

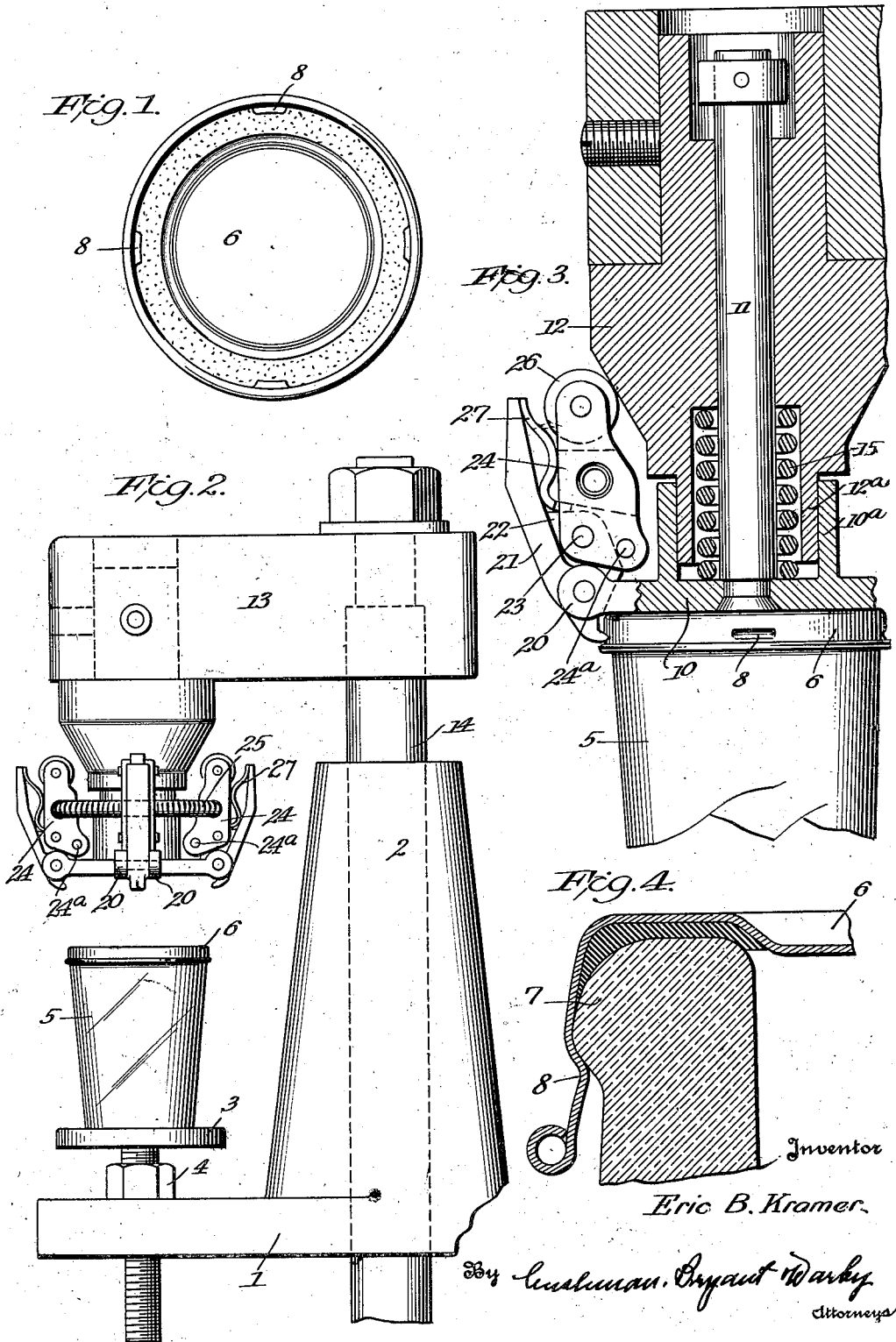
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MEANS FOR APPLYING CAP CLOSURES TO RECEPTACLES

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MEANS FOR APPLYING CAP CLOSURES  
TO RECEPTACLESEric B. Kramer, Baltimore, Md., assignor to  
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Application February 16, 1931, Serial No. 516,254

11 Claims. (Cl. 226—86)

The present invention relates to improvements in means for applying a cap closure to a receptacle having a crown finish bead about its mouth, and particularly to means for applying the cap which is specifically described in a companion application, Serial No. 516,253, filed February 16, 1931.

The invention is particularly designed for use with caps for closing receptacles of the jar or tumbler type having relatively wide mouths, and the cap or closure employed is of a type which permits it to be repeatedly removed and replaced without materially distorting the skirt or flange that surrounds the bead about the receptacle mouth.

As described in the companion application referred to, the improved closure is held in position on the receptacle by engagement of a plurality of relatively widely circumferentially spaced retaining members formed by indenting the outer face of the skirt of the cap-like closure.

