

Oct. 15, 1935.

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2,017,411

BOTTLE CROWNER

Original Filed Dec. 29, 1932

Fig. 1.

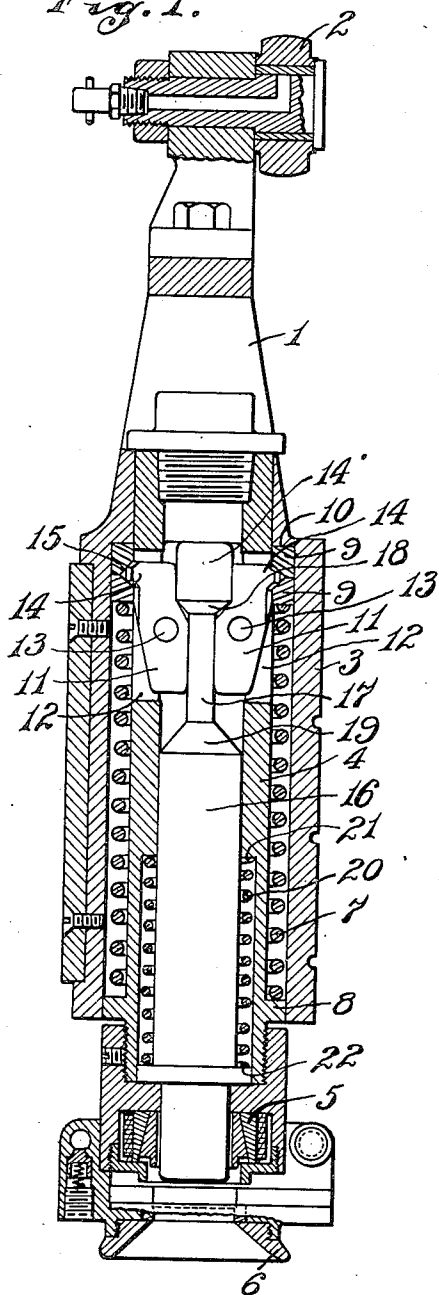
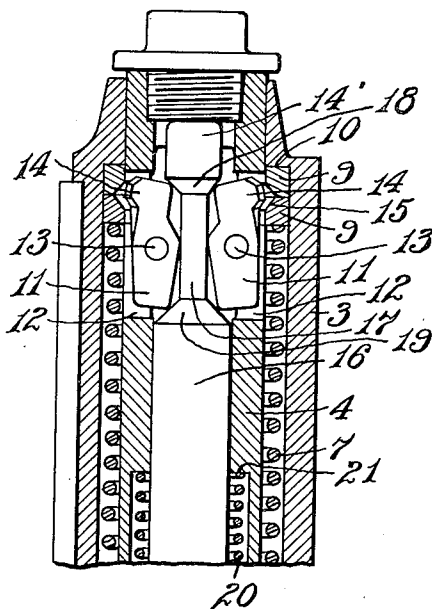


Fig. 2.



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UNITED STATES PATENT OFFICE

2,017,411

BOTTLE CROWNER

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Original application December 29, 1932, Serial No. 649,275. Divided and this application June 9, 1933, Serial No. 674,994

9 Claims. (Cl. 226—84)

My invention relates to improvements in bottle crowning mechanism particularly adapted for use in connection with bottle filling machines.

It is one of the objects of my invention to provide a crown crimping mechanism which shall be positively driven throughout a portion of its stroke, that portion during which the crown is being clamped on the bottle, and shall be resiliently connected with its operating mechanism after the completion of the crimping operation to prevent undue stress being placed on the crowning mechanism and also to accommodate different sized bottles.

The present application is a division of my application S. N. 649,275 filed December 29, 1932, for Bottle filling machine.

For the purpose of disclosing my invention I have illustrated in the accompanying drawing one embodiment thereof and in said drawing:

Fig. 1 is a longitudinal sectional view of a crowning mechanism embodying my invention, and

Fig. 2 is a detail sectional view showing the parts in their released position.

