

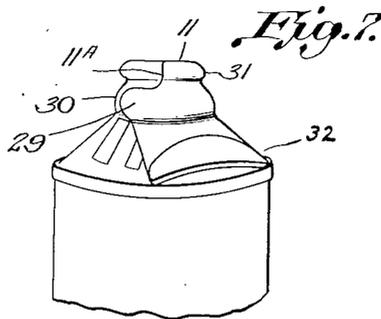
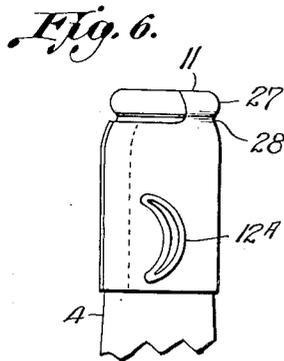
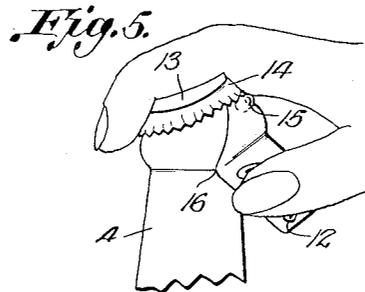
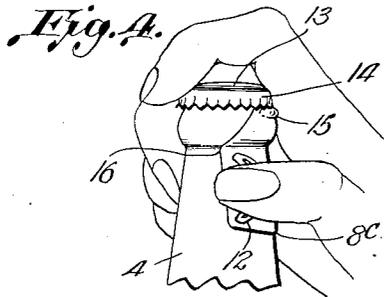
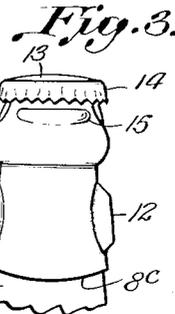
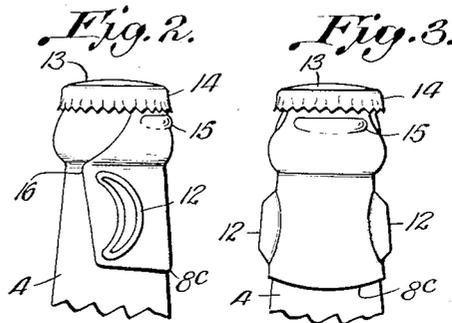
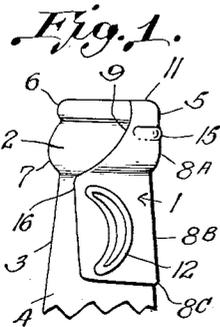
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R. E. REARDON

2,183,588

COLLAR DECAPPER

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Inventor:

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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 semicylindrical 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 2^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 2^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 main-
 taining 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 circum-
 ference 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, diamet-
 ral, oblique and spreading 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 de-
 capping operation, and without superfluous dis-
 tention 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 cir-
 cular 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 lo-
 cation the application of thumb and fingers
 thereto for decapping purpose. It will be ob-
 served 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 to-
 gether 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 appli-
 cation of pressure. As a lever the decapper ac-
 quires great strength and rigidity from its doubly
 arcuate formation. The handle or waist portion
 8^B of it is reinforced against bending with refer-

ence to the neck finish embracing portion by its
 continuity therewith throughout a distance of
 in excess of 90 degrees of the bottle circumfer-
 ence, and the upright lip flange 5 as a plain cy-
 lindrical bridge from neck bulge 7 to bottle lip 6
 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, adja-
 cently 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 deli-
 cate 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 effec-
 tiveness 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 ad-
 jacently 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 be-
 fore filling and crowning or simply before crown-
 ing, 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 de-
 capper 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 re-
 placed 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 coliar—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 12^A 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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