The present invention, as hereinafter described, provides a very simple, inexpensive and durable means for affixing caps to receptacles in the manner above referred to.

In the drawing:

Figure 1 is a bottom plan of a closure cap which has been applied to a receptacle by the means to be hereinafter described and subsequently removed from the receptacle.

Figure 2 is an elevation of the improved cap applying means.

Figure 3 is a vertical section, on an enlarged scale of the pressure head, and

Figure 4 is a section, on an enlarged scale, of a portion of a receptacle having a closure applied by the means of the present case.

Referring to the drawing in the several figures of which like parts are represented by the same reference characters, 1 designates a table or base plate from which rises a tubular boss 2 and on which is mounted a receptacle support 3. The support 3 is shown as being connected to the base 1 by means permitting vertical adjustment thereof and can be secured in any desired vertically adjusted position by a nut 4.

5 designates a receptacle resting on the support 3 and adapted to have a closure cap 6 applied thereto in the relation shown particularly in Figure 4. That is, by the means hereinafter described, the cap 6 is forced downward over the crown finish bead 7 so that the skirt extends about and below said bead and in the outer face of said skirt are formed a series of depressions 8 providing inward projections which extend be-

neath the bead 7 and lock the cap to the receptacle.

As shown, the apparatus includes means for simultaneously forming four depressions 8 in the skirt of the cap after it has been properly positioned on the receptacle, said depressions being circumferentially widely spaced and preferably arranged, as shown, in pairs, the members of each pair being situated diametrically opposite each other.

The means for forcing the cap 6 onto the receptacle 5 and forming the depressions 8 in the skirt thereof, includes a head having a disc-like member 10 adapted to contact with the top of the closure 6 as said disc is moved downward relative to the support 3.

As shown, the disc member 10 has an upwardly extending stem 11 extending through an expanding head 12 which is mounted in an arm 13 extending laterally from a rod 14 that extends downward through the tubular boss 2. Below the table or base 1 the rod 14 is connected with a suitable lever mechanism by means of which it may be bodily reciprocated to move the closure applying means as hereinafter described.

As shown, the upper end of the stem 11 extends into a suitable recess or cavity in the head 12 so that there may be relative vertical movement between the head 12 and disc 10. Between these parts, about the stem 11, is arranged a spring 15 which normally tends to hold the parts in the relation shown in Figure 5, but which permits the expanding member 12 to move downward after the disc 10 has reached the lower limit of its travel, for a purpose to be hereinafter described.

The pressure disc 10 is shown as provided with an upwardly extending annular-shaped wall 10a into which extends the lower tubular end 12a of the expanding member 12 and the spring 15 is arranged within a chamber at the lower end of said member so that it is concealed and protected from damage.

The pressure disc 10 is provided at suitable points on its periphery with ears 20 between which are pivotally mounted indenting levers 21, the lower arms of which extend downward below the lower face of the disc 10.

As shown, the apparatus includes four of such indenting levers which are positioned approximately 90° apart about the circumference of the pressure disc.

The arm of each indenting lever above its fulcrum is provided with an inwardly projecting lug

to which is pivotally connected as at 23 a second lever 24.

The several levers 24 are connected by a radially expansible spring ring 25 which tends to hold them in the relation to the indenting levers shown in the drawing in which a stop 24a on the second lever is in contact with the lug or projection 22 of the indenting lever. At the upper end of each second lever is mounted a roller 26 which is adapted to contact with the expanding member 12 of the pressure head as the latter is forced downward against the action of the spring 15 and such movement of the expanding member acts to rock the several levers 24 against the action of the spring ring 25.

Such outward movement of the upper ends of the levers 24 is transmitted to the indenting levers by leaf springs 27, the upper end of each of which is attached to the inner face of one of the indenting levers and a bowed or deflected portion of which contacts with the edge of the associated lever 24.

It is believed that the operation of the means before described will be readily understood from the description and the accompanying drawing. When a cap 6 has been properly positioned on a receptacle 5 as represented in Figure 2, downward movement of the rod 14 acts to carry the pressure head into position to force said cap over the bead 7 on the receptacle and after the cap is properly seated, further downward movement of the rod 14 will move the expanding member 12 against the action of the spring 15, thus forcing the upper ends of the levers 24 outward and rocking the indenting levers to cause the lower ends thereof to form the depressions 8 in the skirt of the cap.

Such depressions 8 are, as shown, spaced circumferentially of the cap to a considerable extent so that the points of engagement of the projections formed thereby are at considerable distances apart and may be disengaged from the receptacle without material distortion of the skirt of the closure.

While I have shown, and hereinbefore specifically described an embodiment of the invention including four cap-skirt indenting levers, such levers being arranged in pairs with the members of each pair in substantially diametrically opposite relation it is not desired to limit the invention to such specific form.

The number and relative arrangement of the indenting levers may be varied.

However, a feature which is believed to be of considerable importance is that the levers are so positioned, and of such member that the depressions produced thereby will be circumferentially separated to a considerable extent.

