I. NEWMAN.

TOOL FOR CAPPING CANS.

APPLICATION FILED SEPT. 26, 1919.

1,370,039. Patented Mar. 1, 1921.

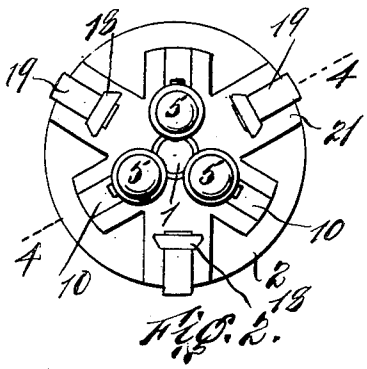


FIG. 2.

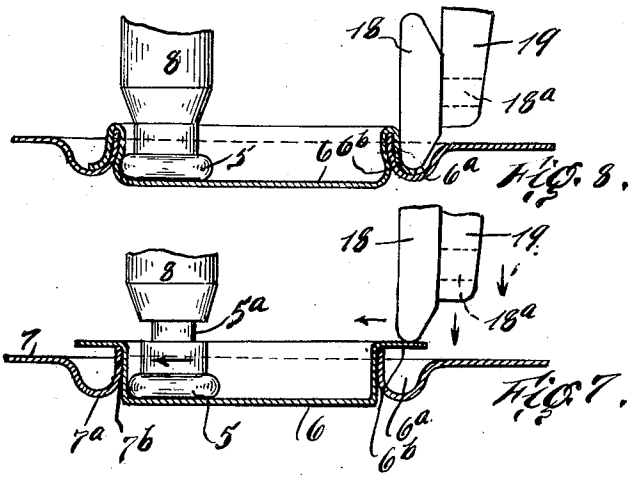


FIG. 8.

FIG. 7.

FIG. 1.

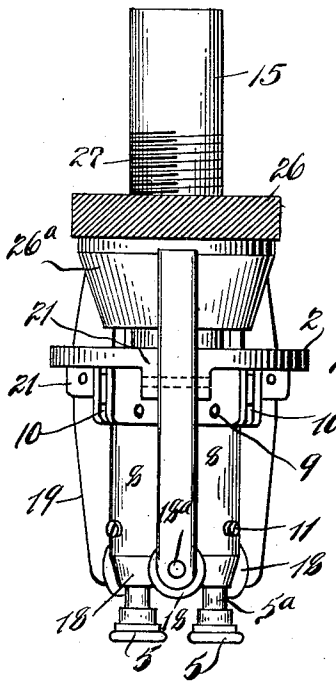
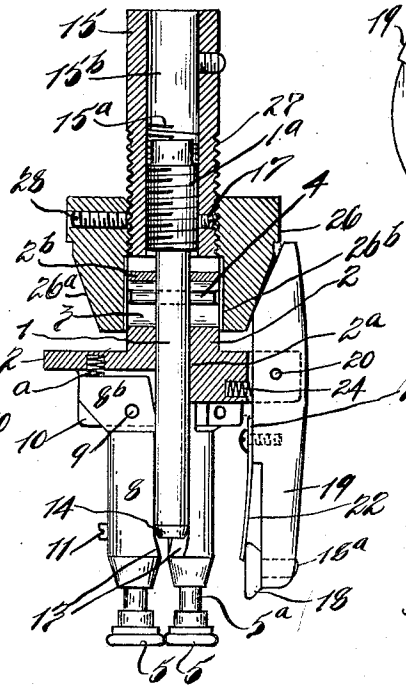


FIG. 4.



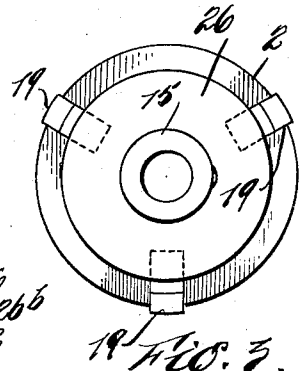


FIG. 3.

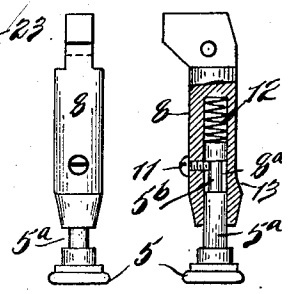


FIG. 5. FIG. 6.

Inventor

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UNITED STATES PATENT OFFICE.

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TOOL FOR CAPPING CANS.

1,370,039. Specification of Letters Patent. Patented Mar. 1, 1921.

Application filed September 26, 1919. Serial No. 326,641.

To all whom it may concern:

Be it known that I, ISIDOR NEWMAN, a citizen of the United States, and resident of New York city, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Tools for Capping Cans, of which the following is a specification.