The structure illustrated is adapted for use in a bottle filling mechanism and the crowning mechanism is adapted to be reciprocated for the purpose of crimping the crown after the same has been applied to the top of the bottle. In operation the bottles are adapted to be fed beneath the crowner, in any suitable manner, as for instance as described in the aforementioned co-pending application, and the crown placed on the bottle, after which the mechanism is adapted to descend for the purpose of crimping the crown in position. To this end I provide a yoke 1 which has at its upper end a roller 2 adapted to operate on a stationary cam track, not shown, for the purpose of reciprocating the yoke during the rotation of the crowning unit as a whole through its orbit in crowning the bottle. This yoke 1 carries at its lower end a hollow cylindrical housing 3 having mounted therein a hollow sleeve or plunger 4, reciprocally mounted within the housing and carrying at its lower end a crimping or crowning head 5, having associated therewith a centering bell 6. A detail description of this crimping head is believed unnecessary in the present application as the same is fully disclosed in my co-pending application filed October 20, 1930, Serial No. 489,777. The bell is adapted to center the neck of the bottle with the crown placed thereon and the crimping mechanism 5 is adapted on the descent of the sleeve 4 to engage and crimp the crown on the neck of the bottle.

This sleeve 4 is maintained in its projected position by a coiled spring 7 interposed between an annular flange 8 on the sleeve 4 and a ring member or a pair of ring members 9 arranged at the upper end of the housing 3 and prevented against vertical upward movement by abutting against the shoulder 10 of the housing 3.

The sleeve 4 is provided with a plurality of dogs 11 operating in slots 12 in the walls of the sleeve and pivoted as at 13 to the sleeve. The noses 14 of the dogs in the normal position of the parts engage in notches 15 formed in the rings 9 and these dogs are maintained in their locking position by a stem 14' forming a part of a plunger 16 operating in the hollow plunger 4, which stem or head, in the normal position of the parts, is positioned between the dogs, at their upper ends, as illustrated, and prevents the dogs from moving out of engagement with the notches 15.

The head or stem 14' is connected by a restricted portion or neck 17 with the plunger 16 and the lower ends of the head 14', at the point where it joins the neck 17 is provided with a cam surface 18. A similar cam surface 19 is provided on the upper end of the plunger 16, at the point where the neck 17 connects with the plunger 16.

This plunger 16 is maintained in its projected position by a coiled spring 20 interposed between a shoulder 21 in the sleeve 4 and an annular shoulder 22 on the plunger 16. It is to be noted that the lower end of the plunger 16 projects slightly beyond the bottom portion of the crimping head 5.

In operation as the crowning unit descends the top of the bottle is engaged and centered by the centering bell 6, the unit descending until the bottom of the plunger 16 contacts with the top of the cap or crown lying on the bottle. The plunger 16 thus comes to a stop while the sleeve 4 continues in its descent, carrying with it the crimping head 5, and it will be noted that during this descending movement the sleeve 4 is positively connected with the housing 3 whereby the crimping head 5 will be positively moved to crimp the crown on the bottle head. However, as the plunger 16 rests on the top of the bottle there will be a relative movement between the plunger 16 and the sleeve 4 moving the head 14' out of contact with the dogs 11, until the cam portion 19 of the plunger 16 engages the lower portion of the dogs, forcing the lower ends of the dogs outwardly, thereby moving the upper ends of the dogs inwardly, the head 14' having been moved out of the path thereof, and disengaging the

dogs from the notches 15. This action of course, compresses the spring 20 and also permits a continued descent of the housing 3 without affecting the sleeve 4, other than to compress its projecting spring 7. In other words, a relative movement between the sleeve 4 and the housing 3 is permitted so that danger of crushing the bottle is prevented and at the same time compensation is made for different sizes or heights of bottles.

