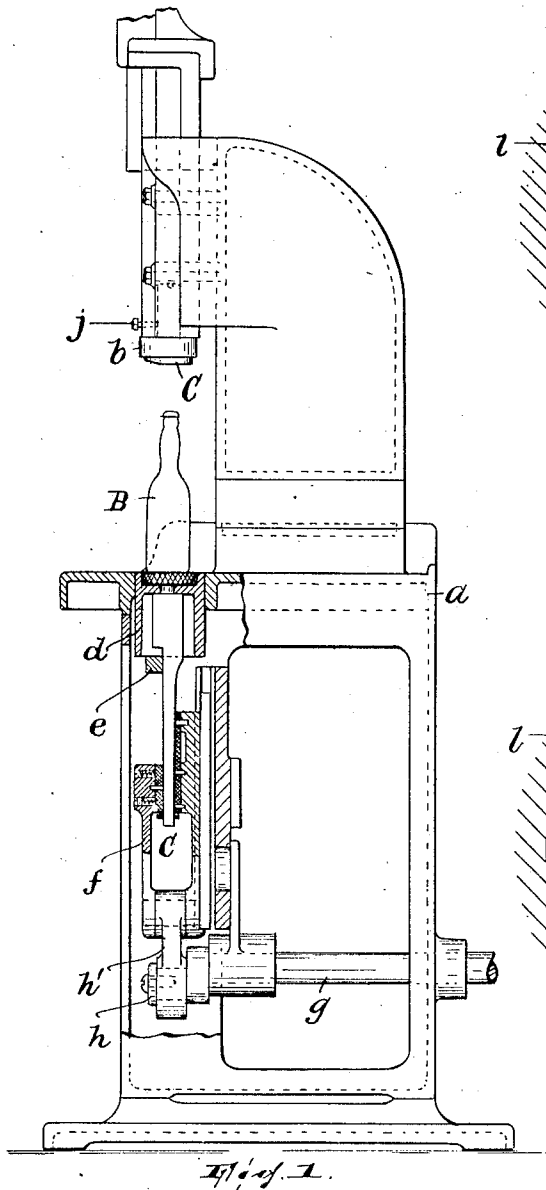
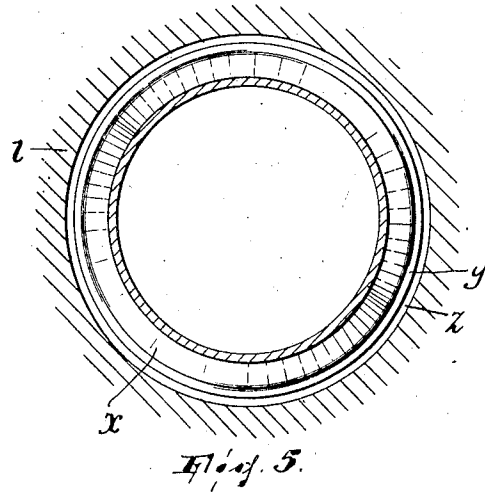
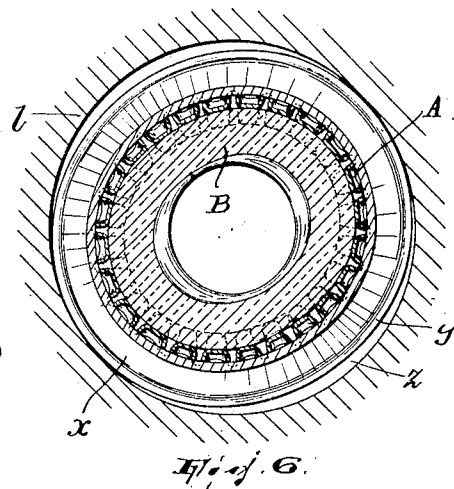


B. ADRIANCE & A. CALLESON.
 APPARATUS FOR SEALING BOTTLES.
 APPLICATION FILED AUG. 19, 1909.

1,083,235.

Patented Dec. 30, 1913.

