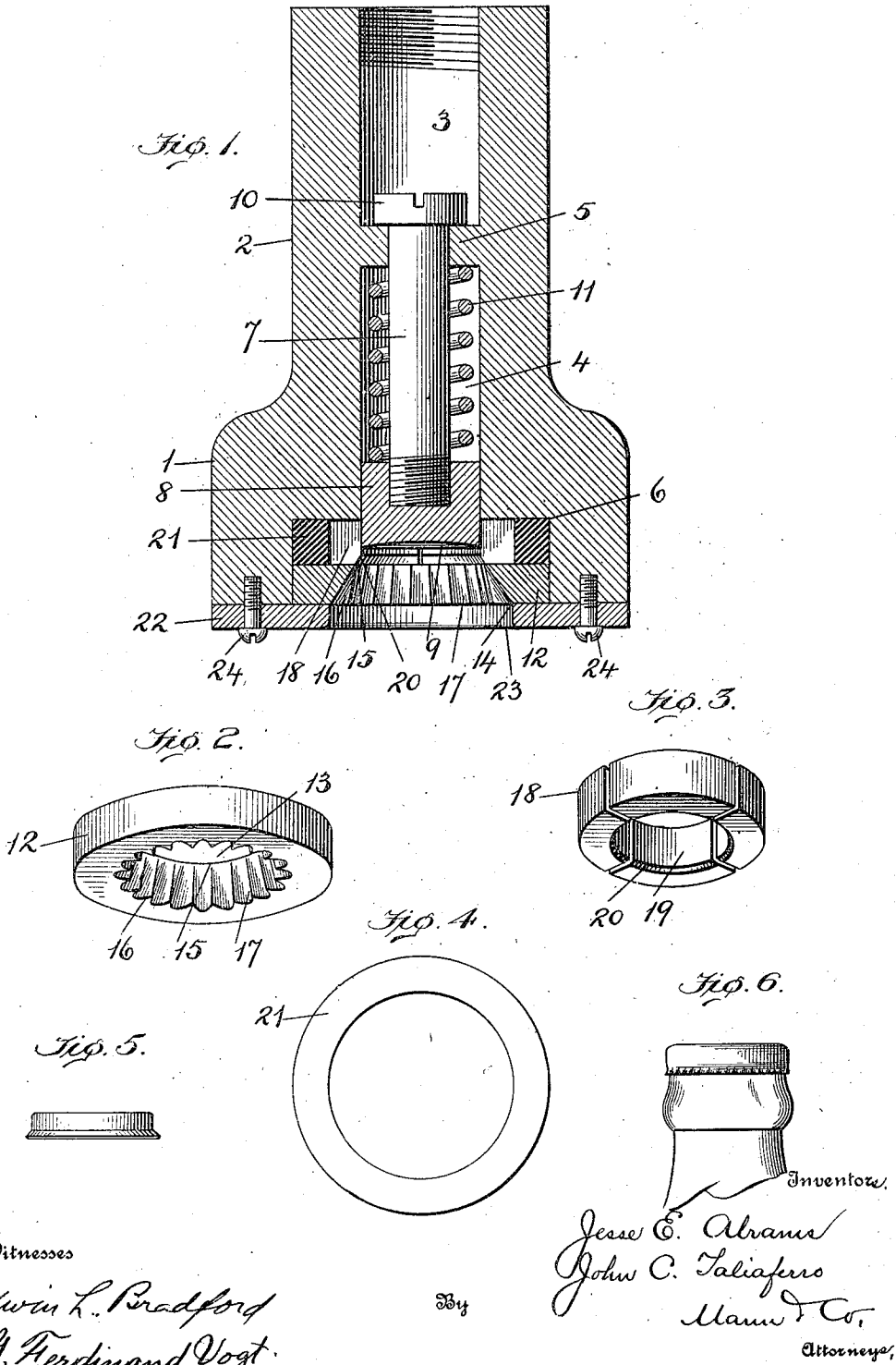


J. E. ABRAMS & J. C. TALIAFERRO.
 TOOL FOR APPLYING CAPS TO BOTTLES.
 APPLICATION FILED DEC. 24, 1908.

949,609.

