R. W. WITTEMANN.

BOTTLE CAPPING-MACHINE.

APPLICATION FILED JAN. 27, 1910.

1,008,292. Patented Nov. 7, 1911.

Fig. 2.

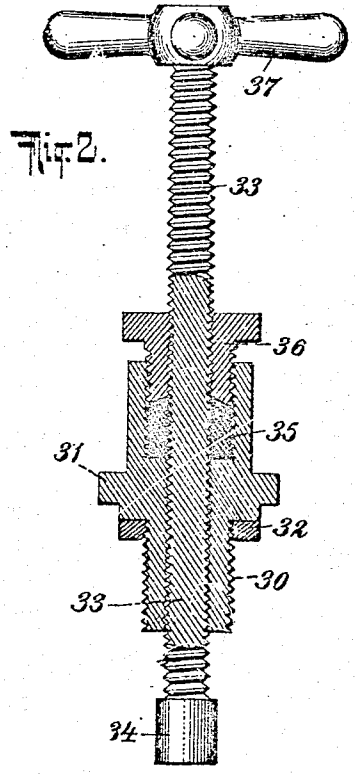


Fig. 1.

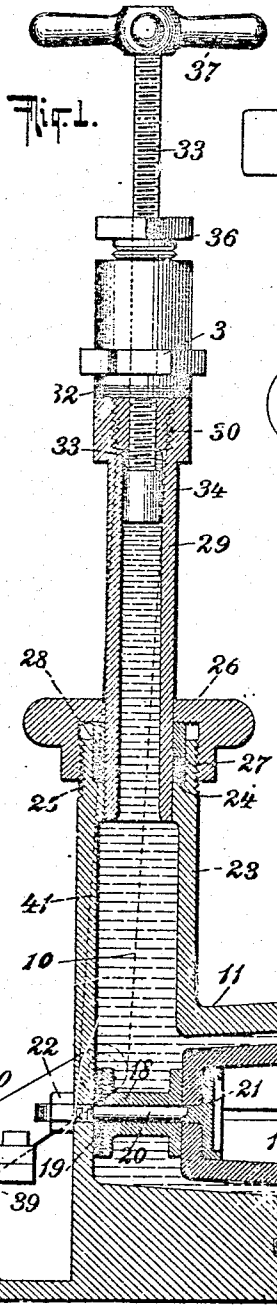
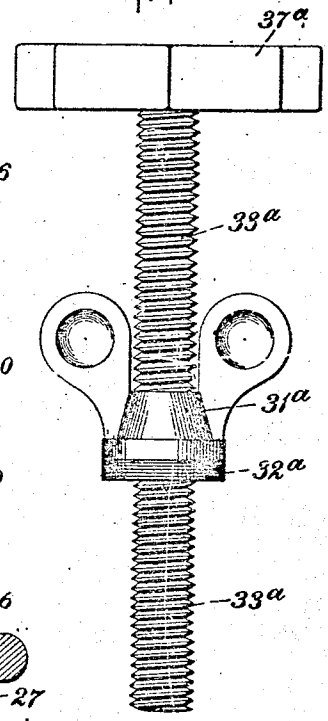


Fig. 3.



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UNITED STATES PATENT OFFICE.

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BOTTLE-CAPPING MACHINE.

1,008,292. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed January 17, 1910. Serial No. 538,477.

To all whom it may concern:

Be it known that I, RUDOLPH W. WITTEMANN, a citizen of the United States, residing at the city of New York, borough of Brooklyn, Kings county, in the State of New York, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a full, clear, and exact specification.

My invention relates to improvements in bottle capping machines, and the same has for its object more particularly to provide a simple, efficient and reliable apparatus by means of which a metallic or other cap may be readily and duly applied to the neck of a bottle.

Further, said invention has for its object to provide an apparatus in which the cap is applied to the bottle by an elastic compression cup actuated under the influence of fluid displaced within a receptacle and surrounding said compression cup.

