

H. S. BREWINGTON.
BOTTLE CAPPING MACHINE.
APPLICATION FILED AUG. 1, 1908.

933,057.

Patented Sept. 7, 1909.

Fig. 1.

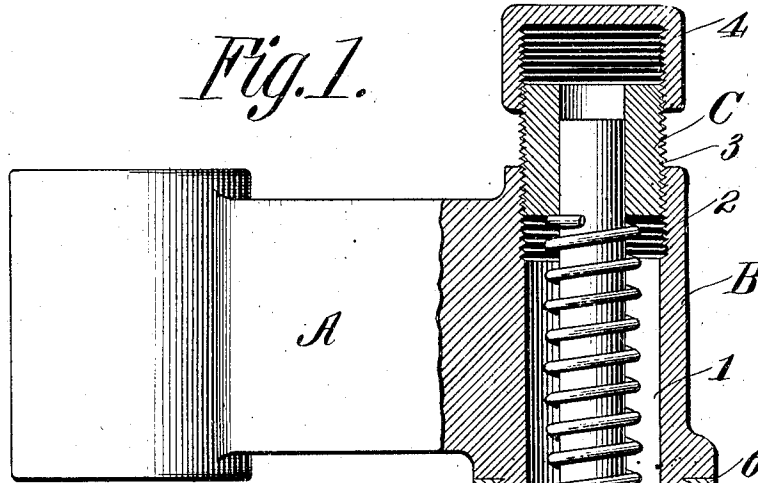


Fig. 2.

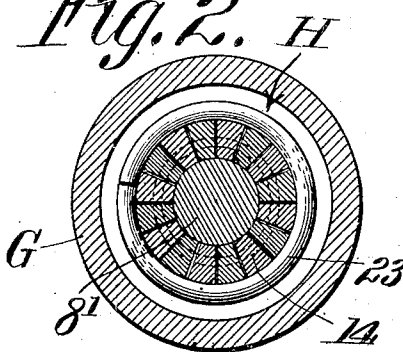


Fig. 4.

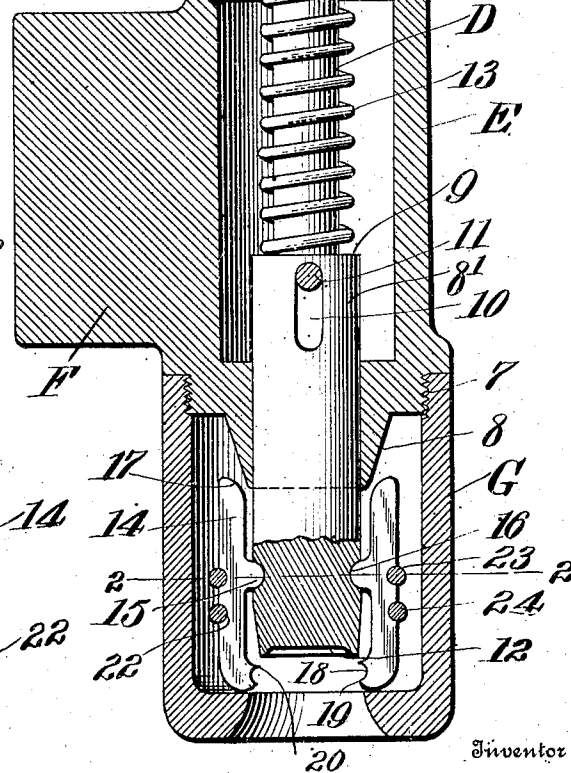
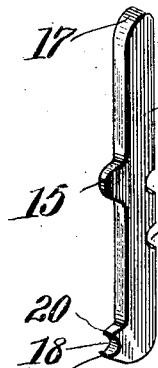
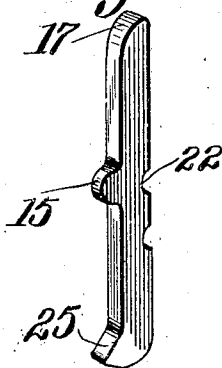


Fig. 3.