I claim:

1. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a portion adapted to apply pressure to the top of a cap, a plurality of radially swinging, cap-skirt indenting levers pivotally mounted on and having their lower ends below said head, an auxiliary lever fulcrumed on each indenting lever above the axis thereof, a spring interposed between the upper arm of each indenting lever and its associated auxiliary lever, means for effecting relative vertical movement between the receptacle support and head, and means, adapted to be actuated after movement between the head and receptacle support has forced a cap onto a receptacle, for

simultaneously rocking all of the auxiliary levers to cause the indenting levers to form depressions in the skirt of the cap and provide interior projections beneath the bead on the receptacle.

2. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a disc adapted to apply pressure to the top of a cap, said disc being provided at a plurality of circumferentially spaced peripheral points with cap-skirt indenting levers that extend below the disc, a lug on each said lever projecting over the disc, a second lever fulcrumed on each said lug, a spring interposed between each indenting lever and the associated second lever, means for effecting relative vertical movement between the receptacle support and the head to force a cap downward over the bead on the receptacle, and means on the head for subsequently cooperating with said second levers to rock the indenting levers, for the purpose described.

3. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a disc adapted to apply pressure to the top of a cap, said disc being provided at a plurality of circumferentially spaced peripheral points with cap-skirt indenting levers that extend below the disc, a lug on each said lever projecting over the disc, a second lever fulcrumed on each said lug, a leaf spring attached at its upper end to each indenting lever and extending downward between said lever and its associated second lever and bearing against the latter, means for effecting relative vertical movement between the receptacle support and the head to force a cap downward over the bead on the receptacle, and means on the head for subsequently cooperating with said second levers to rock the indenting levers for the purpose described.

4. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a disc adapted to apply pressure to the top of a cap, said disc being provided at a plurality of circumferentially spaced peripheral points with cap-skirt indenting levers that extend below the disc, a lug on each said lever projecting over the disc, a second lever fulcrumed on each said lug, a radially expansible ring connecting said second levers above their pivots, means for effecting relative vertical movement between the receptacle support and head to first force a cap onto a receptacle on the support and subsequently rock the said second levers about their axes, and means for transmitting the rocking movement of said second levers to the indenting levers, for the purpose described.

5. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a disc adapted to apply pressure to the top of a cap, said disc being provided at a plurality of circumferentially spaced peripheral points with cap-skirt indenting levers that extend below the disc, a second lever fulcrumed on each said lever, a radially expansible ring connecting said second levers above their pivots, stops for limiting movement of the last said levers under the action of said ring, means for effecting relative vertical movement between the receptacle support and

head to first force a cap onto a receptacle on the support and subsequently rock the said second levers about their axes, and means for transmitting the rocking movement of said second levers to the indenting levers, for the purpose described.

6. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, the combination of a support for a receptacle, a cap applying head including a disc adapted to apply pressure to the top of a cap, said disc being provided at a plurality of circumferentially spaced peripheral points with cap-skirt indenting levers that extend below the disc, a lug on each said lever projecting over the disc, a second lever fulcrumed on each said lug, a spring interposed between each indenting lever and the associated second lever, a roller mounted on each said second lever, means for effecting relative movement between the receptacle support and head to force a cap downwardly over the bead on the receptacle, and means movable vertically of the head for engaging said rollers and rocking the said levers, substantially as and for the purpose described.

7. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, a head, a series of radially swinging cap-skirt indenting levers pivoted on said head, a second series of levers pivoted on the first series, and means operable to move the levers of said second series and therethrough to operate the indenting levers.

8. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, a head, a series of radially swinging cap-skirt indenting levers pivoted on said head, a second series of levers pivoted on the first series, means operable to move the levers of said second series, and yieldable means between said last

named levers and the indenting levers to transmit movement to the latter.

9. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, a head, a series of radially swinging cap-skirt indenting levers pivoted on said head, a second series of levers pivoted on the first series, means operable to move the levers of said second series, yieldable means between said last-named levers and the indenting levers to transmit movement to the latter, and cooperating abutment means on said levers for limiting movement apart of the associated levers under the action of said yieldable means.

10. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, a head, a series of radially swinging cap-skirt indenting levers pivoted on said head, a second series of pivoted levers associated with the first series, means operable to move the levers of said second series, yieldable means between said last-named levers and the indenting levers to transmit movement to the latter, and yieldable means acting on the levers of one of said series to return the levers of both series.

11. In a means for applying a cap closure to a receptacle having a crown finish bead about its mouth, a head, a series of radially swinging cap-skirt indenting levers pivoted on said head, a second series of levers pivoted on the first series, means operable to move the levers of said second series, yieldable means between said last-named levers and the indenting levers to transmit movement to the latter, cooperating abutment means on said levers for limiting movement apart of the associated levers under the action of said yieldable means, and yieldable means acting on said second series of levers to return the levers of both series.

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