2 SHEETS—SHEET 1.



WITNESSES

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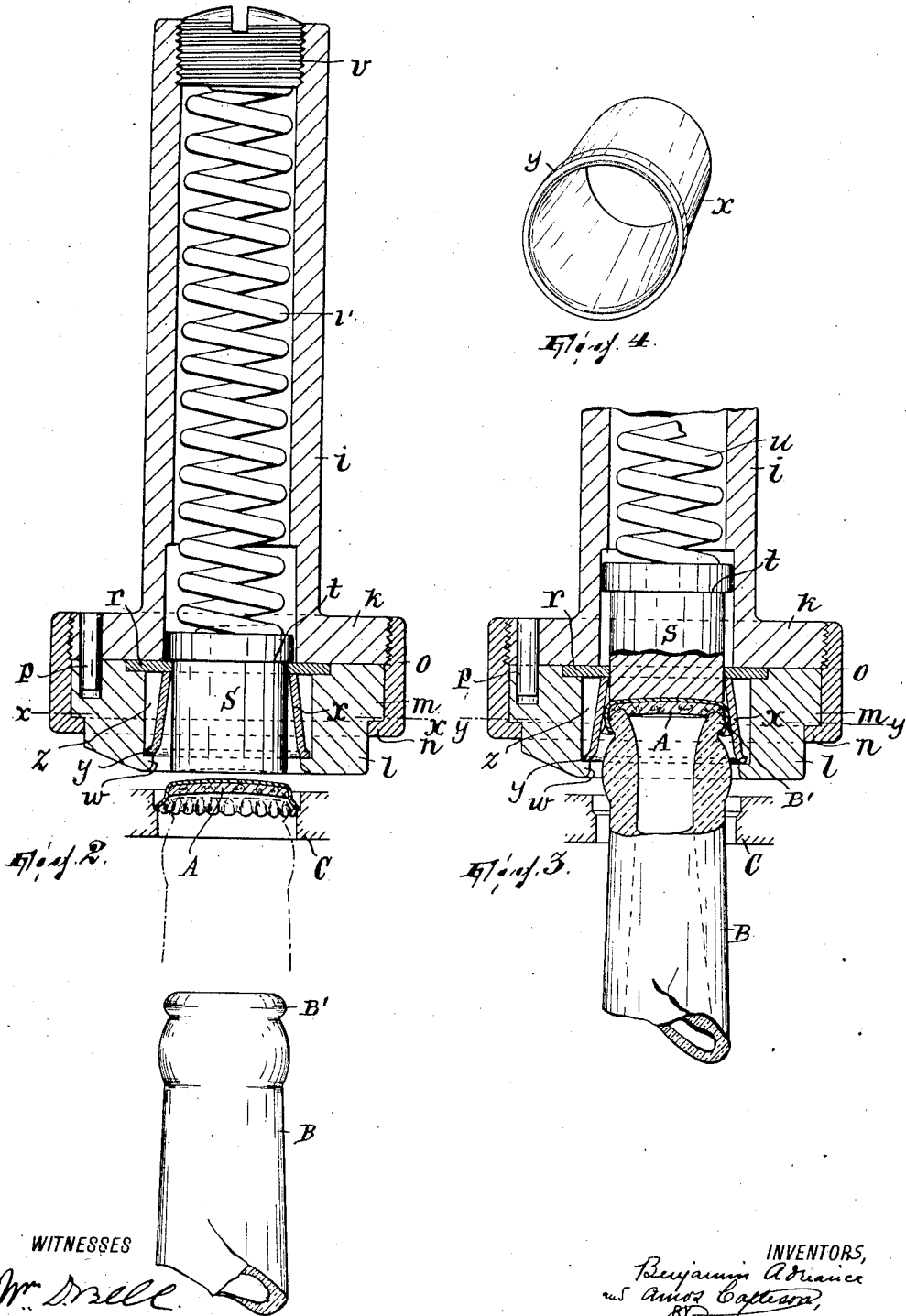
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2 SHEETS-SHEET 2.



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APPARATUS FOR SEALING BOTTLES.

1,083,235.

Specification of Letters Patent.

Patented Dec. 30, 1913.

Application filed August 19, 1909. Serial No. 513,564.

To all whom it may concern:

Be it known that we, BENJAMIN ADRIANCE and AMOS CALLESON, citizens of the United States, residing in Brooklyn, borough of Brooklyn, and State of New York, have invented a certain new and useful Improvement in Apparatus for Sealing Bottles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to the art of sealing bottles, and it has reference particularly to that part of the mechanism for attaching crowns or other closures having portions adapted for interlocking engagement with exterior shoulders on the bottle-heads which is directly concerned in the attaching operation.

The primary object of our invention is to construct the part of such apparatus referred to, and commonly known as the sealing-head, with a view to reduce to the minimum the percentage of breakage or fracture of bottles by the sealing-head during the attaching operation, and to simplify and cheapen the construction, while retaining the mechanism positive and reliable in operation and adapted to release each bottle without undue resistance when the cap has been established in interlocked and sealing relation with the bottle and is cleared or freed from the sealing-head.