My invention relates to improvements in tools or machines adapted to secure caps in filling holes of cans and the like, such as tin cans. In Letters Patent granted to me May 14, 1918, No. 1,266,519, I have set forth a tool wherein rolls operate within a cap to expand it within the neck of the can and rolls operate on the transverse flange of the cap to spin the flange over the neck of the can during rotation of the tool. My present invention has reference to improvements in the class of tools referred to, and is particularly adapted for use in the class of tools disclosed in my aforesaid Letters Patent.

One of the objects of my invention is to provide means to permit control of the extent of lateral movement of the inner rolls within the can cap, and another object is to provide means to cause and regulate the lateral movement of the outer rollers for operation upon the flange of the cap, whereby the desired spinning of the cap upon the flange of the can neck may be effected in accordance with the character of material to be operated upon and the dimensions of the cap.

My invention comprises novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part hereof wherein—

Figure 1 is a side view of a cap seaming tool embodying my invention;

Fig. 2 is an under side view thereof;

Fig. 3 is a top plan view;

Fig. 4 is a section on the line 4—4 in Fig. 2;

Figs. 5 and 6 are detail views of the inner rolls;

Figs. 7 and 8 are sectional diagrammatic views illustrating steps in the operation of my improved tool.

Similar numerals of reference indicate corresponding parts in the several views.

The spindle 1 is adapted to have longitudinal movement in a bore 2^a of the body 2 which parts may be united to rotate together. For such purpose the hub 2^b of body 2 is shown provided with a longitudinal slot 3 receiving a pin or projection 4 from the spindle 1. At 5 are indicated rolls adapted to fit within the cap 6 that is secured in a hole 7^a in can body 7, as in the head of said body, to expand the margin of the cap against the adjacent marginal portion of the can body. The stems 5^a of rolls 5 are shown slidably mounted in bores 8^a of arms 8, the upper portions of which arms are pivotally supported upon pins or the like 9 fitted in holes in body 2. Said arms are shown between jaws 10 on body 2, the pivots 9 passing through said jaws and arms. The stems 5^a are retained in bores 8^a by means of screws 11 secured to arms 8 and entering annular recesses 5^b in said stems 5^a, and springs are provided normally to push the rolls 5 outwardly. For such purpose I have shown springs 12 within the bores 8^a, and bearing against the adjacent ends of stems 5^a and against the bottoms of said bores, (Fig. 6), whereby as the rolls receive pressure the stems may slide within the bores and will be pushed outwardly when such pressure is relieved. The arms 8 are arranged around the spindle 1 in a concentric manner, and said spindle is adapted to spread said arms laterally to force the rolls 5 against the inner surface of the side of the wall of cap 6, for which purpose said arms at their lower ends are provided with cam-like surfaces 13 adapted to be engaged by the cammed or downwardly inclined portion 14 at the inner end of spindle 1. The arms 8 are maintained pressed toward spindle 1 by means of springs *a* which are located in recesses in body 2 and operate against the portions 8^b of said arms that are laterally disposed with respect to the pivots 9, Fig. 4. When the spindle 1 is moved outwardly with respect to body 2 the cammed portion 14 of the spindle will be drawn back from the cam surfaces 13, and when the spindle is pushed inwardly or in the direction of the cams 13 the latter will be engaged by the cammed portion 14 to cause the arms 8 to spread apart to correspondingly spread the rolls 5 and force them against the inner wall of cap 6. In order to control the extent of outward lateral movement of rolls 5 with respect to wall 6^a of cap 6, I pro-

vide means to vary as desired the extent of movement of spindle 1 into body 2 toward cams 13. To carry out such purpose I have shown the upper portion of spindle 1 screw threaded at 1^a and receiving corresponding threads 15^a within the bore 15^b of stop member 15 whereby said member and spindle are adjustably connected, which member at its inner end is adapted to engage an adjacent stop, shown as a hub 2^b of body 2, when the parts 1 and 15 are pushed toward the cam surfaces 13. A screw 17 threaded in a bore in member 15 is adapted to bear against spindle 1 to retain the latter securely attached to member 15 for rotation of the spindle by said member. The member 15 is adapted to be attached to a spindle or chuck of a drill press or other mechanism for rotating the tool. By adjusting the member 15 longitudinally on spindle 1 the position of the cammed portion 14 of said spindle with respect to cam surfaces 13 of arms 8 may be regulated in such a manner that the extent of movement of cam 14 against said cam surfaces can be controlled, so that when member 15 engages the stop or hub 2^b and is stopped thereby the spindle will have spread the arms 8 with rolls 5 to a desired extent and further spreading apart of rolls 5 within the can head 6 will be stopped. By the means described pressure of said rolls against the side wall 6^a of can head 6 for spinning or spreading said wall against the neck 7^b of the can head is controlled in accordance with the inner diameter of the can head and the gage of the metal.

