Dec. 19, 1939. R. E. REARDON 2,183,588

COLLAR DECAPPER

Filed March 28, 1936

Fig. 1.

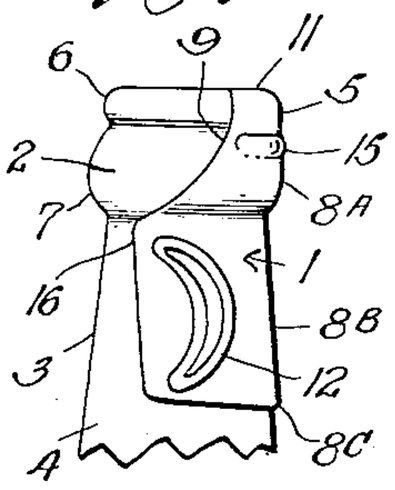


Fig. 2.

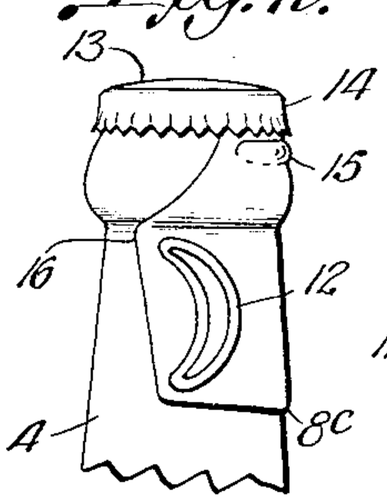


Fig. 3.

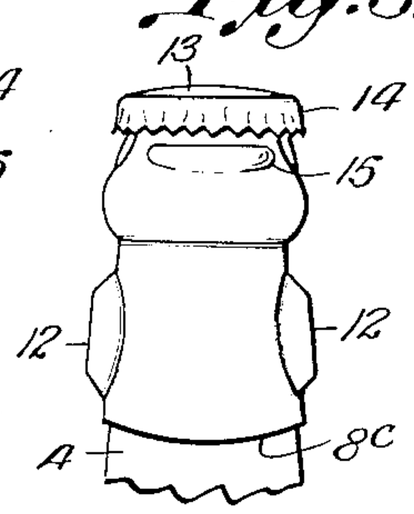


Fig. 4.

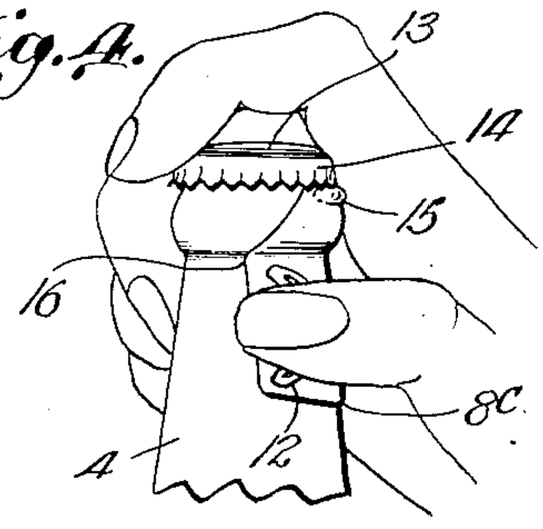


Fig. 5.

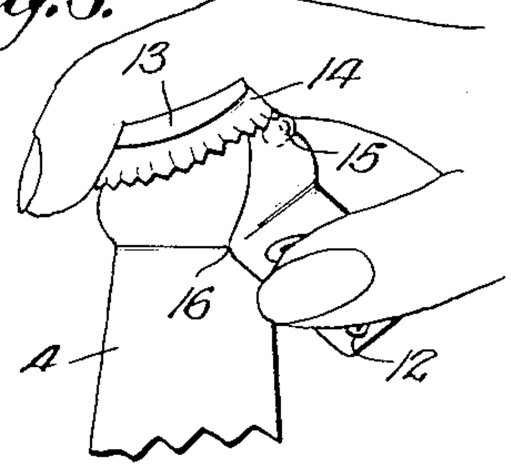


Fig. 6.

