

A. J. L. LASSEN.
 PROCESS FOR MAKING AND APPLYING BOTTLE CAPS OR CAPSULES.
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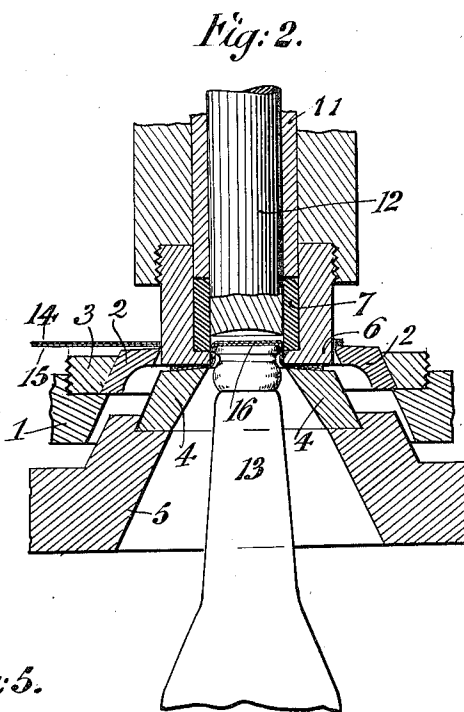
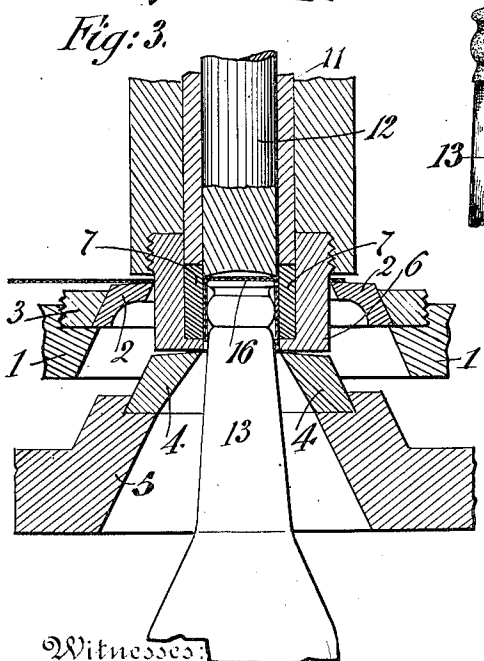
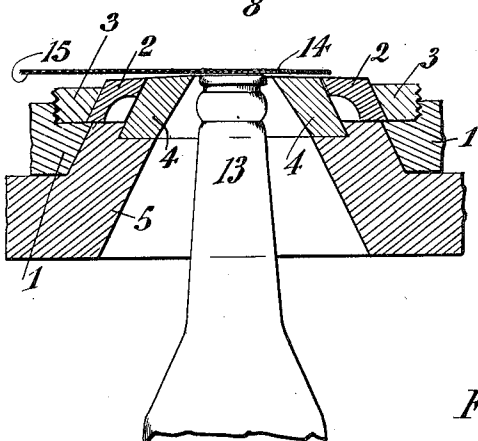
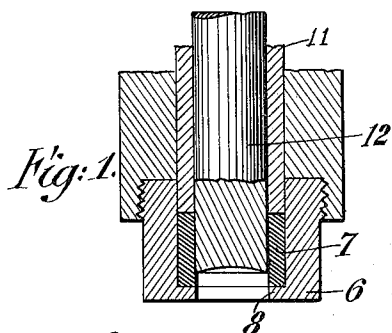
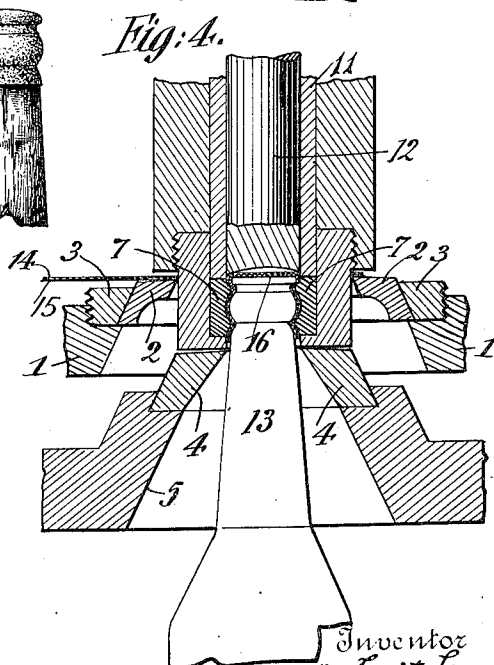


Fig. 5.



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PROCESS FOR MAKING AND APPLYING BOTTLE CAPS OR CAPSULES.

1,045,415.

Specification of Letters Patent.

Patented Nov. 26, 1912.

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To all whom it may concern:

Be it known that I, AXEL JULIUS LAURITS LASSEN, a citizen of the Kingdom of Denmark, residing in Frederiksberg, near Copenhagen, in said Kingdom, have invented certain new and useful Improvements in Processes for Making and Applying Bottle Caps or Capsules, of which the following is a specification.

This invention relates to a process of making bottle caps or capsules of metal and applying them to the necks of bottles.

