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BOTTLE CAPPING MACHINE.

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1,141,267.

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Fig. 1.

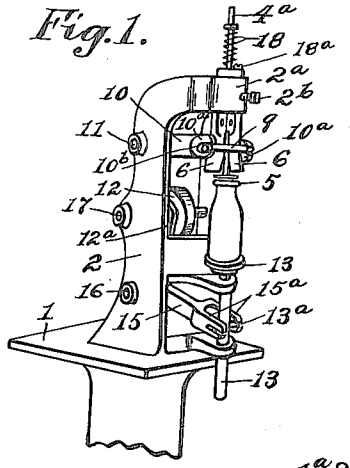


Fig. 2.

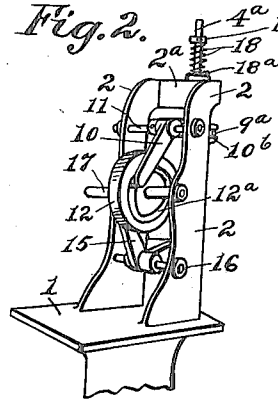


Fig. 3.

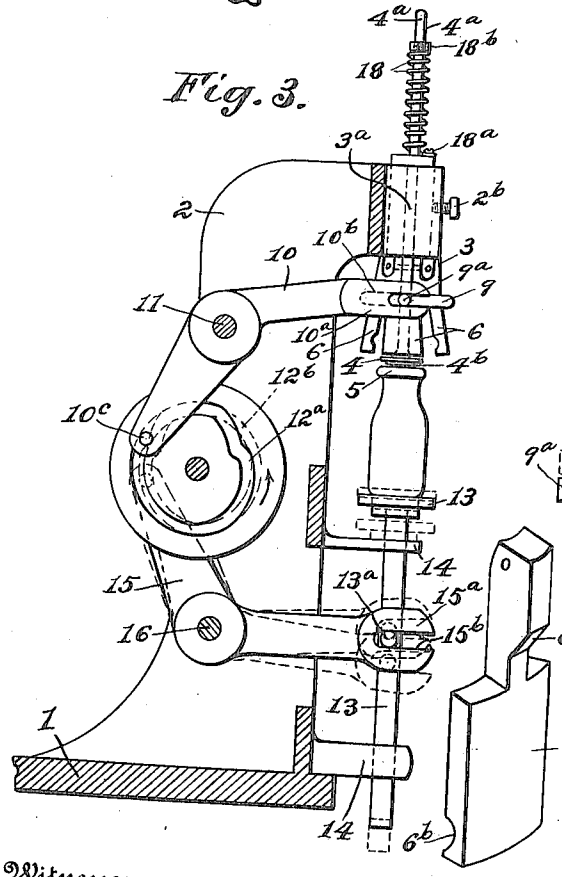


Fig. 4.

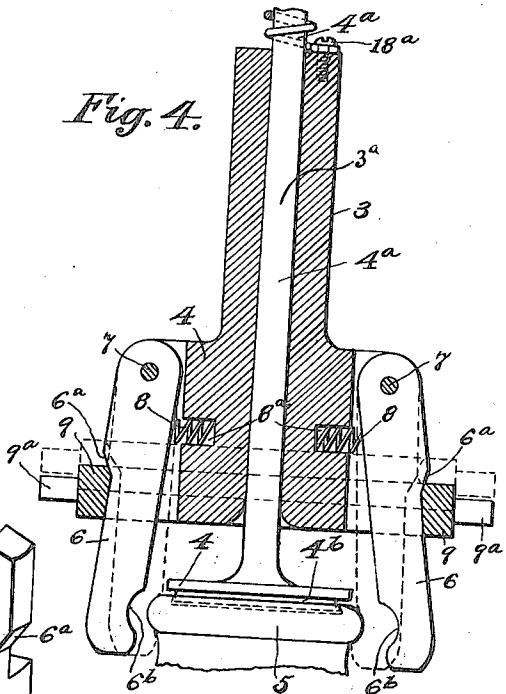


Fig. 5.

Witnesses

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BOTTLE-CAPPING MACHINE.

1,141,267. Specification of Letters Patent. Patented June 1, 1915.

Application filed April 16, 1914. Serial No. 832,163.

To all whom it may concern:

Be it known that we, ALBERT D. RAY and CHARLES N. RUSSELL, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

Our invention relates to improvements in milk-bottle capping machines and is particularly designed and adapted for the application of milk-bottle caps or closures of the general type or character disclosed in our Patent No. 1,038,651 of September 17th, 1912, in which the bottle cap or closure comprises a single blank of material consisting of a disk member and an integral bottle bead engaging and covering rim, said disk member being adapted to be seated in the groove of the bottle mouth and said bottle bead engaging and covering rim having a contracted skirt surrounding the bottle neck forming a contracted exterior bottle bead engaging member.

