J. JANUCHOWSKY & H. ALBERT.

MECHANISM FOR APPLYING BOTTLE CAPS.

APPLICATION FILED MAY 21, 1914.

1,257,709.

Patented Feb. 26, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

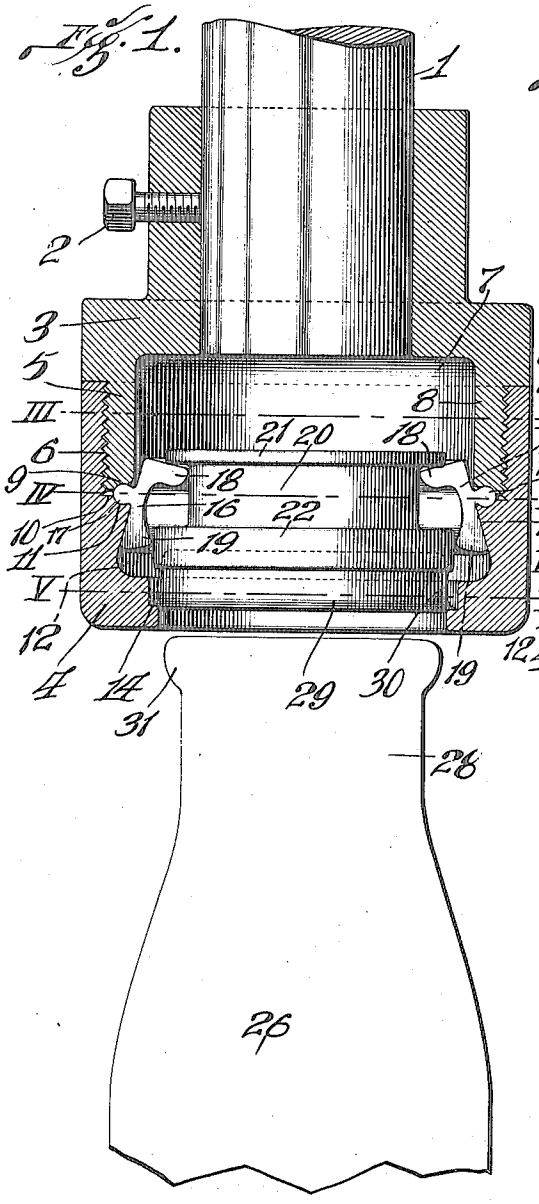
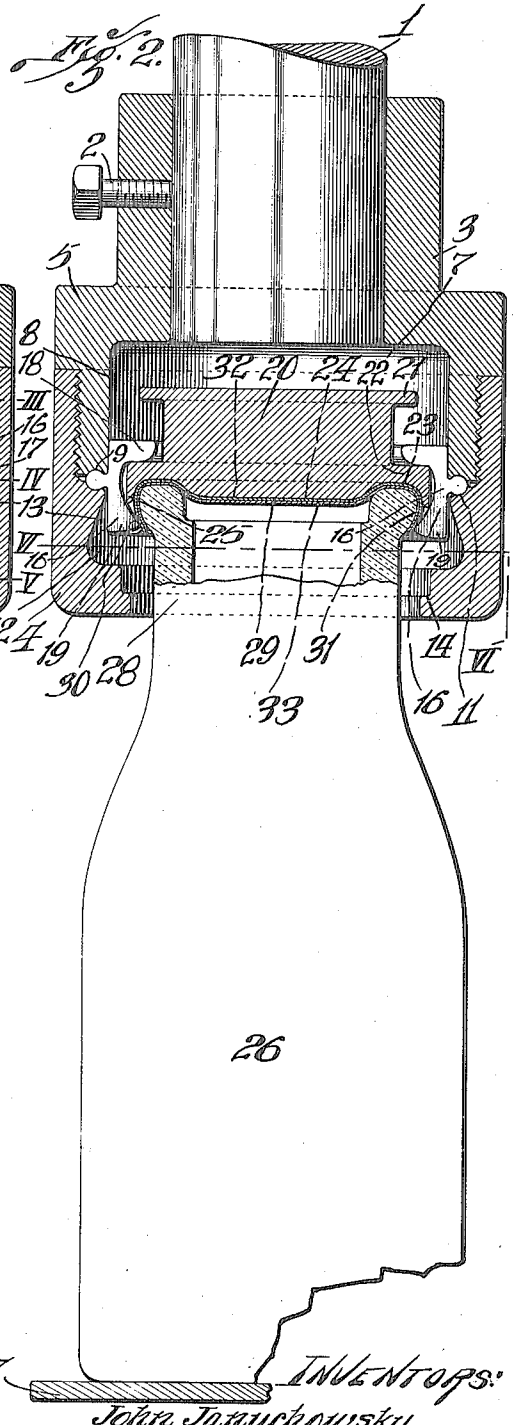