Rollers 18 are adapted to engage the laterally extending flange 6^b of cap 6 for spinning or seaming it over the outturned neck or flange 7^b of the can body surrounding the hole 7^a thereof, and said rollers are movably supported to have inward movement while spinning said flange. The rollers 18 are shown journaled by means of stems 18^a in bores at the lower ends of arms 19 that are pivotally supported upon body 2 by means of pivots 20. Said body is shown provided with spaced jaws 21 receiving arms 19 and pivots or pins 20 whereby said arms may rock. I have shown the rollers 18 rotatively retained upon arms 19 by means of springs 22 secured by screws 23 to said arms and bearing against said rolls. Springs 24 located in bores of body 2 bear against arms 19 below their pivots to normally spread said arms outwardly. The upper ends of arms 19 are coöperative with a controlling member 26 shown having a downwardly tapered or cam-like surface 26^a between the upper ends of said arms, whereby when the member 26 is raised the arms with their rollers 18 will be spread outwardly and when said member is depressed between the upper ends of said arms their lower ends with the rollers 18 will be moved inwardly. Member 26 is adjustably attached to member 15 for which purpose member 26 has an internal threaded bore receiving external threads 27 on member 15. A screw 28 in member 26 is adapted to engage member 15 to secure said members together from relative rotation. Bore 26^b of member 26 receives hub 2^b of member 2. Member 26 may be adjusted on member 15 with relation to spindle 1 in such a manner as to engage the adjacent ends of arms 19 at a predetermined moment to cause the rollers 18 to move inwardly as required, and by means of the position of member 26 with respect to spindle 1 and the stopping of the inward movement of said spindle by engagement of member 15 with the end of hub 2^b the extent of inward movement of rollers 18 may be controlled.

I have shown three rolls 5 concentrically disposed around spindle 1 at equal distances apart and three rollers 18 disposed outside of the circumference of rolls 5 and equally spaced apart but in spaced relation thereto on radii intermediate the adjacent rolls 5 (Fig. 2), whereby the three rolls 5 may be moved outwardly and the three rollers 18 may be moved inwardly simultaneously during spinning of the cap to the can head, and whereby operation of the rolls and rollers upon the can will be balanced and uniform. Any desired number of rolls 5 and rollers 18 may be used instead of three each.

To secure the cap on the can body the cap is seated in hole 7^a of the can head and the tool is advanced to the cap whereupon the rolls 5 will enter the cap and the downward pressure of the tool will cause the cap to be pushed by the rolls snugly into the hole 7^a to force its flange 6^b upon the neck 7^b, and the cam part 14 of the spindle will engage the cam parts 13 of arms 8 to spread the latter for forcing the rolls 5 into engagement with the marginal portion of the cap. The tool will be rotated and the rolls 5 will be rotated in the cap so that continued downward pressure of the spindle 1 will cause rolls 5 to be gradually pressed outwardly to spin or expand the side wall 6^a against the adjacent portion of the can body below the neck 7^b. While the rolls 5 are acting upon the cap the rollers 18 will bear upon the portion of the flange 6^b that extends beyond the neck 7^b to spin said portion of the flange over the neck. While the rolls and rollers are being pressed downwardly with body 2 the member 26 will engage the upper ends of arms 19 to cause the rollers 18 to move inwardly toward neck 7^b, whereby the flange 6^b is spun against the neck not only by downward but by inward pressure and movement of rollers 18 as the entire tool is rotated. The flange 6^b will be squeezed laterally against neck 7^b against the

outward pressure of rolls 5 within the cap, (Fig. 8). The pressure of rollers 18 against flange 6^b can be regulated, as desired, by the position of member 26 upon member 15 with relation to the upper ends of arms 19. While body 2 with the rollers and rolls is being rotated by and with spindle 1 the tool will be caused to move toward the can body by reason of the natural and automatic effort of the body to slide along the spindle assisted by the pressure of member 26 upon arms 19. The simultaneous coöperating action of the inner rolls 5 and outer rollers 18 cause the spinning of the cap to the neck of the can body for effecting a hermetical seal in an expeditious manner. When the cap has been sealed in the can head the spindle will be pulled outwardly whereupon the outward pressure on the arms 8 will be relieved as well as the pressure upon arms 19 by member 26 so that the tool may be readily removed from the cap.