It is well-known that there is a very considerable lack of conformity in bottles, particularly with respect to their cross-sectional contours at their locking shoulders. In consequence, in lieu of employing in the sealing-head a cap-contracting throat or throat-piece every portion of which bears a rigid relation to every other portion, various types of sectional throats have been proposed. Such sectional throats are either of the kind where each part thereof is independently cushioned by a spring or the like, in which case, if an ideal condition of uniform resistance by all parts of the cushioning medium ever exists, such sooner or later fails in the constant use of the sealing-head; or they are of the kind where the

parts, perhaps initially independently cushioned by springs or the like, find ultimate backing during the interlocking operation against some support every part of which is rigid with respect to every other part, so that the sealing-head, so far as adapting itself to or conforming with irregularities in bottle-heads is concerned, is substantially as ineffective as the kind sought to be improved upon. Both kinds, moreover, involve a multiplicity of parts and the undesirable incidents thereof, and they require more or less frequent attention to maintain them in proper working order.

Our invention is to be distinguished from expedients heretofore proposed, by, and it consists in, a sealing-head having its throat-portion, or at least the inner surface part thereof, substantially non-expandible yet flexible. Being flexible, it is self-conforming to the cross-sectional shape of bottle-heads presented to it, and being substantially non-expandible it resists the expanding influence of the cap and causes the portions of the latter controlled thereby to move into the desired interlocking engagement with the bottle-shoulder. Preferably said throat-portion has an interior form like that of a truncated cone, whereby (in applying certain types of closures, for instance of the common "crown" kind) the better to effect the interlocking of the cap with the bottle-head and make it adapted to receive bottle-heads varying more or less in circumferential dimension, a yield, to afford compensation for such variations in bottle-heads, being permitted in the mechanism whereby the bottle and sealing-head are brought into operative juxtaposition.

We have illustrated our invention fully and clearly in the accompanying drawings, wherein the preferred form thereof is shown, Figure 1 being a view in side elevation, partly in section, of a bottle-sealing machine having our improved sealing-head as a part thereof; Fig. 2 is a view showing the sealing-head, a cap, a cap-supporting means and a bottle partly in section and partly in elevation, the parts being in the position occupied thereby at the outset of the sealing operation; Fig. 3 is a view substantially similar to Fig. 2 but showing the parts during the interlocking stage of the operation; Fig. 4 is a perspective view of the throat-

piece *x* of the sealing head; and, Figs. 5 and 6 are horizontal sectional views on the lines *x-x* and *y-y*, respectively, of Figs. 2 and 3, Fig. 6 showing how the part *x* will conform to an irregularly shaped bottle-head.

The sealing machine comprises the frame *a*, the sealing-head *b*, and the bottle-elevating mechanism *c*, the same being arranged in their usual relation; the bottle-elevating mechanism is the portion of the machine in the adaptation shown in the drawings which affords a yield to the bottle as the cap therein is brought into impinging relation to the sealing-head, said mechanism comprising a support *d* for the bottle, limited against downward movement by the stop *e*, a plunger *f* frictionally sustaining the support *d*, a rotating shaft *g* carrying a crank *h* and a link *h'* pivotally connecting the plunger and crank.

Referring, now, to the sealing-head: *i* is a tubular stem which may be secured in the frame *a* by the set-screw *j*; its upper end is internally threaded and its lower end has the externally threaded flange *k*. Against its lower end is secured the socket *l*, the same having an external shoulder *m* engaging the internal shoulder *n* of a ring *o* which is screwed onto the flange *k* of the sleeve and thus holds the socket in place; a dowel-pin *p* may be introduced into parts *k* and *l* to prevent the latter from turning. An internal rabbet is formed in the upper part of the socket and therein is fitted an annular disk *r*, held rigidly between the sleeve *i* and the socket *l*. Said disk acts to guide the plunger *s*, having a shoulder *t* at its upper end which limits its downward movement by impinging against the disk, the plunger being normally forced downwardly by a spiral spring *u* coiled in the sleeve between the plunger and a plug *v* screwed into the upper threaded end of the sleeve. The lower or mouth end of the socket is formed with an internal shoulder *w*, and between said shoulder and the disk *r*, in surrounding relation to the plunger *s* in the rest position of the latter, is interposed the throat-piece *x*, the same fitting fairly snugly between said shoulder and disk. Said throat-piece, in the adaptation shown, is a hollow truncated cone of metal adapted to yield to internally applied influences tending to extend it in any chord or radius thereof but to resist any appreciable tendency to extend circumferentially due to such influences. At its lower end it is formed with a circumferential rib *y* and at this, its greatest, diameter, it is somewhat smaller than the cavity *z* of the socket; its said rib serves principally as a reinforcement.

A is the cap, the same being shown as of the conventional crown type, and *B* the

bottle; *C* is the usual support on which the cap rests until the rising bottle brings it against the plunger *s*.