Witnesses
Frank B. Woodson.
R. E. Preece.

Henry S. Brewington
E. Walton Brewington
his Attorney

UNITED STATES PATENT OFFICE.

HENRY S. BREWINGTON, OF BALTIMORE, MARYLAND.

BOTTLE-CAPPING MACHINE.

933,057.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY S. BREWINGTON, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

My invention relates to an improvement in capping heads as applicable to bottle capping machines and machines of like character, the object being to automatically secure a sealing cap on the head or mouth of a bottle.

The particular kind of bottle which I employ as the most applicable, is that which has an exterior locking shoulder or a bead on the head thereof, and the kind of cap which is more particularly desired to be used and for which the crowning head is most applicable is a metallic cap having a depending flange, the flange adapted to be locked under the shoulder or bead on the bottle head, thereby securing the cap on the bottle by the use of the crowning head now about to be described.

With the foregoing object in view, my invention consists in certain novel features of construction and combinations of parts, which will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1, is a view in longitudinal section. Fig. 2 is a transverse section on line 2--2 of Fig. 1. Fig. 3, is a detail of one of the crimping fingers, and Fig. 4 is a similar view of a modified form of a crimping finger.

A, is an arm adapted to be secured on a machine of any character, adapted to impart to the said arm a reciprocating movement.

B, is a reciprocating head, carrying the crowning mechanism, the head is bored at 1 and is inwardly threaded at 2, into which is screwed the threaded plug C. The plug is exteriorly threaded throughout its entire length as indicated at 3, and is provided with an inwardly threaded cap nut 4 on the top part thereof. The plug C is centrally bored throughout its entire length to allow the plunger D to reciprocate therethrough.

E is a sleeve provided with a reciprocating guide arm F. The said sleeve is inwardly threaded in the upper end part 5 for the purpose of being screwed on the exterior threaded end 6 of the head B. The said sleeve is exteriorly threaded on the lower end por-

tion 7 on which is screwed the guide G, and below the threaded end portion 7, it is tapered at 8, the purpose of which will be hereinafter explained. The lower end portion of the plunger D is enlarged at 8' forming a shoulder 9, a slot 10 extends through the said enlarged portion, through which is fitted a pin 11, which pin extends through the sleeve E; the slot reciprocates with respect to the pin and limits the reciprocation of the plunger D; the pin also prevents the mechanism within the head B from falling out thereof. The face of the lower end of the plunger is slightly concave at 12, for the purpose of centering the cap (not shown) just prior to the sealing operation. Surrounding the plunger D, and supported by the shoulder 9 is a spiral spring 13, the upper end of which abuts against the inner end of the plug C, by which the tension of the spring is regulated. The function of the cap nut 4 is the regulation of the reciprocation of the plunger D within the limit afforded by the slot 10.

H, represents a segmental closing die composed of the fingers 14, which fingers are provided with lugs 15 on the inner sides thereof at a point just above their central length. These fingers are secured on the lower end portion of the plunger D, by means of the lugs 15 being secured in the groove 16 exteriorly provided thereon. The upper ends of these fingers are beveled at 17 to conform to the tapered end 8 of the sleeve E, by which they are adapted to be engaged in the manner to be hereinafter described. In the lower end of the fingers is formed a semi-circular groove 18, for the purpose of retaining the caps below the plunger prior to being secured on the bottle head and for engaging with the flange of the cap, the edge 19 engaging with the lower edge of the flange of the cap (not shown) and forcing it under the bead or shoulder on the bottle head, (not shown) the edge serving the purpose of securely holding the cap in place while the lower edge of the flange is being forced under the bead or shoulder on the bottle head and causing the said flange to curl around and conform to the said bead or shoulder, thereby insuring a better sealing contact when the pressure of the plunger is withdrawn. These series of fingers forming the segments of which the

closing die is composed are exteriorly provided with grooves 22, into which are secured the spring rings 23 and 24 by which means the fingers are secured together and about the end portion of the plunger D in a manner which permits them to open and close during the operation of securing the cap on the bottle head now about to be described.