As the housing moves upwardly on its return stroke the sleeve 4 will be forced downwardly under the influence of the spring 7 and the plunger 16 is likewise forced downwardly under the influence of the spring 7, and during this downward movement the parts are so synchronized that the cam portion 18 of the head 14' will again engage the tops of the dogs 11 and, as they reach a position coinciding with the notches 15, force the noses 14 into these notches, separating the dogs so that the head eventually assumes the position shown in Fig. 1. This locking of the sleeve 4 to the housing 3, also prevents further projection of the plunger 4 from the housing under the influence of the coiled spring 7.

I claim as my invention:

1. A crowning unit for bottle filling machines comprising a member adapted for reciprocation, a crown crimper carried by said member, latching means for positively connecting said crimper with said member, means moved by engagement with the crown for positively moving said latching means to releasing position to permit relative movement between said crimper and said member and means movable relatively to said latching means for engaging and locking said latching means in engaging position during a predetermined portion of the movement of said member.

2. A crowning unit for bottle filling machines comprising a supporting member, a crown crimper resiliently carried by said member to permit relative movement therebetween, a latch on said crimper for engagement with said member to positively connect said crimper to said member, means moved by the relative movement between the supporting member and crimper into engagement with said latching means to hold said latch in latching position and means adapted for engagement with the bottle crown for engaging and moving said holding means out of holding position to permit said latch to disengage and thereby permit a relative movement between said crimper and said member.

3. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, a crimper mounted on said plunger, a latching lever mounted on said plunger for engagement with said member to positively connect said plunger to said member, a second reciprocating plunger, means operated by said second reciprocating plunger for disengaging said lever from said member and means operated by said second reciprocating plunger for moving said lever into engaging position and positively maintaining the same in said position.

4. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, means biasing said plunger relatively to said supporting member in one direction, a latch positively locking said plunger to said supporting member, means for releasing said latch to

permit said plunger to move against said biasing means and means for engaging said latch and positively holding the same in engaged position after the plunger has moved a predetermined distance under the influence of said biasing means.

5. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, a crimper carried by said plunger, a locking lever pivoted on said plunger and adapted for locking engagement with said supporting member to lock said plunger and said member against relative movement, a second plunger adapted for engagement with the crowning head, a locking member operated by said plunger for engaging and maintaining said lever in its locking position and for engaging and moving said lever to unlocking position.

6. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, a crimper mounted on said plunger, a latching lever pivotally mounted on said plunger and adapted for engagement with said member to positively connect said plunger to said member, a second plunger, means on said second plunger for holding said latching lever in engaging position adapted to be moved out of holding position by the relative movement between said first and second plunger, and means on said second plunger for moving said latching lever out of engaging position when said holding means is moved out of holding position.

7. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, a crimper mounted on said plunger, means biasing said plunger in one direction relatively to said member, a latching member mounted on said plunger and adapted for engagement with said supporting member for holding the plunger against relative movement with respect to the supporting member, a second plunger, means biasing said second plunger in one direction, means carried by said second plunger for engaging said latching lever and holding the same in latching position, said means being adapted to be moved out of holding position by the relative movement between said first and second plungers.

8. A crowning unit for filling machines comprising a supporting member, a plunger reciprocably mounted in said supporting member, a crimper mounted on said plunger, a latching lever pivotally mounted on said plunger and adapted for engagement with said supporting member to positively connect said plunger thereto, a second plunger and oppositely disposed cams on said second plunger for engaging the opposite ends of said lever to move the same respectively into and out of locking position.

9. A crowning unit for bottle filling machines comprising a supporting member, a plunger reciprocably mounted on said supporting member, a crimper mounted on said plunger, a latching lever pivotally mounted on said plunger and adapted for engagement with said supporting member for positively connecting said plunger to said supporting member, a second plunger, a cam-faceted locking member on said second plunger for engaging and locking said lever in its locking position and an oppositely-disposed cam on said plunger for engaging and moving said lever to its releasing position.