March 26, 1935. W. J. MUNDY 1,995,860

CAPPING HEAD

Filed Jan. 25, 1933

Fig.1.

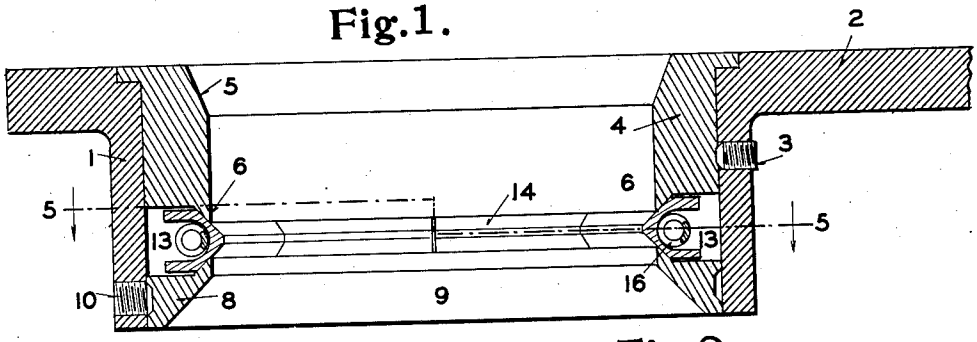


Fig.2.

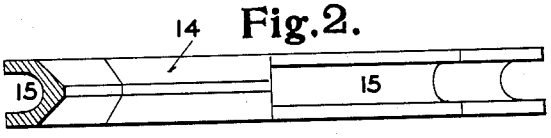


Fig.3.

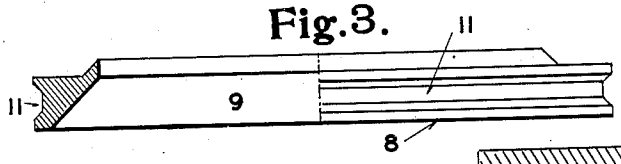


Fig.4.

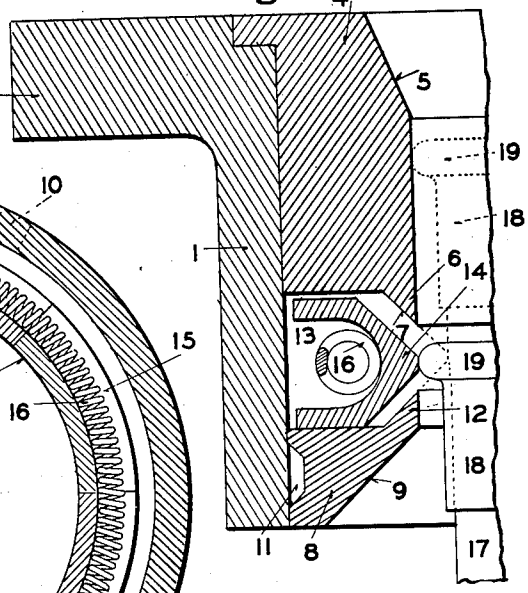
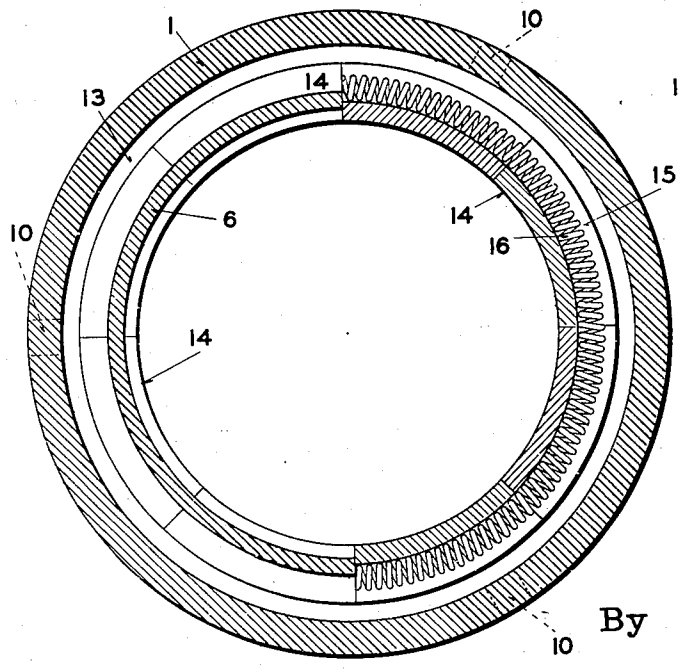


Fig.5.



Inventor
Wm. J. Mundy
By E. C. Huffman
Att'y.

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UNITED STATES PATENT OFFICE

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CAPPING HEAD

William J. Mundy, Melrose Park, St. Louis County, Mo., assignor to C. T. Small Manufacturing Company, St. Louis, Mo., a corporation of Missouri

Application January 25, 1933, Serial No. 653,449

1 Claim. (Cl. 113—30)

My invention relates to capping heads for can capping machines such, for example, as that shown in Letters Patent No. 1,712,234 granted to C. T. Small on May 7, 1929. In capping machines of this type the cap is applied to the can while positioned in a capping head into which it is forced by a plunger, the can body being raised into engagement with the cap by a vertically movable support on which it is carried. Heretofore difficulty has been encountered in securing perfect alignment of the cap and the can body so that neither will be liable to injury by striking the edge of the other when the assembly is made. Particularly is this the case when the cap, instead of having a straight flange, is provided with a projecting bead so that the periphery of the cap is held out of contact with the wall of the capping head.