Patented Feb. 15, 1910.



UNITED STATES PATENT OFFICE.

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TOOL FOR APPLYING CAPS TO BOTTLES.

949,609.

Specification of Letters Patent.

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Application filed December 24, 1908. Serial No. 469,050.

To all whom it may concern:

Be it known that we, JESSE E. ABRAMS and JOHN C. TALIAFERRO, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Tools for Applying Caps to Bottles, of which the following is a specification.

This invention has reference to an improved tool for applying sheet metal sealing caps to the necks of bottles that are provided with a locking shoulder with which the cap engages.

The present invention has particular reference to an improved tool that will operate on a primarily smooth flanged cap to first produce crimps or corrugations therein, then to seat the cap on the neck firmly and finally close the cap into locking engagement with the neck all during a vertical movement between the tool and bottle neck.

The invention also consists in the improved construction and arrangement of a solid ring-shaped corrugating member that will simultaneously corrugate the flange and direct the flange inwardly toward the bottle neck, and a further feature of the invention is in the combination of a head, a solid ring-shaped corrugating member to form the corrugations in a cap flange and a yielding locking member to lock the corrugated flange about the bottle neck.

The accompanying drawing illustrates the invention in which—

Figure 1, is a central vertical section through a head to which the corrugating and locking members are attached. Fig. 2, is a perspective view of the annular corrugating member. Fig. 3, is a similar view of the annular locking member. Fig. 4, is a plan view of the yielding medium. Fig. 5, is a side view of a smooth flanged cap prior to its application to the bottle, and Fig. 6, is a side view of the cap applied to the bottle neck.

The corrugating member is preferably carried in a head of suitable form and construction that will permit it to be readily placed therein, and while the particular construction of the head is immaterial, we have shown in Fig. 1 a head that meets the requirements for all practical purposes. By

reference therefore to Fig. 4 it will be seen that the head, 1, has a central stem, 2, that projects upwardly therefrom with a recess, 3, at its upper end and a longitudinal bore or passage, 4, intermediate its ends. Between the upper recess and the lower bore, the stem is provided with an internal shoulder, 5, which serves as a guide and stop as will presently be described. A central circular recess, 6, is preferably provided in the bottom of the head which is concentric with the central bore or passage. A stem, 7, extends longitudinally through the central passage and in the present instance carries a plunger head, 8, at its lower end, which latter normally has position so as to project from the passage into the circular recess of the head. This plunger head is preferably provided with a concaved or recessed bottom side, 9, to conform approximately to the shape the cap is to take when it is applied to a bottle neck. The upper end of the stem projects above the shoulder, 5, and has a head, 10, which seats on said shoulder and thereby limits the downward movement of the stem. A coiled spring, 11, surrounds the stem and is compressed between the bottom side of the shoulder, 5, and the upper side of the plunger head in order that the latter head and stem may have a yielding vertical movement to adjust itself to variations in the height of the bottles.

A corrugating or crimping member is provided at the lower end of the central passage and has a position that is concentric with the plunger head, 8. While this corrugating or crimping member may be embodied in different mechanical forms, we have preferred, in the present instance to show the same in the form of a continuous ring, 12, having a central upright, 13. This central ring opening is larger at the lower end, 14, than at its upper end, 15, and its curved inner face is provided with corrugations, 16, that extend from the lower toward the upper end thereof,—the corrugations tapering and having their broader portions, 17, adjacent the entrance to the opening. From the foregoing description it will be seen that the crimps or corrugations of this member, in the present instance, are rigid with respect to each other.

