C. W. V. Messerschmidt.
MACHINE FOR SECURING METAL CAPS ON BOTTLES.
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Fig 1

Fig 2

Fig 3

Witnesses
Walter M. Chapin
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Inventor
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Patent Office, Washington, D.C.
To all whom it may concern:

Be it known that I, CHRISTIAN WILLIAM VILHELM MESSERSCHMIDT, a subject of the King of Denmark, residing at Gl. Kongevej 6, Copenhagen, Denmark, have invented a new and useful Improvement in Machines for Securing Metal Caps on Bottles; and I hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to mechanism for applying caps to receptacles such as bottles and has for its object the provision of means for conforming the cap closely to the head of a receptacle in such manner as to effectively seal the same. In devices of this character heretofore constructed, the mechanism has in many instances been unfitted to properly apply the cap to, for example, bottles of different makes owing to slight variations in the disposition of the recess around the bottle-neck into which a part of the cap is driven.

My invention consists in providing a plurality of rollers which are moved longitudinally with respect to the bottle while bearing against the neck thereof, the inward movement of the rollers against the sealing device being controlled by a pattern cooperating therewith.

Referring to the drawings: Figure 1 shows a side elevation with parts removed of the cap applying rollers, a portion of the plunger and the head of the bottle being shown in section; Fig. 2 is a plan of the device shown in Fig. 1; and Fig. 3 is a sectional detail of one of the rollers.

The mechanism for imparting the various movements to the rollers, the plunger and the bottle are not shown herein, since they are not essential parts of my invention. The device embodies a plunger A against the lower end of which the bottle B with the capsule C applied loosely thereto, is adapted to be pressed. Immediately above the lower end of the plunger it is provided with an annular pattern surface comprising a groove 16 which merges into a rib 17. Arranged concentrically of the plunger is a surrounding ring 15 which is supposed to have both a vertical and a rotary motion with respect to the axis of the plunger. Pivoted to this ring are three depending rods 18 which carry at their lower ends double rollers comprising the rims G and 19 at the respective ends thereof. These rollers are in one solid piece and preferably of steel and are mounted on ball-bearings as shown in Fig. 8. They are also adjustable longitudinally upon the rods 18 by means of the nuts 14, which work upon the threaded ends of the rods. These three rods are spaced apart around the plunger A and are pressed toward the same by means of springs 20 which extend between the lower ends of the plungers as shown in Fig. 1. In this position the rims G of the rollers are out of contact with the plunger A immediately above the bottle, while the rims 19 bear against the surface of the plunger at a point above the groove 16. The ring 15 is now simultaneously rotated and lowered and as soon as the rims G approach the groove in the neck of the bottle, the rims 19 pass into the groove 16 in the plunger, thereby permitting the rollers to be drawn inward by the springs 20 and to roll the capsule firmly into the groove on the bottle. In the further downward movement of the rollers the rims 19 travel outward upon the rib 17 of the plunger thus drawing the rims G out of contact with the capsule and bottle and permitting the bottle to be removed without interference therefrom. When this is done, the rollers return to the position shown in Fig. 1 for operation upon another bottle. While in this non-operating position, the rims G which act upon the capsule, are held out of contact with the plunger A so that while the rollers are in their upper position there is no wear of the rims G by contact with the plunger.

Having described my invention, I claim:

1. In a capping machine, a fixed plunger, a plurality of rollers surrounding said plunger, having a revoluble movement around said plunger and a rectilinear movement parallel to the axis of said plunger, means for forcing said rollers inwardly, and means normally holding said rollers apart a distance greater than the diameter of the cap to be placed upon the bottle beneath the plunger and for permitting inward movement of said rollers to engage said cap upon an initial downward movement of said rollers and for forcing said rollers apart upon a further downward movement of said rollers to disengage the rollers from the cap.

2. In a capping machine, a fixed plunger, a rotatable support surrounding said plunger and adapted to be moved in a direction parallel to the axis of said plunger, a plurality of members connected to said support,
rollers mounted on said members and adapted to roll the cap into locking engagement with a receptacle when said rollers are forced inwardly into engagement with said cap while being rotated, means for forcing said rollers inwardly, and a cam forming an extension from the bottom end of said plunger normally holding said rollers spaced a distance greater than the cap to be locked to the receptacle and permitting inward movement of said rollers on the initial downward movement of said support to engage said cap and roll the same into locking engagement with the receptacle and for then forcing said rollers apart upon further downward movement of said support to disengage the rollers from the cap and the receptacle whereby the capped receptacle may be removed while the rollers are in their lowermost position.

3. In a capping machine, a fixed plunger against which the loose cap on the receptacle is adapted to abut, a plurality of rollers surrounding said plunger, having a revoluble movement around said plunger and a rectilinear movement in a direction parallel to the axis of said plunger, said plunger having an annular cam forming a part thereof with which said rollers are adapted to engage, means for forcing said rollers into engagement with said plungers, said annular cam being cut to hold said rollers spaced apart a distance greater than the diameter of the cap to be attached to the bottle in their normal upper position and to permit the rollers to engage said cap upon an initial downward movement and for again forcing said rollers out of engagement with said cap in their lowermost positions whereby the capped receptacle may be removed while the rollers remain in their lowermost position.

4. In a capping machine, a fixed plunger against which the loose cap on a receptacle is adapted to abut, a plurality of rollers surrounding said plunger, having a revoluble movement around said plunger and a rectilinear movement in a direction parallel to the plunger, and means for normally holding said rollers apart a distance greater than the diameter of the cap in the upper position of said rollers and for moving them into locking engagement with said cap upon an initial downward movement of said rollers and for again forcing them apart upon a further downward movement thereof whereby the capped receptacle may be removed from beneath the plunger when the rollers are in their lowermost position.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN WILLIAM
VILHELM MESSEBSCHMIDT.

Witnesses:
VIGGO BLOM,
C. Y. SCHON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."