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

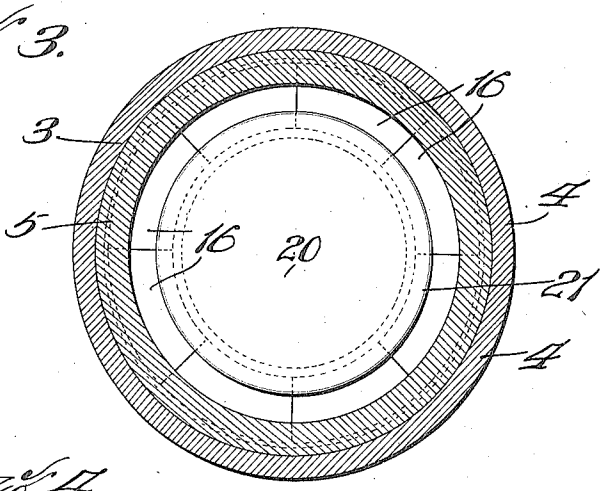


Fig. 4.

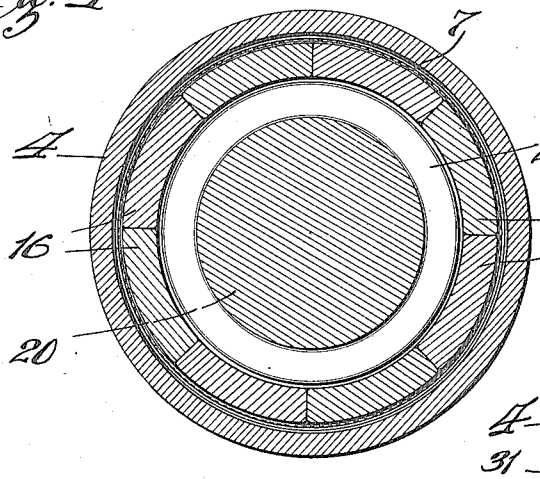


Fig. 6.

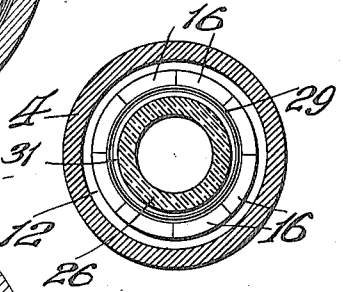
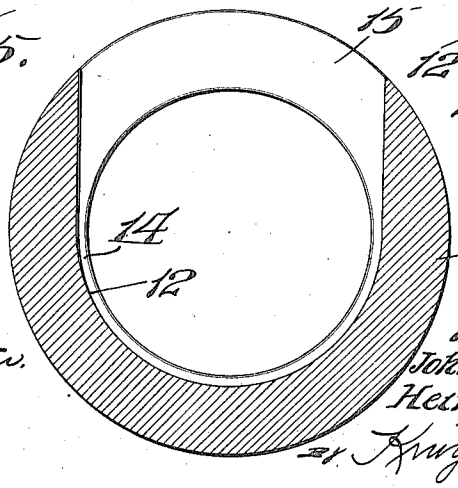


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR APPLYING BOTTLE-CAPS.

1,257,709. Specification of Letters Patent. Patented Feb. 26, 1918.