The object of this invention is to devise a process by which the cap may be cut out of a strip of metal with or without an inner lining or packing, formed and applied, all substantially simultaneously without any movement of the bottle from the beginning to the end of the operation. This object I accomplish by feeding the doubled or single strip of material over a die in the center of which is placed the mouth of the bottle and stamping out the cap and forcing it over the bottle neck on the downward stroke of a hollow punch having an inwardly movable flexible inner lining and finally causing the inner lining to press against the cap to force it to engage with the rims of the bottle neck.

In the accompanying drawing, Figures 1 to 4 represent different steps of the process and show in vertical section the various parts which engage the strip to form and apply the cap, and Fig. 5 shows the bottle neck after the cap is applied.

Similar reference characters designate similar parts throughout the several views.

The fixed table or plate 1 carries a cutting die 2 held in place by an inwardly beveled locking rim 3. The internal diameter of the die 2 is equal to the diameter of the disk from which the bottle cap is formed.

Within the die 2 is yieldably held the clamping ring 4 supported in a plate 5 which is normally held by a suitable spring or the like in the position shown in Fig. 1, but which together with the clamping ring may be moved downwardly against the pressure of said spring to the position shown in Figs. 3 and 4.

A vertically movable punch 6 coöperates with the die 2. The punch 6 is tubular and is lined with a thick elastic tube 7 of rubber or other elastic material. An inner annular flange 8 in the punch 6 prevents the tube 7 from being forced out of the punch, and the sliding tube 11 is adapted to move down-

wardly relative to the punch 6 whereby the length of the elastic tube may be decreased by compression between the sliding tube 11 and the flange 8, whereby the elastic tube will increase its thickness as shown in Fig. 4. A yieldably pressed cylindrical blank-holder 12 is adapted for downward movement with the punch 6.

In carrying out this process the bottle is held slightly yieldably with its neck 13 concentric with the die 2, as shown. The strip of metal 14 with or without a subjacent strip 15 of lining or packing is fed to cover the die-opening and the punch 6, the elastic tube 7, the flange 8, the sliding tube 11 and the holder 12 are simultaneously lowered, the die and punch cutting out a disk-shaped blank 16 from the strips 14 and 15, the blank-holder pressing the inner portion of the blank against the mouth of the bottle and the circumferential portion thereof against the clamping ring 4 as clearly shown in Fig. 2. This movement of the punch 6, the elastic tube 7, the flange 8, the sliding tube 11 and the holder 12 continues until the blank-holder 12 presses against the center of the blank, the ring 4 being forced downwardly by the punch 6, the clamping ring 4, the punch 6, the elastic tube 7, the flange 8, the sliding tube 11 and the disk 16 continue downwardly the bottle neck 13 remaining stationary, and the blank is pulled from between the punch 6 and the ring 4, the uncompressed elastic tube 7 causing the blank to assume a cup-like shape, all as clearly shown in Fig. 3. The downward movement of the punch 6, elastic tube 7, and sliding tube 11 is continued while the blank-holder presses upon the center-portion of the blank, and the clamping-ring 4 is forced downwardly by the punch 6. The bottle-neck remains stationary so that the circumferential portion of the blank is drawn through between the punch 6 and clamping-ring 4 onto the portion shown in Fig. 3, whereby the circumferential portion is subjected to a stretching operation in radial direction so that the formation of folds or creases in the downwardly-bent portion of the cap is obviated and the accurate fitting of the cap to the bottle-neck obtained. After the parts have reached this position the downward motion of the punch 6 and clamping-ring 4 is interrupted and the sliding tube 11 moved for a short distance in downward direction so as to compress the elastic tube 7 and reduce its

size, and press thereby the downwardly-bent portion of the blank around the upper end of the bottle-neck into conformity and engagement with the exterior rims of the same, as shown in Fig. 4. The bottle is then removed and the operative parts are returned to their initial position, as shown in Fig. 1, the strip 14 and lining 15 being then fed forward for the required distance, the next blank cut off and the operation of drawing the blank onto and around the bottle-neck being repeated for any desired number of times.

I claim:

1. The process herein described of applying bottle-caps to the necks of bottles, which consists of the following successive steps,—feeding a strip of metal over the mouth of the bottle-neck cutting a disk-shaped blank from said strip, pressing the center-portion of the blank into contact with the rim of the bottle-neck, drawing the circumferential portion of the blank in downward direction over the bottle-neck and simultaneously stretching it in radial direction, and lastly, pressing the downwardly-drawn portion around the bottle-neck into engagement and conformity with the rims of the same.

2. The process herein described of applying bottle-caps to the necks of bottles, which consists in feeding a strip of metal and a lining for the same over the mouth of a bottle, cutting a disk-shaped blank from said

strip and lining, holding the central portion of the blank in contact with the rim of the bottle-neck, drawing the circumferential portion of the blank in downward direction around the bottle-neck while simultaneously stretching it in radial direction for preventing folds or creases in the same, and lastly, pressing the so-bent and stretched portion of the blank around the bottle-neck into conformity and engagement with the bottle-neck.

3. The process herein described of closing and sealing bottles, which consists of the following successive steps—feeding a strip of metal over the mouth of the bottle-neck, cutting a disk-shaped blank from said strip, pressing the center-portion of the blank into contact with the top of the bottle-neck, drawing the circumferential portion of the blank in downward direction over the bottle-neck and simultaneously stretching it in radial direction, and mechanically pressing the downwardly-drawn portion around the bottle-neck into engagement and conformity with the rim of the same.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

AXEL JULIUS LAURITS LASSEN.

Witnesses:

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