the packing, shipping or storage thereof and which furthermore permit the bottles to be used in vending machines and the like.

Still another object is to provide improved bottle openers which are of a design such that they can be used to reseal the bottles, after opening them.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a partial side plan view of a bottle having a bottle opener exemplary of a first embodiment of the invention affixed to it, the same being partially sectionalized to illustrate the manner in which the bottle opener is attached thereto;

FIG. 2 is a view similar to FIG. 1, illustrating several positions in which the bottle opener can be disposed for shipping, storage, etc. of the bottles;

FIG. 3 is a top plan view of the bottle openers of FIG. 1;

FIG. 4 is a sectional view taken along lines 4-4 of FIG. 3;

FIG. 5 is a top plan view of a bottle opener exemplary of a second embodiment of the invention;

FIG. 6 is a sectional view taken along lines 6-6 of FIG. 5;

FIG. 7 is a view generally illustrating the manner in which the cap or end closure is severed from the bottle, using either the bottle opener of FIGS. 3 and 4, or FIGS. 5 and 6;

FIG. 8 is a partially sectionalized, partial side plan view of the bottle after its cap or end closure is severed therefrom.

FIG. 9 is a top plan view of a bottle opener exemplary of another embodiment of the invention;

FIG. 10 is a sectional view of a portion of a bottle, generally illustrating the manner in which the bottle opener of FIG. 9 is affixed to the bottle;

FIGS. 11 and 12 are top and side plan views, respectively of still another bottle opener having a double cutting edge;

FIG. 13 is a sectional view of a portion of a bottle having a cap-type opener which is adapted to be affixed to the bottle to reseal the latter after it has been opened;

FIG. 14 is a bottom view of the cap-type opener; and FIG. 15 is a side plan view generally illustrating the manner in which the cap-type opener is used to reseal the bottle.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings, in FIG. 1 there is illustrated a bottle 10 which is of plastic and which has an opener 11 exemplary of a first embodiment of the invention affixed thereto. The bottle 10 has a bottle portion 12 and an end closure 14 which is integrally formed therewith. The bottle 10 may be of the type, and molded and filled, as disclosed in copending U.S. Pat. application, Ser. No. 828,589, filed May 28, 1969.

The bottle 10 has an annular groove 16 disposed between the top wall 18 of the neck portion 20 and an enlarged diameter rim 22 of the end closure 14. The portion of the end closure 14 above the annular groove 16 forms a removable end cap 24 which is engaged and removed by the opener 11, in a manner described below.

The opener 11, as can be best seen in FIGS. 3 and 4, includes two rings, a neck ring 30 and a finger ring 31, which are integrally affixed together by a web portion 32. A neck ring 30 has an inside diameter sized so that the neck ring 30 can be forcibly urged over the enlarged diameter rim 22, and secured within the annular groove 16, to affix the opener 11 to the bottle 10. The finger ring 32 can be of any convenient diameter which will permit a finger to be extended through it.

The opener 11 preferably is formed of flat sheet metal such as aluminum, so that it can be easily and inexpensively formed, with, for example, a stamping operation. When formed of sheet metal, the material forming the finger ring 31 preferably is folded over upon itself to provide a double thickness to protect the finger against being cut. Alternatively, the opener 11 can be molded of a flexible, substantially rigid plastic or other material which will function in the manner described below to remove the end cap 24.

As indicated above, the opener 11 is affixed to the bottle 10, by forcibly urging the neck ring 30 over the enlarged diameter rim 22, until it seats within the annular groove 16. The opener 11 can be affixed to the bottle in this fashion either during the molding operation, or afterwards. Once affixed to the bottle 10, the opener can be folded over atop the bottle, as illustrated in FIG. 2. Alternatively, the finger ring 31 can be bent annularly downwardly, as illustrated by the dot-dash lines in FIG. 2. In either case, the opener 11 is conveniently positioned so that the bottles can be easily packed, stored and shipped. Also, if the bottles contain milk, soda or other similar products generally dispensed from vending machines, the bottles can be used in the vending machines without the opener 11 interfering with the dispensing operation thereof. Being folded in the illustrated manner also reduces the likelihood of the end caps 24 being accidentally removed.

To open the bottle 10, a finger is inserted in the finger ring 31, and the opener 11 thereafter is pulled in a substantially horizontal direction, while holding the bottle 10 vertically against the pulling action. The opener also can be simultaneously rotated with a back-and-forth movement, to assist in severing the end cap. The web material between the end cap 24 and the top wall 18 is thereby caused to sever, permitting the end cap 24 to be removed, to provide an opening into the bottle.

In many cases, particularly when the bottle 10 is molded of a relatively strong, resilient plastic, the interior diameter of the neck ring 30 is advantageously provided with a sharpened or serrated cutting edge 36 on it. This cutting edge will cut into and assist in severing the web material between the end cap 24 and the top wall 18, so that the end cap can be more easily removed.