Further, said invention has for its object to provide means for compensating for any loss of the operating fluid by leakage, and preventing the cushioning of the non-elastic fluid contained within the casing whereby the compression cup is actuated to apply a metallic cap to a bottle neck.

Further, said invention has for its object to provide means adapted to be forced into the fluid receptacle or its communicating parts in order to displace a portion of the fluid therein and thereby maintain said fluid casing and its connected parts completely filled with the operating liquid.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings forming part of this specification, wherein like numerals of reference indicate like parts, Figure 1 is a central longitudinal section showing one form of capping machine constructed according to and embodying my said invention; Fig. 2 is an enlarged detail central sectional view showing the means for displacing a portion of the fluid in order to make up for that which may be lost from time to time in the course of the operation of the machine, and Fig. 3 is an enlarged detail side view showing a modified form of device.

In said drawings 10 designates the apparatus as a whole comprising a casing 11 having a horizontal opening therein adjacent to its base provided with a flange 12, into which opening is fitted an elastic compression cup 13 preferably made of rubber having a lateral flange 14 at its outer portion adapted to be fitted in an annular recess in the flange 12 of the casing and secured in position thereon by means of an annular plate 15 secured to said casing 11 by bolts 16, 16, and 17 denotes a packing interposed between the flange 14 of the elastic cup and the annular plate 15. The said packing 17 is provided with a central opening in line with the opening in the outer or forward end of the compression cup 13 to receive a bottle neck and cap.

18 denotes a flanged member arranged to the rear of the inner, closed end of the cup 13, and 19 denotes a packing disposed between the rear end of said flanged member 18 and the inner wall of the casing 11.

20 denotes a bolt provided at its forward end with an enlarged head 21 corresponding substantially in outline with the inner end of the compression cup 13 and having its outer end, which passes through the casing 11, screw-threaded and provided with a nut 22 for maintaining the inner end of said compression cup 13 duly in position within said casing.

The casing 11 is provided with a vertical section 23 which communicates with the horizontal portion thereof and is provided at its upper end with a shoulder 24, and upon its outer surface with screw-threads 25.

26 denotes a nut provided with a central opening and adapted for engagement with the screw-threaded upper end of the vertical portion 23 of the casing. Within the upper end of the vertical portion 23, and resting upon the shoulder 24, is disposed a packing 27 upon which is arranged a ring 28 having its upper edge adapted for contact with the under surface of the nut 26.

29 denotes a hollow plunger adapted to work within the upper end of the vertical portion 23 of the casing, which plunger has its upper end interiorly threaded and adapted to receive the screw-threaded portion 30 of a nut 31, and 32 denotes a packing dis-

posed between the upper end of said plunger 29 and the nut 31. The nut 31 is provided with a central opening which is screw-threaded and adapted to receive a screw 33 which extends entirely through said nut, and is provided at its lower end with a head 34 corresponding in diameter substantially with the inner diameter of the hollow plunger 29. The upper end of the nut 31 is recessed to form a stuffing box, and 35 denotes a packing disposed within said stuffing box and surrounding the screw 33, which packing is adapted to be compressed within said stuffing box by a nut 36 working upon said screw 33.

37 denotes a hand-wheel secured to the upper end of the screw 33 whereby said screw may be rotated in order to force the head 34 thereof downwardly into the plunger 29.

38 denotes a bearing provided to the rear of the casing 11 in which is mounted a shaft 39 having arms 40, 40 secured at the opposite ends thereof, which arms have their outer ends connected to the lower ends of links 41, 41 connected at their upper ends to the upper end of the plunger 29, and 42 denotes an operating lever secured upon the shaft 39 whereby when said lever is actuated the hollow plunger 29 is caused to descend and displace the fluid within the casing 11 and compress the compression cup 13 arranged in the horizontal portion of said casing.

43 denotes a stop secured to the shaft 39 for limiting the upward movement of the arms 40, 40 and their connected parts.