The object of my invention is to provide a capping head with an expansible clamping ring for engaging the upper end of the can body to shape and center it so as to prevent injury to either the cap or the can and to operate with equal efficiency upon the straight flange or beaded caps.

In the accompanying drawing, which illustrates one form of capping head made in accordance with my invention, Figure 1 is a vertical central section; Figure 2 is a side view of the clamping ring, partly in section and partly in elevation; Figure 3 is a side view of the retaining ring, partly in section and partly in elevation; Figure 4 is an enlarged section through one side of the head, showing the capped can partially withdrawn from the head; and Figure 5 is a section taken on the line 5—5 of Figure 1.

As shown in the drawing, 1 is an annular casing formed integral with a supporting plate 2 which may be the cap disc of a capping machine such as disclosed in Small patent above referred to. Removably secured in the casing 1, by a set screw 3, is a bushing 4 the interior diameter of which is such as to snugly fit the periphery of the cap flange if a straight flange cap is to be applied, or the periphery of the bead if a beaded cap is to be applied. Formed at the upper end of the bushing is a bevel 5 for facilitating the insertion of the cap. The lower end of the bushing is provided with a downwardly projecting lip 6, the rear face of which is beveled, preferably at an angle of about 45 degrees, to provide an inclined contact face 7 joining the horizontal lower face of the bushing. Secured in the lower end of the casing is a retaining ring 8 beveled at 9 to facilitate the insertion of the can body. This ring is removably held by any suitable means, such as set screws 10 engaging with a groove 11 in the periphery of the ring. The upper face of the ring is parallel with the lower face of the bushing and is provided at its inner edge with a lip 12 similar to the lip 6 but having its inner face beveled in reverse direction. This construction provides an annular recess 13 between the bushing and the retaining ring opening into the interior of the head through an annular passage having inclined sides.

In the recess 13 is situated the clamping ring 14 having a V-shaped inner edge projecting through the opening into the interior of the head. This ring is divided into segments so as to be expansible. In the drawing I have shown eight segments but the number may be varied. Formed in the periphery of the clamping ring is a groove 15 for the reception of a surrounding coil spring 16 providing an elastic band normally holding the ring in the position shown in Figures 1 and 5. By varying the proportions of the parts, the extent to which the V-shaped edge of the clamping ring projects into the interior of the casing, may be regulated to accommodate the type of can and cap operated upon. The extent of this projection should be such that the internal diameter of the clamping ring is slightly less than the exterior diameter of the can body 17 so that when the body enters the ring, the latter will be slightly expanded against the tension of the spring 16. This causes the ring to firmly clamp the can body throughout its entire circumference, insuring true circular form of the body. It is to be noted that the vertical dimension of the ring 14 is slightly less than the corresponding dimension of the recess 13 so that the ring will be carried up a slight distance by its frictional contact with the can body. This upward movement of the ring maintains its upper beveled face in contact with the beveled face 7 of the lip 6 so that its concentric relation with the cap 18 is insured notwithstanding its slight expansion. The clamping ring thus forms what is in effect a free floating, shaping, and centering device which, during the operation of capping, is supported only by frictional contact with the can body. After the can has been capped, it is ejected from the head by any suitable means, such as further depression of the capping plunger (not shown). If the cap, as shown in the drawing, is provided with a bead 19, such bead will contact with the upper inclined face of the clamping ring, further expanding the ring, as shown in Figure 4 to permit the passage of the bead.

By the use of the free floating expansible clamping ring, I provide shaping and centering means of a simple construction which may be adapted for use with either straight flange or beaded caps and which is sufficiently rigid to withstand the wear to which it is subjected in use. In case the device is used to operate upon coated cans, a certain amount of the coating may enter the recess 13 and, in course of time, interfere with the proper function of the device. By loosening the set screws 10, the retaining and clamping rings may be quickly detached from the head to allow the removal of such accumulated coating.

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

A capping head comprising a casing, a bushing in said casing having an opening for the passage of a can cap and adapted to receive the end of a can body, the lower end of said bushing having a horizontal face terminating in an annular inclined lip, a retaining ring removably carried in said casing below said bushing, the upper end of said retaining ring having a horizontal face terminating in an annular inclined lip, a sectional clamping ring in the recess formed between said bushing and retaining ring, said clamping ring being of less thickness than the recess and having a V-shaped inner edge normally projecting into the interior of the head and engaging with the can to be capped throughout substantially its entire periphery, said clamping ring having an annular groove in its outer periphery, and a resilient band in said groove forcing the sections of ring inwardly and holding them in the same plane, whereby limited vertical movement of the ring is permitted with its inclined faces in contact with one of the inclined annular lips.

WILLIAM J. MUNDY.