The primary object of the invention is to provide a generally improved machine of this class, of exceedingly simple, cheap, and efficient construction adapted to properly and expeditiously apply bottle closures or caps to milk-bottles.

With the above mentioned and other ends in view, the invention consists in the novel construction, arrangement, and combination of parts hereinafter described, illustrated in one of its embodiments in the accompanying drawings, and particularly pointed out in the appended claims.

Referring to the drawings forming a part of this specification, Figure 1, is a perspective view of a machine constructed in accordance with this invention, the parts being shown in position preparatory to receiving and applying the bottle cap or closure to the milk-bottle. Fig. 2, a perspective view of the rear portion of the same illustrating the lever actuating cam wheel and the connected parts. Fig. 3, an enlarged vertical sectional view, the dotted lines indicating the relative movements of the parts. Fig. 4, an enlarged longitudinal sectional view of the jaw and plunger carrying head together with the jaw actuating collet or ring. Fig. 5, a perspective view of one of the jaws.

Similar numerals of reference designate like parts throughout all the figures of the drawings.

The improved machine comprises a suitable base 1, and side bearing members 2, the latter terminating at their top in an overhanging head or support 2^a, adapted to receive and contain a jaw and plunger carrying head 3. The head 3, may be removably secured within the opening of the head or support 2^a, by means of a set screw 2^b.

The head 3, is provided with a centrally located opening 3^a, adapted to slidably receive and contain the plunger stem 4^a, of the plunger or head 4, which latter is provided with an inset disk portion 4^b, to fit into the mouth of the bottle in the act of pressing or inserting the disk portion of the bottle cap within the groove of the bottle mouth as indicated by dotted lines in Fig. 4 of the drawings.

As a means of forming and closing the depending or bead engaging member of the bottle cap about the beading 5, of the bottle mouth, a plurality of depending jaws 6, are pivotally mounted about the head 3, upon suitable bearing members 7, and as a means for opening the jaws, coiled springs 8, are mounted in openings 8^a, of the head, said springs bearing against the inner sides of the jaws 6, beneath the bearing members 7, and as a means of closing the jaws to form or constrict the bottle bead engaging member of the bottle cap about the bottle beading in the final application of the bottle cap, a collet or ring 9, is slidably mounted about the jaws 6, the latter being provided with beveled or inclined portions 6^a, with which the collet 9, is adapted to coöperate in its upward movements to close the jaws as indicated by dotted lines in Fig. 4 of the drawings. The collet 9, is provided with bearing studs 9^a, and as a means of operating the collet for opening and closing the jaws a crank arm 10, is provided said arm being mounted on a shaft 11, and provided at its front with arms 10^a, having slots 10^b, taking over and engaging with the bearing studs 9^a, said crank arm receiving its motion from a cam wheel 12, provided with a suitable cam groove 12^a, in which the stud or bearing member 10^c, of the crank 10, is adapted to travel.

As a means of moving the bottle upwardly to come into engagement with the bottle cap carried by the plunger head 4, for the initial insertion of the disk portion of the bottle cap into the mouth of the bottle a bottle carrying plunger 13, is provided, said

plunger being provided with a stem or shaft 13^a, mounted in and adapted to slide in guides 14, extending from the front of the frame, and as a means for actuating the bottle carrying plunger the cam wheel 12, is provided with a second cam groove 12^b, similar in form to and arranged in opposite relation to the cam groove 12^a, said cam groove 12^b, operating a crank or lever 15, mounted on a bearing shaft 16, the forward end of the crank or lever 15, being provided with arms 15^a, having slots 15^b, taking over or engaging bearing members or studs 13^a, of the plunger stem 13.

The cam wheel 12, is mounted on a driving shaft 17, which may be operated in any suitable and convenient manner.

Upon reference to the parts it will be seen that their relative arrangement is such that the bottle carrying plunger 13, is first elevated to initially insert the disk portion of the bottle cap within the mouth of the bottle after which the upper crank 10, is actuated to close the jaws about and secure the skirt or beaded portion of the bottle cap about the bottle beading, the plunger stem 4^a, being adapted to operate against the resistance of a spring 18, detachably connected to the top of the head 3, by the part 18^a, the upper end of the spring being adjustably secured by means of the adjusting clamp 18^b, on the plunger stem 4^a.