Application filed May 21, 1914. Serial No. 839,961.

To all whom it may concern:

Be it known that we, JOHN JANUCHOWSKY and HEINRICH ALBERT, citizens of the United States of America, and residents of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Mechanism for Applying Bottle-Caps, of which the following is a specification.

The primary object of this invention is to provide an improved mechanism for drawing and fitting closure caps over and around the necks of bottles.

Another object is to provide an improved mechanism for capping bottles that does not crimp the depending edge of the cap, but in lieu thereof draws and smooths the depending edge of the caps to the contour of the beaded edge of the bottle neck.

A further object is to provide a bottle capping mechanism that will fit the cap perfectly to the contour of the beaded neck of the bottle both inside and outside thereof, thereby providing a perfect seal to the contents of the bottle.

A still further object is to provide a bottle capping mechanism that will produce a drawing effect in opposite directions to the cap during the bottle capping operation.

Other and further objects will appear in the specification and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention, and in which,

Figure 1 is a sectional view of this improved device showing the parts in an inactive position, parts thereof being shown in full lines.

Fig. 2 is a sectional view, similar to Fig. 1, but showing the device in an operative position.

Fig. 3 is a horizontal section taken on the line III—III, Fig. 1.

Fig. 4 is a horizontal section taken on the line IV—IV, Fig. 1.

Fig. 5 is a horizontal section taken on the line V—V, Fig. 1, the bottle cap being removed.

Fig. 6 is an inverted horizontal sectional view reduced in size, and taken on the line VI—VI, Fig. 2.

Referring to the drawings: 1 designates a spindle which has secured at one end thereof, by a screw 2, a holder 3, said holder being constructed in two parts, the lower portion thereof being in the form of a nut 4. Said nut is secured to the upper portion 5 by the threads 6. Formed in the upper part 5 of the holder 3 is a recess 7, the bottom of the side wall 8 of said recess having an inverted annular groove 9 formed therein.

Formed in the nut 4 is an annular shoulder 10, said shoulder having an annular groove 11 formed therein, said groove 11 being directly opposite to the inverted groove 9 formed in the upper portion 5 of the holder 3 when the nut 4 is secured to said upper portion 5.

Formed in the nut 4 is a bottle cap receiving chamber 12, said chamber having downwardly and inwardly inclined walls 13. Formed in said nut, beneath said chamber, is a horizontally arranged cap receiving ledge 14. Formed in the side wall of said nut is a cap receiving opening 15, said opening communicating with the cap receiving chamber 12.

Arranged concentrically around the cap receiving chamber 12 is a series of wedge shaped members 16, each of said members 16 having a pivotal portion 17 located approximately midway thereof. Each of said pivotal portions is pivotally mounted in the grooves 9 and 11. Each of the members 16 has an inwardly extending portion 18 formed on the upper end thereof, the lower end of each of said members 16 being formed in the cap engaging portions 19. These members 16, when in their concentric arrangement, have their side surfaces in engagement with each other.

Reciprocably mounted in the center of the members 16 is a bottle cap engaging plunger 20, said plunger having a retaining flange 21, which normally rests on the portions 18 of the members 16, and an engaging shoulder 22 formed on the lower end thereof. Formed on the under side of the shoulder 22 of the plunger 20 is an annular groove 23. The inside edge of said groove terminates in a depending portion 24, and the outside edge of said groove terminates in the depending flange 25.

As shown more clearly in Figs. 1 and 2, the device is being used in capping milk bottles, although this device can as well be used in capping any type of bottles that have beaded necks.

In the operation of this improved device, a bottle 26 is mounted on the receiving platform 27, which receiving platform is adapted to be elevated in order to bring the neck 28 of the bottle into operating engagement with this improved device. Before the bottle is elevated, a bottle cap 29 is inserted in the opening 15, the lower depending edge of said cap resting on the cap receiving ledge 14 of the cap receiving chamber 12. This will put the bottle cap in a position directly over the neck of the bottle.