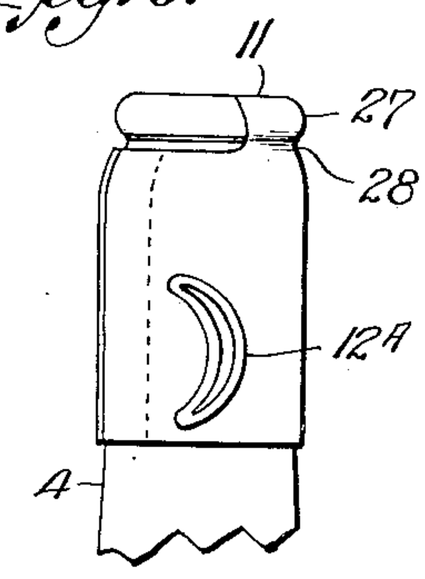
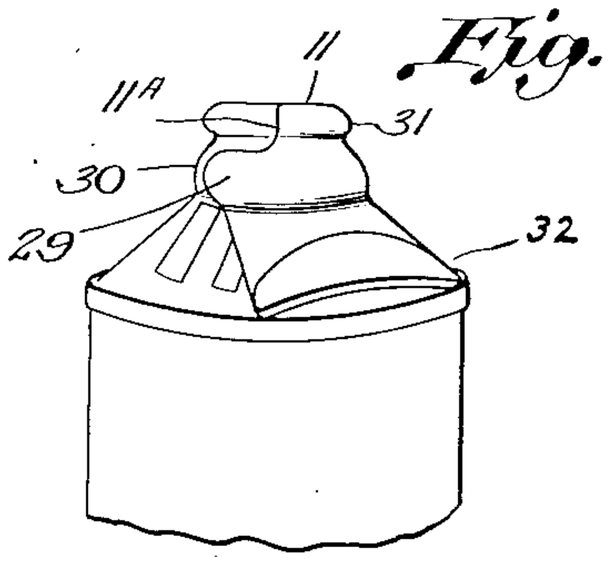


Fig. 7.



Inventor:

Robert Edwin Reardon

Patented Dec. 19, 1939

2,183,588

UNITED STATES PATENT OFFICE

2,183,588

COLLAR DECAPPER

Robert Edwin Reardon, Camden, N. J.

Application March 28, 1936, Serial No. 71,481

1 Claim. (Cl. 215—46)

My invention relates to improvements in individual bottle opening devices and aims to improve existing devices, especially devices used on bottle heads of crown finish, as a superfinish placed on same before the filling of the bottle and sealing of a crown cap thereon, to be used at will to remove said cap. My own prior Patent No. 1,874,208, shows, for instance, a figure (7) that was intended to stay in position on a bottle during the capping operation, but proved impractical, because, in the thin metal that must be used, the wing flaps shown in it for position maintenance were altogether inadequate to hold it positively in place on the bottle; and the wing flaps in folding back to grip for decapping use, exposed raw edges of metal to the hand, and also took time to manipulate. Therefore, my object is to provide a device which meets practically the commercial requirements for an individual bottle opener: an inexpensive, discardable device capable of easy, rapid, hand or mechanical attachment to bottles and retentive of position thereon, yet ever ready for instant grasp and use for cap removal, while constantly presenting to the grasp a smooth surface; a device which even though made of soft sheet metal will snap into place on a bottle from the resiliency induced by its formation; which is so formed that its manual engagement for use is easy and the method and direction of use obvious and suggested by its formation; an opener which does not present to the hand a raw edge of metal that might cause injury in its use or handling; which is not liable to accidental displacement to cause loosening of the crown seal during commercial handling of bottles, nor likely to be displaced except by deliberate intention, as gripping pressure on it without lateral pulling action has no effect but to hold it tighter in place; which presents an area of inscribable space that gives it value as a label or advertising medium.

The preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevation of my decapper as mounted on a bottle head, ready to pass through a filling and capping machine.

Fig. 2 is a side elevation of my decapper as mounted on a bottle that has a cap sealed thereon.

Fig. 3 is a front elevation of my decapper as shown in Fig. 2, illustrating also the space available for label or advertising inscription.

Fig. 4 is a side elevation of my decapper as on a sealed bottle, illustrating manual engagement of the decapper and the function of the guard ridge in fending the hand from contact with the rough edge of the cap.

Fig. 5 is a side elevation of the decapper shown in Fig. 4, illustrating the course of manual removal of the cap from the bottle head.

