This invention relates to a bottle capping device.

It is an object of this invention to provide a bottle capping device wherein a bottle is held stationary and means are lowered to screw a cap onto the neck of the bottle.

It is a further object of this invention to provide a bottle capping device which will not screw the cap onto a bottle with an excess of torque with resulting injury thereto.

It is a further object of this invention to provide a bottle capping device wherein the amount of torque applied to the cap is readily adjustable from the outside of the structure.

It is still a further object of this invention to provide a bottle capping device wherein the cap engaging means is not rotating upon contacting the cap.

Other objects and advantages of this invention will be readily apparent from the following description.

In the drawings:

Figure 1 is a side elevation of a bottle capping device embodying this invention.

Figure 2 is a section taken along line 2—2 of Figure 1.

Figure 3 is a section taken along line 3—3 of Figure 2.

Figure 4 is a section taken along line 4—4 of Figure 2.

Figure 5 is a side elevation of the device with housing removed.

Figure 6 is a perspective view of the clutch mechanism.

A bottle 10 usually of glass is moved along a conveyor and the internally threaded cap 12 is positioned either manually or mechanically upon the externally threaded neck of the bottle and screwed partially thereon. It is readily apparent therefore that the position and external by pushing the caps on the bottles will vary as they are presented to the capping device. The bottle is stopped beneath the capping device and secured by suitable means against rotation. The bottle capping device is lowered either mechanically or manually into contact with the cap and functions to screw the cap onto the bottle to a tightly closed position.

This invention is concerned with the capping device hereinafter described. The device is driven from a suitable source of power by a flexible drive formed of a stationary cable 16 having a rotating driving member 18 which screws into the upper extremity of shaft 20. The cable terminates in a plug 22 which in turn screws into the upper extremity of housing 24 and is secured against rotation by means of set screws 26.

The shaft 20 is rotatably mounted in housing 24 by means of bearing 28 and carries at its lower extremity the upper jaw 30 of the clutch mechanism. The shaft is indented at 32 and 34 and the upper jaw 30 has a pair of apertures such as 36 through which pins 38 and 40 are inserted into the indentations 32 and 34 permitting vertical movement of the upper jaw 30 on shaft 20. The pins are urged inwardly by means of split rings 42. A spring 44 is mounted upon shaft 20 by means of a collar 46 which screws onto the shaft and is secured thereon by set screws 48 and 50.

The lower extremity of shaft 20 has a slot therein into which the pin 52 at the upper extremity of lower shaft 54 projects. This connection permits vertical movement between the upper and lower shafts while maintaining alignment between the two shafts. Secured to the lower shaft 54 by pin 56 is the lower jaw 58 which engages the upper jaw 30 in a manner hereinafter to be described.

The lower shaft 54 is journaled in a bushing 60 which in turn is secured to housing 24. The shaft 54 is threaded as at 62 after projecting through the bushing and carries a thrust bearing 64 thereon. The thrust bearing is movable vertically on shaft 54 and is secured in the desired position by means of collar 66 which screws onto the shaft and is secured by set screw 68.

At its lower extremity the lower shaft 54 is threaded to receive shell 70 which in turn has mounted therein a rubber bushing 72 having a conical aperture 74 therethrough. When the device is lowered onto the bottle the cap 12 thereof projects into aperture 74 and the conical shaped aperture adapts the device for various sized and shaped caps.

It is to be noted that with the collar 66 in the position illustrated in Figure 2 the lower jaw 58 is raised above the upper surface of bushing 60. When the device is not engaged with bottle cap 12 the weight of the lower shaft and the attached parts causes it to lower in the bushing 60 disengaging the upper and lower jaws 30 and 58 so that the shaft 54 and hence rubber bushing 72 is not rotating. When the bushing engages a bottle cap the shaft 54 is raised engaging the upper and lower clutches driving shaft 54 and bushing 72 to screw a cap 12 on a bottle 10.

To prevent too much torque being applied to the cap the jaws 30 and 58 are formed as best seen in Figure 6. Each jaw has formed thereon three lugs 76 spaced equally from one another and have the corners thereof tapered. When the jaws first engage upon raising of shaft 54 the lower shaft 54 is rotated screwing cap 12 on bottle 10. When the cap is tight and resists further rotation the upper jaw raises against the urging of spring 44 and the lugs by means of their rounded corners slip over one another.

It is thus apparent that the amount of torque the device will apply before the clutch formed between upper and lower jaws 30 and 58 will slip is controlled both internally by the strength of spring 44 and position of collar 46 and externally by position of said collar 66 which limits the upward movement of shaft 54.

While what hereinefore has been described is the preferred embodiment of this invention it is readily apparent that alterations and modifications can be resorted to without departing from the scope of this invention and such alterations and modifications are intended to be included within the appended claims.

I claim:

1. A bottle capping device comprising: an upper drive shaft, an upper jaw mounted upon said drive shaft for longitudinal movement thereon, means biasing said jaw toward the lower extremity of said drive shaft, a driven shaft, a lower jaw mounted upon said driven shaft, means suspending said driven shaft from said drive shaft permitting longitudinal movement between the shafts to engage or disengage said jaws, cap engaging means mounted upon said driven shaft, and means for adjusting the position of said driven shaft in said suspension means thereby varying the amount of torque necessary to urge said upper jaw against said biasing means and thereby disengaging same from said lower jaw.

2. A bottle capping device comprising: a housing, a drive shaft in the upper portion of said housing, an upper jaw mounted on said drive shaft for longitudinal movement thereon, a driven shaft mounted in said housing for movement relative to said drive shaft, adjustable means...
on said driven shaft outside said housing limiting movement of said driven shaft towards said drive shaft, a lower jaw mounted upon said driven shaft for engagement with said upper jaw, and cap engaging means carried by said driven shaft.

3. A bottle capping device comprising: a housing, a drive shaft in the upper portion of said housing, an upper jaw mounted on said drive shaft for longitudinal movement thereon, a driven shaft mounted in said housing for movement relative to said drive shaft, a collar adjustably mounted upon said driven shaft outside said housing and engaging same to limit movement of said driven shaft towards said drive shaft, a lower jaw mounted upon said driven shaft for engagement with said upper jaw and cap engaging means carried by said driven shaft.

4. A bottle capping device comprising: a housing, a drive shaft in the upper portion of said housing, an upper jaw mounted on said drive shaft for longitudinal movement thereon, spring means biasing said upper jaw towards the lower extremity of said drive shaft, a driven shaft mounted in said housing for movement relative to said drive shaft, a collar adjustably mounted upon said driven shaft outside said housing and engaging same to limit movement of said driven shaft towards said drive shaft, a lower jaw mounted upon said driven shaft for engagement with said upper jaw, and cap engaging means carried by said driven shaft.

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