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

1. A tool of the class described comprising a spindle, a roll mounted for lateral movement relative to the spindle, a roller outside of and independent of the roll mounted for lateral movement relative to the spindle and rotative in a circle outside of the circle described by the rotation of the roll, and means operative with the spindle to move said roll and roller laterally in opposite directions.

2. A tool of the class described comprising a spindle having a cam-like member, a roll supported for lateral movement by the spindle, the latter having means to move the roll laterally, a roller outside of said roll and movable means supporting said roller and coöperating with said member for moving the roller inwardly when the spindle moves longitudinally to move the roll outwardly.

3. A tool of the class described comprising a spindle, a body movable relatively to the spindle, a roll, means movably connecting the roll with the body, said means being coöperative with the spindle for moving the roll outwardly, a roller outside of the roll, an arm movably supporting the roller upon the body, and means connected with the spindle for operating said arm to move the roller inwardly when the spindle moves in the direction of the roll.

4. A tool of the class described comprising a spindle, a body movable relatively to the spindle, an arm movably carried by the body, a roll carried by the arm, means cooperative between the spindle and arm for moving the roll outwardly, a roller spaced from the roll, an arm carrying said roller and movably supported by the body, and means connected with the spindle for operating said arm for moving the roller inwardly when the spindle moves in the direction of the roll.

5. A tool of the class described comprising a spindle, a body movable relatively to the spindle, an arm movably carried by the body, a roll carried by the arm, means cooperative between the spindle and arm for moving the roll outwardly, a roller spaced from the roll, an arm carrying said roller and movably supported by the body, and a cam-like member connected with the spindle to actuate the arm for moving the roller inwardly when the spindle moves in the direction of the roll.

6. A tool of the class described comprising a spindle, a body movable relatively to the spindle, a plurality of arms disposed around the spindle, rolls carried by said arms, said spindle and arms having coöperative portions for moving the rolls outwardly when the spindle moves relatively to the arms, a plurality of arms pivotally carried by the body outside of the first named arms and provided with rollers outside of said rolls, and means connected with the spindle for actuating the second named arms when the spindle actuates the first named arms.

7. A tool of the class described comprising a spindle, a body movable relatively to the spindle, three rolls disposed concentrically with respect to the spindle, arms carrying said rolls and pivotally supported by the body, coöperating surfaces between the spindle and arms for moving the latter with the rolls outwardly upon movement of the spindle toward the rolls, three rollers disposed outside of said rolls, arms supporting said rollers and pivotally carried by said body in spaced relation to the first named arms, and means connected with said spindle and coöperative with the second named arms to move the rollers inwardly when the rolls are moved outwardly.

8. A tool of the class described comprising a spindle, a body movable relatively to the spindle, three rolls disposed cencentrically with respect to the spindle, arms carrying said rolls and pivotally supported by the body, coöperating surfaces between the spindle and arms for moving the latter with the rolls outwardly upon movement of the spindle toward the rolls, three rollers disposed outside of said rolls, arms supporting said rollers and pivotally carried by said body in spaced relation to the first named arms, and a member connected with said spindle and having a cam-like portion between the second named arms to cause the rollers to move inwardly when the spindle moves toward the rolls.

9. A tool of the class described comprising a body having a stop, a spindle slidable in the body, a roll, means movably supporting the roll upon the body, said means and

spindle having coöperative portions for causing lateral movement of the roll, and a member adjustable along said spindle and adapted to engage said stop to control the extent of movement of said roll by said spindle.

10. A tool of the class described comprising a body having a stop, a spindle slidable in the body, a roll, means movably supporting the roll upon the body, said means and spindle having coöperative portions for causing lateral movement of the roll, a roller outside of said roll, an arm carrying said roller and pivotally carried by said body, a member adjustable along said spindle and adapted to engage said stop and a second member adjustable along the first named member adapted to actuate said arm to move the roller inwardly when the spindle moves the roll outwardly.

11. A tool of the class described comprising a body, an arm movably carried by the body, a roller carried by the arm, and a member connected with the body to rotate the latter and movable relatively to the body, said member having a cone-like controlling member coöperative with the arm to operate the latter to move the roller laterally when the controlling member moves in the direction of the length of the arm and threads connecting said members to permit adjustment of the controlling member respecting the arm.

12. A tool of the class described comprising a body, a spindle slidably connected to the body to rotate the latter, a cone-like controlling member, threads connecting the member to the spindle, an arm pivotally carried by the body and coöperative with said member to be rocked thereby when the member moves along the arm, and a roller carried by the arm to be moved laterally by the latter.

Signed at New York in the county of New York and State of New York this 24th day of September A. D. 1919.

ISIDOR NEWMAN.