It will be observed that the depending jaws 6, are provided on their inner sides and near the free ends thereof with a horizontal groove or recess 6^b, conforming to the contour of the bottle beading 5, and adapted to embrace the same when closed in the act of clamping the hood of the bottle cap to the bottle beading.

From the foregoing description, taken in connection with the accompanying drawings, the operation and advantages of our invention will be readily understood.

Having thus described one of the embodiments of our invention, what we claim and desire to secure by Letters Patent is,—

1. In a bottle capping machine, a stationary head, a spring resisted plunger stem mounted therein and terminating in a plunger head the latter being provided with an inset disk portion adapted to receive the disk portion of the bottle cap and to fit into the mouth of the bottle, and spring resisted depending jaws projecting beneath said plunger head and provided at their inner free sides with bottle bead receiving grooves adapted to crimp the skirt portion of the bottle cap about the bottle beading after the insertion and retention of the disk portion of the bottle cap in the mouth of the bottle by said plunger head.

2. In a bottle capping machine, the combination with a stationary head, and a spring resisted plunger stem mounted therein and provided with a plunger head having an inset disk portion adapted to receive the cap disk and to fit into and insert the latter in the mouth of the bottle; of cap crimping spring resisted jaws mounted in said stationary head and surrounding and projecting beneath said plunger head, the free inner sides of said jaws being provided with bottle bead receiving grooves to receive and constrict the skirt or bottle bead engaging portion of the bottle cap about the bottle beading in the final application of the latter.

3. In a bottle capping machine, a stationary head, a spring resisted plunger stem mounted therein and terminating in a plunger head the latter being provided with an inset disk portion adapted to fit into the mouth of the bottle and to receive the disk portion of the bottle cap in the act of receiving the latter within the groove of the bottle mouth, and a plurality of spring resisted cap crimping jaws carried by said stationary head and provided at their free inner sides with bottle bead receiving grooves extending beneath said plunger head and being adapted to finally crimp the skirt or beaded portion of the bottle cap about the beaded portion of the bottle when the latter is elevated to a position in horizontal alinement with said bead receiving grooves.

4. In a bottle capping machine, a stationary head, a spring resisted plunger stem mounted therein and terminating in a plunger head the latter being provided with an inset disk portion adapted to fit into the mouth of the bottle, a plurality of jaws pivotally mounted in said stationary head and surrounding and projecting beneath said plunger head, the free inner sides of said jaws being provided with bottle bead receiving grooves, a plurality of springs interposed between said stationary head and said pivotally mounted jaws to normally hold the latter in an open position, a collet surrounding said jaws and adapted to simultaneously close the same against the resistance of said springs, a bottle carrying plunger adapted to carry a bottle against said plunger head in the act of initially inserting the bottle cap therein, and means for operating said collet whereby to close said jaws and finally crimp the skirt portion of the bottle cap about the bottle beading after the insertion and retention of the disk portion of the bottle cap in the mouth of the bottle by said plunger head and said bottle carrying plunger.

5. In a bottle capping machine, a frame provided at its top with a head, a spring resisted vertically movable plunger head mounted therein, said head having an inset disk portion adapted to receive the disk portion of the bottle cap and to fit into the

mouth of the bottle, a bottle carrying plunger beneath said head, a plurality of depending jaws carried by said head and surrounding said plunger head, said jaws being provided with bottle bead receiving grooves, means for moving said bottle carrying plunger whereby the bottle carried by the latter is adapted to initially receive the bottle cap from said spring resisted plunger head and the beading of said bottle is brought into alinement with said grooves of said jaws, and means for closing said jaws about the skirt or beaded portion of said bottle cap after the insertion and retention of the latter in said bottle by said plunger head and the elevation of the beaded portion of said bottle as aforesaid.

6. In a bottle capping machine, a stationary head provided with a spring resisted vertically movable plunger stem terminating in a downwardly spaced plunger head having an inset disk portion adapted to receive the disk portion of the bottle cap, a plurality of depending jaws pivoted in said stationary head and surrounding and depending beneath said plunger head, said jaws being provided at their free inner sides with grooves adapted to receive the skirt portion of the bottle cap after the initial insertion of the latter into the mouth of the bottle by said plunger head and the elevation of said bottle beading to horizontal alinement with said grooves of said jaws, and means for closing said jaws to crimp the skirt portion of said bottle cap about the bottle beading after the insertion and retention of said bottle cap in the mouth of the bottle by said plunger head and the elevation of the beaded portion of said bottle as aforesaid.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ALBERT D. RAY.
CHARLES N. RUSSELL.

Witnesses:
O. C. BILLMAN,
L. M. CRAIL.