Fig. 6 is a side elevation of a modified form of my decapper, as on a bottle head prior to capping. It completely embraces the bottle neck and head finish and overlaps slightly in its embracement. A weakened line vertically across the collar before the gripping ears permits the free ends of the collar to open for lateral withdrawal in decapping use.

Fig. 7 is a modification of my decapper adapted for application to cans, or other containers with short necks.

My collar decapper **1** is preferably made of the tinplate commonly used in the manufacture of crown caps, of approximately .012 inch thickness, although a thickness of .008 inch will remove a cap, such is the strength imparted to the soft metal by the formation of the decapper. The thicker sheet metal, however, is preferable because then the device is not materially deformed by decapping use and may readily be replaced for temporary sealing if desired, in case the container is not immediately emptied, and used repeatedly. The decapper in its preferred form **1** may be described as a form fitting collar for the neck finish **2** and neck **3** of a bottle **4**, but shaped initially and applied with the bottle lip engaging portion **5** not form fitting in regard to the lip ring (or cap locking ring) **6**, but bridging across the depression between said lip ring **6** and the neck-bulge, or reinforcing ring, **7** below same, as a vertical semicyindrical flange erected from the upper bulge fitting portion **8** of the decapper adjacently below and around said lip ring **6** and tapering to a top marginal bend which bears on a segment of about 90 degrees of the circumference of the outer upper curve of the bottle lip. As the said lip engaging flange **5** bears only on the upper curve of the bottle lip **6** and bridges across from the neck-bulge portion 8^A of the collar decapper, which is formed to substantially fit the bottle neck **3** and lower side of the neck bulge **7**, it is evident that when a crown cap **13** is sealed upon the opener equipped bottle head the contraction of the crimped cap skirt **14** will indent and shorten the vertical lip flange, and thus pull up the waist portion 8^B into closer fit upon the lower half the neck bulge **7**, and having taken up any slack in said lower fit, likewise pull down the lip flange **5** upon the upper outer curve of the bottle lip.

The lower neck embracing and position maintaining waist 8 of the decapper extends around the neck 3 for approximately two-thirds of its circumference, say 240 degrees, and from that waist portion 8 tapers upward over the curve of the neck bulge 7 in substantially a right angled triangle, to a point 9 about one-quarter inch below its truncated top 11, and the bottle mouth level, where it has a substantial embracement of about 120 degrees of the neck bulge circumference and is adapted by its width and shape to contact most effectively the crimped skirt 14 of the crown cap 13 to pry up same when the leverage operation of the decapper commences in decapping use of the device, and also retain its shape sufficiently for further usage. This is the initial pry point, where the strong, diametral, oblique and speading leverage action of the doubly arcuate lever and wedge constituted at 9 by the curved triangular tongue of the decapper is brought to bear upon the cap skirt 14 in decapping operation, and without superfluous distention of said cap skirt. Above the point 9 the triangle rises about vertically and curves inward towards its truncated terminal 11, so the latter will have no corners to be bent up by the broad 90-degree fulcrum bearing of the truncated top 11 of the decapper upon the circular bottle lip 6, while the vertical ascent line to said curved corners 11^A presents to the actual sealing contact of the cap skirt straight edges which substantially parallel the crimps in the cap skirt and do not cut obliquely across same as to lessen the grip of the sealed cap upon the bottle lip 6 at any point. Upon the opposite sides of the waist 8^B of the decapper, adjacent the edges thereof and preferably between said side edges and the diametral axis of the bottle neck, are extended by embossment two crescent shaped gripping ears 12 convexed towards the direction in which the decapper should be withdrawn from the bottle neck in decapping use, the said ears indicating and suggesting by formation and location the application of thumb and fingers thereto for decapping purpose. It will be observed that decapping pressure is thus applied rearwardly of the outer face of the decapper, on a diagonal leverage line from the fulcrum tip 11 of the lever formed by the decapper, which gives in a short, wide, collar body a lever length equal to that of a long narrow vertical body, and also enables convenient, forcible, and rapid side grip application of the user's fingers, on a smooth surface without contact with raw edges of metal, and necessitating no use of finger tips or nails for initial engagement. Furthermore, the lateral pressure applied by the hand in engaging the said smooth embossed ears will, if continued excessively beyond withdrawal of the collar from the bottle neck, simply result in crushing together the two sides of the collar decapper, with thumb and fingers still contacting only the smooth convex sides pressed between them. It will also be noted that because of the collar embracement of the bottle neck for a distance in excess of 180 degrees of the circumference, any diametral lateral pressure applied to it, such as that of a hand grasp in lifting bottles, for instance, will operate only to hold the decapper in its place. To move it from place requires both the holding of the bottle and direct tangential lateral application of pressure. As a lever the decapper acquires great strength and rigidity from its doubly arcuate formation. The handle or waist portion 8^B of it is reinforced against bending with reference to the neck finish embracing portion by its continuity therewith throughout a distance of in excess of 90 degrees of the bottle circumference, and the upright lip flange 5 as a plain cylindrical bridge from neck bulge 7 to bottle lip 11 is a reinforcement against bending of the decapper upon the cap skirt 14. The sturdily wide, neck embracing formation of the collar decapper and the diagonal arcuate and resilient decapping lever afforded by its construction make the device a marked improvement over the prior art in individual bottle openers. In decapping use of it, a guard ridge 15 embossed on the upper face of the neck bulge embracing portion, adjacently below the base of lip flange 5, acts to fend the fingers of the user from contact with the crimped edge of the cap skirt 14, and thus perfectly prevent any abrasion of the most delicate hands or gloves of users. And the snappy resiliency imparted to this collar of thin, soft sheet metal by its formation combines happily with the rigidity which gives it retentiveness of position on the bottle as well as leverage effectiveness to make it commercially desirable. It is, in short, laterally resilient and vertically rigid, easy of application, adaptive, retentive of place, of label utility, an attractive finish for bottles, and easy and obvious of decapping use.

