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BOTTLE CAPPING DIE

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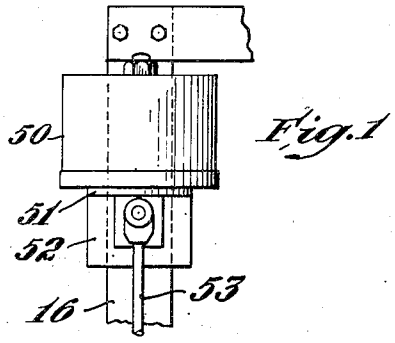


Fig. 1

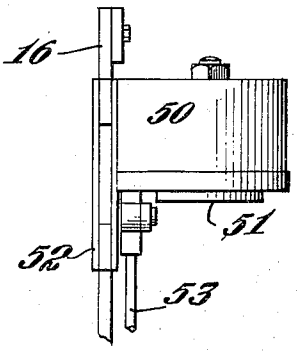


Fig. 2

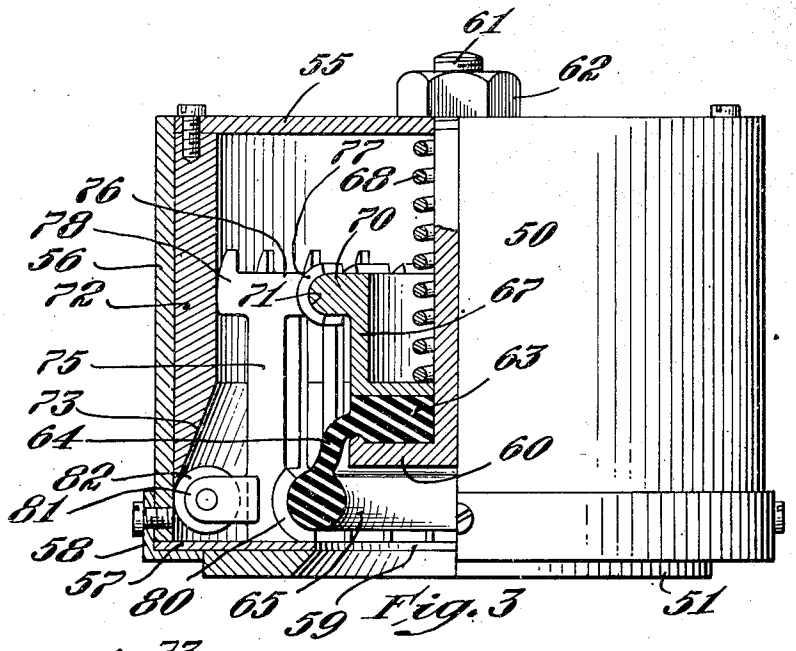


Fig. 3

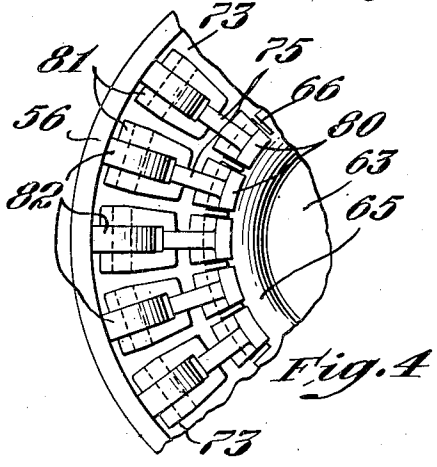


Fig. 4

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BOTTLE CAPPING DIE

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Original application May 31, 1941, Serial No. 395,958. Divided and this application January 20, 1947, Serial No. 723,136

3 Claims. (Cl. 226—86)

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This invention relates to a bottle capping die of the type wherein a bottle having a cap formed with a depending flange or skirt is sealed by crimping or clamping the flange against the neck of the bottle, the present application being a division of our application, Serial No. 395,958, filed May 31, 1941, now U. S. Patent No. 2,414,434, granted January 2, 1947.

The principal object of the invention is to provide a simple and efficient cap sealing mechanism which is reliable in operation and capable of withstanding severe usage. Further objects relate to various features of construction and will be apparent from a consideration of the following description and accompanying drawings, wherein:

Fig. 1 is a front elevation of the cap sealing head;

Fig. 2 is a side elevation thereof;

Fig. 3 is an enlarged side elevation of the sealing head with parts broken away and shown in section; and

Fig. 4 is a fragmentary bottom plan view of the sealing head with certain parts removed.

In the embodiment herein shown the numeral 16 designates an upright rigidly secured to the frame of the capping machine, as shown more fully in the above-identified patent to which reference may be had. The bottle sealing head 50 is supported on a bracket 51 projecting forwardly from a block 52 enclosing and slideably mounted upon the upright 16. An operating rod 53, pivotally attached to the bracket 51 and actuated by the operating mechanism (shown in the aforementioned patent), raises and lowers the head 50.

The head 50, as shown in Figs. 3 and 4, comprises a top wall 55, a cylindrical side wall 56 and an annular bottom wall 57, the latter being secured to the side wall 56 by an angle iron 58 and its central opening defining a mouth 59. Mounted within the casing and suspended from the top wall 55 is a circular plate 60 from the center of which extends a post 61 which passes through the top wall 55 and receives a nut 62.

Resting against the underside of the plate 60 is a sealing member consisting of an annular disk 63 of rubber or the like flexible and resilient material which surrounds the post 61. The periphery of the disk 63 is integral with a downwardly extending rubber skirt 64 which terminates in an annular bead 65. The bead 65 is continuous along its inner surface, but is provided with a plurality of equally spaced slots or notches 66 (Fig. 4) on its outer surface or periphery. A cup-shaped plate 67 rests upon the body of disk

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63 and is positioned closely in contact therewith by an expansion coil or spring 68 surrounding the post 61. Projecting laterally outwardly from the top of the plate 67 is a flange 70, the outer edge 71 of which is of semicircular cross section to provide a fulcrum ring.