When the platform 27, carrying the bottle 26, is elevated by means not shown, the cap 29 will concentrically engage the neck 28 as the bottle is moved upwardly. As the bottle still continues to move, it will carry the cap 29 upwardly, and the cap will engage against the under side of the shoulder 22 of the plunger 20 and fit into concentric relation with the annular depending flange 25. The plunger 20 will then be carried on upwardly, and the shoulder 22 thereof will engage the under side of the portions 18 of the members 16. This action will cause the members 16 to rock on their pivotal portions 17. The portions 19 of said members will be moved inwardly so that said portions will engage against the depending flange 30 of the bottle cap 29, thereby pressing and smoothing said flange inwardly around the beaded edge 31 of the bottle 26.

As the members 16 are being swung on the pivotal portions 17, the platform 27 is about at the end of its upward movement. Therefore, the upward movement of the plunger 20 is limited by the engagement of the shoulder 22 with the under sides of the portions 18 of the members 16. Therefore, the top of the beaded edge 31 of the bottle will impress the cap 29 into the annular groove 23 formed in the plunger 20, and the depending portion 24 of the plunger will cause a depression 32 to be formed in the top of the bottle cap. This pressing action, which is given to the top of the cap is done simultaneously with the inward bending of the flange 30 of the cap in and around the outside of the beaded edge 31 of the bottle by the action of the portions 19 of the members 16.

It will, therefore, be seen that a drawing action is given to the cap 29 in opposite directions on account of the top and central portion of the cap being pressed downwardly while the depending flange of the cap is pressed inwardly and downwardly. The outer material of the cap, which is composed of pliable metal, is drawn or pressed very tightly and smoothly against the packing 33 of the bottle cap to conform to the contour of the beaded edge 31 of the bottle, thereby providing a perfect seal to the contents of the bottle.

As the platform 27 is lowered, the bottle will ride away from the members 16, and the plunger 20 will ride on the bottle cap until the retaining flange 21 of the plunger will engage the extending portions 18 of the members 16. The plunger 20 and members 16 then being in their normal positions are ready for operation on another bottle cap.

With this improved construction, it is not necessary to have any resilient pressure applied to the top of the plunger, as the plunger will move downwardly of its own weight. If any of the members 16 fail to fall back in their normal positions, the weight of the plunger on the extending portions 18 of said members will cause them to be returned to their normal positions.

In the type of bottle capping devices now in use, the depending flange of the cap is merely pressed inwardly around the beaded edge of the bottle neck and crimped, and the sealing point of contact of the cap with the bottle is merely around the top of the neck of the bottle. With this improved device, the sealing point of contact of the cap with the bottle is inside of the mouth of the bottle, all around the top of the bottle neck, and approximately all around the outside of the beaded edge of the bottle.

What we claim is:

1. In a bottle capping machine, a holder rigidly held against vertical movement, a series of radially arranged cap pressing members pivotally mounted in said holder, and a gravity actuated plunger supported and guided by said members mounted in said holder for actuating said members, said plunger being self-adjusting relative to centralizing itself with said members.

2. In a bottle capping machine, a holder having a chamber formed therein, a plunger located in said chamber, a series of pivotally mounted cap pressing members radially arranged around said plunger, an inwardly extending portion formed on each of said members, a flange formed on said plunger for engagement with the under side of said inwardly extending portions, and another flange formed on said plunger for engagement with the top surface of said extended portions, said members providing guiding and supporting means for said plunger.

3. In a bottle capping machine, a holder rigidly held against vertical movement, a series of radially arranged cap pressing members pivotally mounted in said holder, and a gravity actuated plunger supported by said members mounted in said holder for actuating said members, said plunger by its own weight adapted to adjust said members relative to engaging and disengaging a bottle cap.

4. In a bottle capping machine, a holder having a chamber formed therein, a plu-

rality of circularly arranged cap pressing members swingingly mounted in said chamber, an inwardly extending portion formed on each of said members, a plunger loosely mounted axially in said members, said members providing guiding means for said plunger, said members and plunger being self adjustable relative to concentric displacement of each other.

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In the presence of—
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