A notable feature of the decapper formation is what may be called its center, or girdle, grip upon the bottle, where the greatest degree of embracement occurs. The contour of the collar sides recedes to the top and the center bottom from a point of maximum embracement 16 adjacently below the neck bulge 7 of the bottle, this girdle grip tending to pull the lip flange 11 into close contact with the upper outer curve of the bottle lip 6, which is vitally necessary in order to present a smooth bottle mouth for crown cap application, and also draw the bottom edge of the collar waist 8^B closely against the bottle neck, aided by the marginal inclination of the collar where same is desirable, and the maximum length of waist 8^B at center bottom which aids fit by giving a central bearing on the bottle neck.

The application of my collar decapper to a bottle and its operation to decap a bottle are so obvious that explanation is hardly required. The collar having been placed on a bottle, either before filling and crowning or simply before crowning, by pushing its open side against the bottle neck and head finish, until it expands sufficiently to embrace and snap into place thereon, and a crown cap having been placed on the opener equipped bottle head and duly sealed thereon by a sealing die, the operation of using the decapper to remove the cap consists simply in steadying the bottle with one hand and with the other hand gripping the collar decapper between thumb and fingers, by the side ears 12 and, pivoting the upper part of the hand on the side and top of the crown cap, pull laterally and upwardly upon the decapper till the cap comes off. The collar decapper may then be snapped back into place on the bottle and the cap replaced for temporary sealing, if so desired.

The modification of my collar decapper that is shown in Fig. 6 differs mainly in that it is substantially full-cylindrical throughout, with the upper contour levelled and ears approximately the same as in the preferred form; and the bottle lip engaging flange 27 is shallowly indented, to sufficient depth to hold the top 11 in place on the bottle lip, and prevent the decapper body from riding up on the flare of a bottle neck. This

plain cylindrical formation is very simple to make and may embrace the bottle to fullest degree as an overlapped collar—if so desired for the finish or greater labelling or advertising area it affords on its plain surface—because it may be dropped over the head of a bottle in application to same and simply pushed down till the lip indent 28 snaps over the bottle lip ring 11. The gripping ears 12A are as in the preferred form, and method of decapping operation the same.

The modification shown in Fig. 7 is designed for use on cans or similarly shaped containers. The girdle embracement 29 is applied to the neck bulge 30 and the lip ring engaging flange 31 indented slightly as in Fig. 6 modification. The lower margin has a broad horizontal arched roll 31 in it for thumb or finger engagement to lift for decapping.

I claim:

An individual bottle decapper comprising an arcuate collar of thin sheet material made substantially rigid vertically and resilient laterally to embrace and clamp the neck and head finish of a bottle or the like and provided with a segment at its upper edge to contact the lip of said bottle, and means formed on said collar for manual engagement for decapping use.

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