In the modification illustrated at Fig. 3 the screw 33ª is provided at its upper end with a hand-wheel 37ª and upon its threaded portion with a wing nut 31ª which is adapted to engage the upper threaded end of a hollow plunger 29, and 32ª denotes packing disposed upon the threaded portion of the nut 31ª. In this construction the end of the screw 33ª projecting below the wing nut 31ª is adapted to be forced into the casing 11 to displace a portion of the liquid therein by merely rotating the hand-wheel 37ª. As soon as the same has been screwed down to the desired degree, the screw 33ª is secured in its adjusted position by the wing nut 31ª which also serves to compress the packing 32ª intermediate said wing nut 31ª and the upper threaded end of the casing 11 to effect a fluid-tight closure at that point.

The operation of the apparatus is as follows: As the plunger 29 is reciprocated during the repeated operation of the machine in applying a cap to a bottle neck by means of the lever 42, arms 40 40, and links 41 41, to displace a portion of the fluid within the casing 11 in order to compress the compression cup 13, a slight amount of said fluid contained within said casing will from time to time be caused to issue from the casing, or between said casing and the hollow plunger working therein, and unless some provision is made for the fluid so lost, the remainder of the fluid within said casing cannot operate properly as the hollow plunger 29 enters the same, and the compression cup 13 will thus be prevented from properly folding and lapping a metallic cap and securing the same to the bottle neck. In order to compensate for the fluid thus lost it merely becomes necessary to rotate the screw 33 by means of the hand-wheel 37 and force the head 34 at the lower end of said screw 33 downwardly into the plunger and cause said head 34 and a portion of the screw 33 entering said plunger to fill the space previously occupied by the operating fluid so lost.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein, a hollow plunger working within said casing, of a device adapted to displace a portion of the liquid in said casing, substantially as specified.

2. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein, a hollow plunger working within said casing, of a device adapted to displace a portion of the liquid in said casing independently of the action of said hollow plunger, substantially as specified.

3. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein, and a hollow plunger working within said casing, of an adjustable device adapted to be forced into the fluid contained in said casing, substantially as specified.

4. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein and a hollow plunger working within said casing, of a device adjustably arranged in said hollow plunger and adapted to displace a portion of the liquid contained in said casing independently of the action of said hollow plunger, substantially as specified.

5. In a bottle capping machine, the combination with a liquid containing casing, an elastic cup therein and a hollow plunger working within said casing, of a displacing device mounted within said hollow plunger adapted to displace a portion of the liquid in said casing independently of the action of said hollow plunger, substantially as specified.

6. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein and a hollow plunger working within said casing, of a plunger mounted in said hollow plunger and adapted

to be forced into said plunger and displace a portion of the fluid contained in said casing and hollow plunger, substantially as specified.

7. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein, a hollow plunger arranged to work within said casing, a revoluble member disposed in said hollow plunger having a head at its lower end adapted to be forced into said hollow plunger to displace a portion of the fluid contained within said casing and hollow plunger, substantially as specified.

8. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein, a hollow plunger adapted to work within said casing, a cap on said plunger, a revoluble member mounted in said cup, a head disposed upon said revoluble member and adapted to work within said hollow plunger whereby to displace a portion of the fluid contained within said casing and hollow plunger, substantially as specified.

9. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein and a hollow plunger adapted to work within said casing, a cap on said plunger, a screw mounted in said cap, a head secured to the lower end of said screw and adapted to work within said hollow plunger, and means for rotating said screw whereby to cause said head to displace a portion of the fluid contained within said hollow plunger and casing, substantially as specified.

10. In a bottle capping machine the combination with a liquid containing casing, an elastic cup therein and a hollow plunger adapted to work within said casing, a cap on said plunger, a screw mounted in said cap, a stuffing box provided upon said cap, and surrounding said screw, a packing disposed within said stuffing box, a head secured upon the lower end of said screw and adapted to work within said hollow plunger, and a hand-wheel secured to the upper end of said screw whereby to force said head downwardly within said hollow plunger and displace a portion of the fluid within said hollow plunger and casing, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 3rd day of June, nineteen hundred and nine.

RUDOLPH W. WITTEMANN.

Witnesses:

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