Above the ring-shaped corrugating member and also in the central recess, 6, of the head we provide an annular locking member, 18, which closes the cap-flange about and into locking engagement with the usual locking head or shoulder on the exterior of the bottle neck. In the present instance the locking member is formed in segmental sections which when in proper relative relation butt together and have a ring form with a central opening, 19. The wall of this central opening is substantially straight in a vertical direction with the exception of a slight bevel, 20, at its lower end where said opening registers with the opening in the corrugating member. By reference to Fig. 1 it will be seen that the segmental locking member also has position in the bottom recess, 6, of the head and is concentric with and embraces the lower end of the plunger head, 8. These locking-member sections are preferably sustained about the plunger head so as to permit them to yield by moving laterally in a radial direction with respect to the plunger head, and while this lateral movement may be effected in various ways, the form of device here shown comprises a yielding backing 21. This yielding backing, in the present instance, has the form of a rubber ring which encircles the locking member and permits its sections to yield laterally when wedged apart at the central opening, as would occur for example when a bottle neck of a slightly larger diameter than the central opening, 19, is inserted in the latter during the cap-locking operation.

The crimping or corrugating member may be retained in the head in any suitable manner but in the present instance we have provided a base plate, 22, which also has a central opening, 23, and which is attached to the bottom of the head by means of screws, 24.

The form of cap employed is preferably one that has a depending wall with a laterally-projecting smooth flange, the particular angle at which the lateral flange projects is immaterial and may be varied but it is desirable that the depending wall be primarily plain and practically free of corrugations or crimps as it is desirable and advantageous that the corrugations be formed simultaneously from all sides while there is a relative vertical movement between the head and the neck with the cap in position thereon. This relative movement may be a downward movement of the head onto the bottle or it may be an upward movement of the bottle and cap into the head. In either event during the entering of the cap and bottle neck into the openings, 23, and, 13, the corrugations or crimps are formed, and the further entrance of the cap and bottle neck into the opening, 19, will

effect a locking of the cap about the bottle-neck. During the movement of the cap onto the opening, 19, the dome or top surface of the cap will seat against the plunger head, 8, and will thereby be pressed down on the mouth of the bottle to compress the usual packing disk thereon and this pressure is maintained during the locking operation.

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

1. In a tool for operating on the plain flange of metal bottle caps to form corrugations therein while the cap is on a bottle-neck, the combination with a head and a perforated plate carried thereby said plate having a plurality of rigid corrugations in its perforation and the perforation being smaller in diameter at one side than the other.

2. In a tool for operating on the plain flange of metal bottle caps to form corrugations while the cap is on a bottle neck, the combination with a head, a plate carried by the head and having a perforation with a plurality of rigid corrugations in the perforation to corrugate the cap as it is entered with the bottle neck into said perforation, and means beyond the corrugations for locking the same about the bottle-neck.

3. In a tool for corrugating and applying plain flanged caps to bottles, the combination with a head, of a central plunger in the head and a ring below the plunger and having a rigid corrugated interior diameter for forming corrugations in the cap flange while closing said flange about the bottle neck.

4. In a tool for corrugating and applying plain flanged caps to bottles, the combination with a head having a central recess, and a plate attached to the head below the said recess and having a central tapered opening largest at its entrance and said tapered opening having a plurality of rigid corrugations extending upwardly toward its smaller diameter whereby when a plain flanged cap on the mouth of a bottle is passed through said tapered opening the rigid corrugations therein will form corresponding corrugations in said cap flange about the bottle neck.

5. In a tool for applying flanged caps to bottles the combination with a head, of a rigid corrugating device carried by the head and a locking device.

6. In a tool for applying flanged caps to bottles the combination with a head, of a rigid corrugating device carried by the head, and a yielding locking device.

7. In a tool for applying flanged caps to bottles the combination with a head, of a perforated corrugating plate carried by the head and a sectional locking device above the corrugating plate.

8. In a tool for applying flanged caps to
bottles the combination with a head, of a
solid perforated plate carried by the head
and having corrugations in the wall of its
5 perforation, a sectional locking device above
the corrugating device and means for yield-
ingly sustaining the sectional locking de-
vices.

In testimony whereof we affix our signa-
tures in presence of two witnesses.

JESSE E. ABRAMS.
JOHN C. TALIAFERRO.

Witnesses:

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