In FIGS. 5 and 6, there is illustrated another bottle opener 40 which is generally like the opener 11, having a neck ring 41, a finger ring 42 and a web 43 integrally connecting the two rings 41 and 42 together. The principal distinction between the two openers 11 and 40 is that in the case of the latter, the opening 44 in the neck ring 41 is oval shape and has a major diameter substantially corresponding to the diameter of the

annular groove 16 in the bottle 10. A minor diameter of the opening 44 is slightly smaller than the diameter of the annular groove 16.

The opener 40 is affixed to and provided with the bottle 10, in the same manner as the opener 11. In this case, however, to remove the end cap 24, the opener 40 is merely rotated about the bottle while the latter is held stationary. The minor diameter of the opening 44 engages and severs the web material between the end cap 24 and the top wall 18 of the bottle. It may be necessary to make several revolutions about the bottle, before the end cap 24 is completely severed. In this case also, the interior diameter of the opening 44 can be provided with a cutting edge, like the cutting edge 36, on it to assist in severing the web material so that the end cap can be more easily removed.

In FIGS. 9 and 10, there is illustrated still another bottle opener 45 having a neck ring 46 which has an oval-shaped opening 47 therein. As in the case of the opening 44 in the bottle opener 40, the major diameter of the opening 47 substantially corresponds to the diameter of the end closure on the bottle while its minor diameter is slightly smaller than the diameter of the end closure. The interior diameter of the opening 47 also is advantageously provided with a sharpened or serrated cutting edge, to assist in severing the web material as the opener 45 is rotated.

The opener 45 is provided with a pair of diametrically opposed wings 48 and 49 which are integrally formed thereon and which are bent to extend upwardly substantially perpendicular to the neck ring 46. These wings 48 and 49 provide or form finger grips for rotating the opener 45, to sever the end cap from a bottle in the same fashion as with the opener 40 of FIGS. 5 and 6. The wings 48 and 49 preferably are formed with a double thickness so that they are fairly rigid and are not easily bent when being used to rotate the opener to sever the end cap from a bottle. Also, as in the case of the finger rings 31 and 42 of the openers 11 and 40, respectively, these wings 48 and 49 can be bent out of the way so that they do not interfere with the packing, shipping or use of the bottles to which the openers are affixed.

In FIGS. 11 and 12, another opener 50 is illustrated which has a neck ring 51 formed by slidably affixing two ring members 52 and 53 together in a fashion such that the ring members can be rotatably displaced with respect to one another. The ring member 52 has at least one pair of diametrically opposed locking flanges 54 and 55 integrally formed thereon which are reversely folded so as to form a pair of slots for fixedly and slidably receiving the ring member 53 therein, for affixing the two ring members together. The locking flanges 54 and 55 advantageously are crimped about the ring member 53 so that the latter is frictionally retained and is not too easily rotated with respect to the ring member 52. The opener 50 is more easily handled and affixed to a bottle when formed in this fashion.

Each of the ring members 52 and 53 has an opening in it for receiving therethrough the end cap which is to be removed. These openings preferably are axially aligned and are oval-shaped so that each of the ring members is capable of cutting or severing the end cap from a bottle. The interior diameters of the openings in the ring members are provided with cutting edges, preferably serrated cutting edges. At least one wing 56 is integrally formed with each of the ring members 52 and 53, and is bent so as to extend upwardly substantially perpendicular to the ring members. These wings 56 preferably are disposed diametrically to one another when the opener 50 is formed and affixed to a bottle, so that the opener generally resembles the opener 45.

The opener 50 is affixed to a bottle in the same fashion as described above in the case of the openers 11, 40 and 45. To operate the opener 50 to sever the end cap from the bottle, the wings 56 on the ring members 52 and 53 are gripped and are rotated in opposite directions towards one another. As the ring members 52 and 53 are thereby caused to rotate, the cutting edges within the openings therein function as a double

cutting edge much like in the case of the cutting blades of an electric knife, to sever the end cap from the bottle.

In some of the above-described examples, the opener is affixed to and supplied with the bottle by snap or force fitting the opener within an annular groove formed in the neck portion of the bottle between its body portion and its neck portion. It is apparent that the openers can be provided with each bottle and simply affixed to the latter by means of some type of fastening means such as a length of removable tape. In such cases, the opener is removed and affixed to the bottle in the above-described fashion by the party desiring to open the bottle, just prior to opening it. Also, the bottles need not have annular grooves in them for receiving the openers. It is only necessary that the diameter of the bottle at the area to be severed and the interior diameter of the opener be proportioned so that the latter can be extended over that area of the bottle, as illustrated in FIG. 10, and can function to sever the same in the described manner.

In FIGS. 13-15, there is illustrated still another opener 60 which is formed in a fashion such as to both sever the end cap or end closure on the bottle and to thereafter be used to reseal the bottle. In the illustrated example, the bottle 61 has a threaded neck portion 62 which is closed by means of an end closure 63 which is integrally formed thereon. The bottle however, can be of the type having an end cap which is adapted to be snap fitted about an annular groove on its neck portion or it can have quarter threads on its neck portion, as in the case of the bottles disclosed in the above-mentioned copending application, Ser. No. 828,589, filed May 28, 1969. Other reclosable caps also can be used, simply by shaping the opener 60 so that it will fixingly engage with the bottle to reclose it.