The side wall 56 is provided with a lining 72, the lower portions 73 of which is outwardly flared or bevelled, as shown more clearly in Fig. 3, to provide a cam-like member. Between the plate 67 and the lining 72 is a plurality of crimping fingers 75. Each finger 75 is formed at its top with a crossbar 76 terminating at its inner end in a concave pocket 77 which receives the edge 71 of the flange 70, and at its outer edge in a convex shoe 78 contiguous to the lining 72. The bottom of each finger 75 is formed with a concave pocket 80 which receives the bead 65, and a pair of ears 81 is formed integral with each finger 75 between which is mounted a freely rotatable roller 82. The fingers 75 are so positioned that the pockets 80 engage the bead 65 between the notches 66 so that the rollers 82 of the fingers are yieldingly held against the lining 72 of the head.

When the head 50 descends on a capped bottle in response to a downward pull on the rod 53, the plate 60 first engages the cap of the bottle with the skirt 64 and the annular bead 65 surrounding the flange of the bottle cap. As the head 50 continues to descend, the plate 60 and associated parts are forced upwardly within the head 50 and the rollers 82 engage the cam or bevelled surface 73, whereupon the fingers 75 are forced inwardly, pivoting about their upper ends to effect a radial contraction of the bead 65, thereby crimping or sealing the skirt of the bottle cap inwardly about the neck of the bottle. When the head ascends the spring 68 acts to eject the capped bottle from the head 50, during which cycle the lip of the capped bottle, acting on the bead 65, is effective to restore the fingers 75 to their original position, as shown in Fig. 3.

While we have shown and described one embodiment of the invention, it is to be understood that this disclosure is for the purpose of illustration and various changes and modifications may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

We claim:

1. A machine for sealing a cap about the mouth and neck of a bottle, comprising a cylindrical casing having an open lower end for receiving the neck of a bottle having a cap formed with a flange and disposed on its mouth, the inner pe-

ripheral wall of said casing having an outwardly flaring cam-like annular member, a sealing member mounted within and movable axially relative to said casing, said sealing member having a central body portion engageable with the body of a cap positioned on the mouth of a bottle to be sealed and a flexible and resilient depending annular skirt portion engageable with the flange of said cap, the lower end of said skirt portion terminating in an enlarged beaded edge, and a plurality of spaced fingers circumposed about said skirt portion within said casing, said fingers being supported at their lower ends by said beaded edge so as to swing radially inwardly and outwardly within said casing, the lower ends of said fingers having parts engageable with said cam-like member so that in response to axial movement of said sealing member relative to said casing in one direction, said fingers are swung inwardly to contract said skirt portion radially, thereby crimping the flange of a cap about the neck of a bottle inserted in the opening of said casing, and in response to axial movement of said sealing member in the opposite direction, said fingers are free to move outwardly, thereby to permit said skirt portion to expand radially and release the neck of said bottle.

2. A machine for sealing a cap about the mouth and neck of a bottle, comprising a cylindrical casing having an open lower end for receiving the neck of a bottle having a cap formed with a flange and disposed on its mouth, the inner peripheral wall of said casing having an outwardly flaring cam-like annular member, a sealing member mounted within and movable axially relative to said casing, said sealing member having a central body portion engageable with the body of a cap positioned on the mouth of a bottle to be sealed and a flexible and resilient depending annular skirt portion engageable with the flange of said cap, the lower end of said skirt portion terminating in an enlarged beaded edge, a plate within said casing and seated on the body portion of said sealing member, said plate having a laterally projecting annular flange, and a plurality of spaced fingers circumposed about said skirt portion within said casing, the upper ends of said fingers being fulcrumed about said annular flange and their lower ends having parts contacting said beaded edge and other parts engageable with said cam-like member, the construction and arrangement of parts being such that in response to axial movement of said sealing member relative to said casing in one direction, said fingers are swung inwardly to contract said skirt portion radially, thereby crimping the flange of a cap about the neck of a bottle inserted in the opening of said casing, and in response to axial movement of said sealing member in the opposite direction, said fingers are free to move outwardly, thereby to permit said skirt portion to expand radially and release the neck of said bottle.

3. A machine for sealing a cap about the mouth and neck of a bottle, comprising a cylindrical casing having an open lower end for receiving the neck of a bottle having a cap formed with a flange and disposed on its mouth, the inner peripheral wall of said casing having an outwardly flaring cam-like annular member, a sealing member mounted within and movable axially relative to said casing, said sealing member having a central body portion engageable with the body of a cap positioned on the mouth of a bottle to be sealed and a flexible and resilient depending annular skirt portion engageable with the flange of said cap, the lower end of said skirt portion terminating in an enlarged beaded edge formed at its outer edge with circumferentially spaced notches, a spring-pressed plate seated on the body portion of said sealing member, said plate having a laterally projecting flange, and a plurality of spaced fingers circumposed about said skirt portion within said casing, the upper ends of said fingers being fulcrumed about said projecting flange and their lower ends having parts contacting said beaded edge between the notches therein and outwardly projecting parts engageable with said cam-like member, the construction and arrangement of parts being such that in response to axial movement of said sealing member relative to said casing in one direction, said fingers are swung inwardly to contract said skirt portion radially, thereby crimping the flange of a cap about the neck of a bottle inserted in the opening of said casing, and in response to axial movement of said sealing member in the opposite direction, said fingers are free to move outwardly, thereby to permit said skirt portion to expand radially and release the neck of said bottle.

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