In the modification I have provided a closing die composed of a series of fingers as shown in Fig. 4, which fingers are in every respect similar to those shown in Fig. 3, save on the lower end portion I have provided a single wedge shaped tooth 25. A forming die composed of fingers of this character while very effective relative to a particular form of cap is not as applicable as that shown in the preferred form to the various styles of caps now in universal use by the trade.

My device is operated as follows: A cap (not shown) is placed within the die H and held therein below the plunger D by the grooves 18 in the series of fingers 15. The bottle (not shown) to be capped, is then placed below the cap and plunger and the head B is then reciprocated (by any suitable means, not shown). As the head descends the plunger D is made to ascend causing the beveled ends 17 of the fingers 14 to be engaged by the tapered end 8 of the sleeve E, thereby spreading the fingers apart or opening the die at its upper end, thereby causing the lower grooved ends 18 of the fingers to close in and about the flange of the cap and press it under the bead on the bottle mouth. As the head ascends and the pressure of the plunger on the bottle is released, the plunger is made to descend by reason of the spring 13, thereby releasing the fingers about the cap and permitting it to be removed from within the die H.

Slight changes and alterations might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, hence I do not desire to limit my invention to exact construction as set forth, but:

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a machine of the character described, comprising a reciprocating capping head, a spring actuated plunger secured within the head, a yielding segmental closing die composed of a plurality of closing fingers fulcrumed on the lower end portion of the said plunger, a guide surrounding the said closing die, means for entering the upper inner end portion of the said die, thereby spreading the upper ends of the said fingers outwardly and thereby forcing the lower ends inwardly toward a common center, and

means exteriorly provided on the said die for causing the said fingers to return to their normal closed position after the entering means is withdrawn, substantially as described.

2. In a machine of the character described, comprising a reciprocating head, a reciprocating plunger secured within the head, a yielding segmental die composed of a plurality of closing fingers fulcrumed on the lower end portion of the said plunger, means regulating the reciprocation of the said plunger, means provided on the fingers for supporting a cap within the said die and below the said plunger, a sleeve having a substantially conical shaped end portion, means forcing the said conical end portion into the upper end portion of the said die thereby forcing the upper ends of the said fingers outwardly and causing the lower ends to be forced inwardly toward a common center, substantially as described.

3. In a machine of the character described, comprising a reciprocating head, a sleeve having a substantially conical shaped end portion carried by the head, a spring actuated plunger secured within the head, a yielding segmental closing die composed of a plurality of individual closing fingers fulcrumed at a point substantially midway of their length to the lower end portion of the said plunger, a guide carried by the said sleeve, surrounding the said die, means for reciprocating the said plunger thereby causing the said conical end of the sleeve to enter the said closing die whereby the upper ends of the said fingers are forced outwardly and the lower ends made to close inwardly toward a common center, and means provided on the said die for restoring the said fingers to normal closed position after the withdrawal of the said conical end portion of the said sleeve, substantially as described.

4. In a machine of the character described, comprising a reciprocating head, a sleeve, substantially conical shaped on one end thereof carried by the said head, a spring actuated plunger secured within the said head, means limiting the reciprocation of the said plunger, a yielding segmental closing die composed of a plurality of individual closing fingers fulcrumed on the lower end of the said plunger, a guide carried on the said sleeve and surrounding the said die, means for reciprocating the said plunger thereby causing the said conical end of the said sleeve to enter the said die whereby the upper ends of the said fingers are forced outwardly and the lower ends inwardly toward a common center, and means provided on the said die for restoring the said fingers to their normal closed position after the withdrawal of the said conical end portion of the said sleeve, substantially as described.