The opener 60 is generally cylindrical-shaped and has threads 64 formed in it which threadingly engage with the threads on the neck portion 62 of the bottle 61. The upper edge (as shown in FIG. 13) is reversely folded to form a gripping rim 65, and the latter advantageously is serrated or knurled to provide a better gripping surface. The opposite or lower edge is folded inwardly so as to form a flange which defines a neck ring 66 having an opening 67 therein. The opening 67 preferably is oval-shaped like the opening 44 in the opener 40, with a major diameter which substantially corresponds to the diameter of the annular groove 68 in the neck portion 62 of the bottle and a minor diameter which is slightly smaller. The edge of the opening 67 also preferably is formed with a sharpened or serrated cutting edge.

A locking flange 69 is formed interiorly of the opener 60, and is spaced from the lower edge so as to form a seal with the end closure 63. This locking flange 69 in combination with the neck ring 66 also functions to retain the severed end closure 63 within the opener 60.

The opener 60 is affixed to and supplied with the bottle 61, by forcibly urging the opener over the end closure 63 until the neck ring 66 seats within the annular groove 68 in the neck portion 62 of the bottle 61, as illustrated in FIG. 13. When it is desired to open the bottle 61, the opener 60 is rotated until the end closure 63 is severed from the bottle. Severance can be assisted by simultaneously pulling the opener 60 in a substantially horizontal direction while holding the bottle in a vertically disposed position. The end closure 63, upon being severed, is retained within the opener 60 by the neck ring 66 and the locking flange 69.

If it is desired to reclose the bottle 61, the opener 60 is inverted, as illustrated in FIG. 15, and is threaded onto the neck portion 62 of the bottle, as any bottle cap would be threadedly affixed to the bottle. The end closure 63 engages the severed edge of the neck portion 62, and forms a seal with it.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and certain changes may be made in the above article. Accordingly, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Now that the invention has been described, what I claim as new and desire to be secured by Letters Patent is:

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1. In combination, a plastic bottle having a neck portion, an annular groove in said neck portion concentric to the central axis of said bottle, an end closure which is integrally formed with said neck portion and is concentric to the central axis of said bottle, and a bottle opener for severing said end closure to provide an opening into said bottle through which a product therein can be dispensed, said bottle opener comprising a neck ring having an opening therein of a diameter to permit said neck ring to be urged over and disposed about said end closure to engage said opener within said annular groove, the interior diameter of said opening forming a cutting edge for severing said end closure from said bottle, and means integrally formed with said neck ring for manipulating said opener while said bottle is held vertically upright to engage said cutting edge in said neck ring to sever said end closure from said bottle.

2. The combination of claim 1, wherein said bottle opener comprises a flat, elongated length of material having in one end thereof an opening forming said neck ring and in the other end thereof another opening forming a finger ring, the interior diameter of said opening forming said finger ring being such as to permit a finger to be extended through it for manipulating said bottle opener while said bottle is held vertically upright to engage said cutting edge in said neck ring to sever said end closure from said bottle.

3. The combination of claim 2, wherein the interior diameter of said neck ring is circular-shaped.

4. The combination of claim 1, wherein said neck ring is oval-shaped having a major diameter substantially corresponding to the diameter of said end closure and a minor diameter slightly smaller than the diameter of said end closure, whereby said opener upon being rotated while said bottle is held stationary will sever said end closure therefrom.

5. The combination of claim 1, wherein said bottle opener comprises a neck ring including two substantially circular-shaped neck ring members which are slidably and rotatably affixed together atop one another, each of said neck ring mem-

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bers having an oval-shaped opening therein of a major diameter substantially corresponding to the diameter of said end closure and a minor diameter slightly smaller than the diameter of said end closure, whereby each of said neck ring members upon being rotated while said bottle is held stationary will sever said end closure from said bottle, said means integrally formed with said neck ring for operating said opener comprising at least one wing integrally formed with each of said neck ring members and disposed upright substantially perpendicular to said neck ring members so as to provide a pair of finger grips for rotating said neck ring members, said wings when angularly rotated towards one another causing said neck ring members to be rotated in opposite directions so that the cutting edges thereof function as a double cutting edge to sever said end closure from said bottle.

6. In combination with a plastic bottle having an end closure integrally formed thereon, a bottle opener for severing said end closure to provide an opening into said bottle through which a product can be dispensed, said bottle opener being generally cylindrical shaped and having a body portion adapted to be affixed to said bottle to reclose it, one end of said body portion being folded inwardly so as to form a flange defining a neck ring having an opening therein of a diameter to permit said neck ring to be urged over and disposed about said end closure, a locking flange interior of said body portion cooperating with said neck ring to retain the severed end closure within said opener, said opening in said neck ring being oval-shaped with a major diameter substantially corresponding to the diameter of said end closure and a minor diameter slightly smaller than the diameter of said end closure, whereby said opener upon being rotated while said bottle is held stationary will sever said end closure from said bottle, said opener being inverted and affixed to said bottle to reclose it after said end closure is severed from said bottle, said end closure engaging the severed edge on said bottle and forming a seal therewith.

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