The operation of sealing a bottle in the use of the improved sealing-head proceeds substantially as follows: The bottle having been placed on the elevating means and thereby raised, its head engages the cap *A* and in raising the latter forces it up into the cone *x*, the plunger *s*, under the influence of its spring *u*, holding the cap meantime squarely on the bottle-head and preventing it from tilting in the latter (due to possible irregularities in the cap) until it comes properly within the contracting influence of the cone. As the cap is forced up into the cone, the latter effects a contraction of the flaring edge-part of the cap, such contraction ultimately resulting in the lower or inner corrugations of the cap being forced inwardly under, and into locking engagement with, the shoulder *B'* on the bottle. (Although the circumferential dimensions of bottles at their shoulders *B'* may vary, or successive bottles have varying heights, such discrepancies are taken care of, to the end that the caps are uniformly acted upon by the cone, by the yield afforded in the elevating mechanism). Whatever the cross-sectional shape of the bottle-head at the shoulder *B'*, the cone will conform or adjust itself thereto, and at the same time, being substantially non-expandible, it will compress the cap-flange positively under, and into locking contact with, the shoulder on the bottle. This is illustrated in Figs. 5 and 6. In Fig. 5, the cone *x* appears as circular (which is its normal shape, in the preferred form, any alteration of its shape being permitted by its being somewhat elastic); in Fig. 6, the cone has assumed an oval shape, this being due to the extending influence of a bottle-head having an oval cross-section. It will be observed, however, that the extension of the cone is in a direction cross-wise thereof and not circumferentially, so that every part of the cone acts with substantially the same degree of resistance as every other part in causing the edge-part of the cap flange to interlock with the bottle-head. In this way, irregularities in bottle-heads are effectually taken care of, and the danger of breakage or fracture reduced to the lowest possible minimum. When the upward pressure of the elevating mechanism ceases, the spring-actuated plunger *s* causes the bottle to follow the elevating means downwardly, and the cone being internally smooth and without obstruction, the bottle clears the sealing-head with perfect freedom.

Having thus fully described our invention, what we claim and desire to secure by Letters Patent is:

1. In an apparatus for establishing caps

in interlocked relation with containers, a sealing-head having its throat-portion substantially non-expansible yet flexible, substantially as described.

5 2. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head having its throat-portion substantially non-expansible yet universally flexible, substantially as described.

10 3. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head having the inner surface-part of its throat-portion substantially non-expansible yet flexible, substantially as described.

15 4. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head having the inner surface-part of its throat-portion substantially non-expansible yet universally flexible, substantially as described.

20 5. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head having its throat-portion tapering and substantially non-expansible yet flexible, substantially as described.

25 6. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head comprising a supporting member and a cap-contracting throat-piece, said throat-piece being substantially non-expansible yet flexible, substantially as described.

30 7. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head comprising a supporting member and an annular cap-contracting throat-piece, said throat-piece being substantially non-expansible yet flexible, substantially as described.

40 8. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head comprising a supporting member and an annular and conical cap-contracting throat-piece, said throat-piece being substantially non-expansible yet flexible, substantially as described.

50 9. In an apparatus for establishing caps in interlocked relation with containers, a sealing-head comprising a supporting member having an open cavity and a cap-contracting throat-piece held in said cavity against axial movement but laterally spaced

from the wall of said cavity, said throat-piece being substantially non-expansible yet flexible, substantially as described.

55 10. A capping die for a bottle capping machine comprising an outer member, and an inner member forming an upwardly tapered throat, the inclined inner side walls of which are adapted to engage the flange 60 of a cap; said inner member being formed from a single piece of resilient material; and having the tapered part thereof free from contact with the side walls of said outer member.

65 11. A capping die comprising an outer member, and an inner member formed from comparatively thin resilient material, said inner member consisting of an upwardly tapered part the inclined inner side walls 70 of which are adapted to engage the flange of a cap and a flanged part; said flanged part secured to said outer member and adapted to hold the tapered part free from contact with the side walls of said outer member.

75 12. A capping die formed from comparatively thin resilient material, comprising an inverted, cup-shaped outer member, and an inner member having an upwardly tapered 80 part the inclined inner side walls of which are adapted to engage the flange of a cap, said inner member having a flanged part fitting within the open end of said outer member and holding the tapered part free 85 from contact with the side walls thereof.

90 13. In a capping die for a bottle capping machine having a holding member, a throat made of comparatively thin resilient material and having an open top and bottom, 95 said throat having tapered sides adapted to engage the flange of a cap, said sides being held free from contact with said holding member whereby they are free to spring outward.

In testimony, that we claim the foregoing, we have hereunto set our hands this 13th day of August, 1909.

BENJAMIN ADRIANCE.
AMOS CALLESON.

Witnesses:

W. J. HORN,
JAMES VAN WICKLEN.