5. In a machine of the character described,

comprising a reciprocating head vertically bored throughout its entire length, a reciprocating plunger secured within the bored portion and provided with a groove in the lower end portion thereof, a yielding segmental closing die composed of a series of individual closing fingers fulcrumed in the said groove at a point substantially midway the length of the said fingers, the said fingers being inwardly provided on their lower end portions with a substantially semi-circular groove formed therein and a plurality of grooves exteriorly provided in the said fingers, spring rings secured within the last mentioned grooves, a sleeve having a substantially conical shaped end secured on the head, the said conical shaped end of the sleeve adapted to be forced into the said die and force the upper ends of the said fingers outwardly and thereby force the lower ends of the said fingers inwardly toward a common center, substantially as described.

6. In a machine of the character described, comprising a capping mechanism, provided with an annularly arranged series of independent movable suspended closing fingers, having a plurality of grooves exteriorly provided therein, and spring rings secured in the said grooves securing and yieldingly forming the said fingers into a yielding closing die, a plunger upon which the said fingers are fulcrumed, a reciprocating head, a sleeve carried thereby, having a substantially conical shaped end portion for entering the said die whereby the upper ends of the said fingers are forced outwardly and the lower ends inwardly toward a common center, substantially as described.

7. In a machine of the character described, comprising a capping mechanism, provided with a yielding segmental die formed of a plurality of independent movable closing fingers loosely secured to a plunger, a plurality of grooves formed in the outer surface of the said fingers and having spring rings secured therein, and means for engaging with the upper ends of the said fingers forcing them outwardly, and thereby forcing the lower ends inwardly toward a common center, substantially as described.

8. In a machine of the character described, comprising a closing die formed of a series of individual closing fingers, said fingers being provided with lugs on their inner face portion at a point substantially midway their length, the said fingers being inwardly provided on their inner end portions with a semi-circular groove formed therein, and exteriorly provided with a plurality of grooves into which are secured spring rings, a plunger having means provided thereon by which means the lugs fulcrum the said fingers thereon, and means for entering the said die whereby the upper ends of the said

fingers are forced outwardly and the lower ends inwardly toward a common center, substantially as described.

9. In a machine of the character described, comprising a head, a threaded hollow plug partially screwed within the upper end thereof, a cap nut secured on the projecting portion of the said plug, a spring actuated plunger secured within the head carrying a yielding segmental closing die composed of a plurality of individual closing fingers on the lower end portion thereof, a sleeve having a substantially conical shaped end portion secured on the lower end of the said head, a guide secured on the lower end of the sleeve, means for reciprocating the said head thereby causing the said conical shaped end of the sleeve to enter the said die, thereby forcing the upper ends of the said fingers outwardly and the lower ends inwardly toward a common center, substantially as described.

10. In a machine of the character described, comprising a head, a yielding reciprocating plunger secured within the head, a yielding segmental die composed of a plurality of individual closing fingers having a plurality of grooves exteriorly provided in the surface thereof, and means provided on the lower inner end portions of the said fingers for supporting a cap below and in line with the said plunger, means by which the said fingers are fulcrumed on the lower end of the said plunger, and means for engaging the upper ends of the said fingers whereby the upper ends of the said fingers are forced outwardly and away from the plunger and the lower ends inwardly toward a common center, substantially as described.

11. In a machine of the character described, comprising a head, a sleeve carried thereby, a guide carried by the sleeve, a spring actuated plunger secured within the said head, a yielding segmental closing die composed of a plurality of individual closing fingers carried by the said plunger, means provided on the lower inner ends of the said fingers for supporting a cap below and in line with the said plunger, means fulcruming the said fingers on the lower end of the said plunger, means for engaging the upper inner ends of the said fingers, whereby the upper ends are forced outwardly, and the lower ends inwardly toward a common center, and means provided on the said die for retaining the lower ends of the said fingers in normal closed position prior to the said engagement of the said upper ends thereof, substantially as described.

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

HENRY S. BREWINGTON.

Witnesses:

MARY M. MAGRAW,

KATHERINE M. MANNION.