July 1, 1930. F. C. T. RADBRUCH 1,768,629

APPARATUS FOR CLOSING MILK BOTTLES WITH CARDBOARD DISKS

Filed May 13, 1927

Fig. 1.

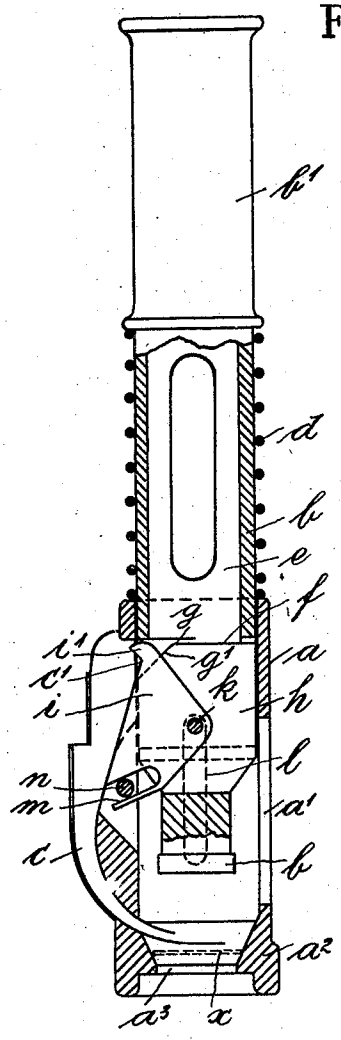


Fig. 4.

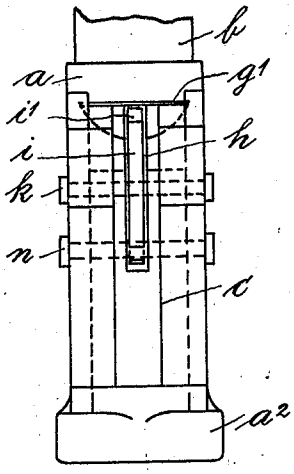


Fig. 2.

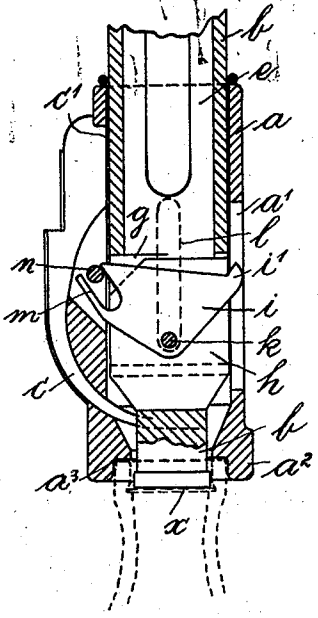
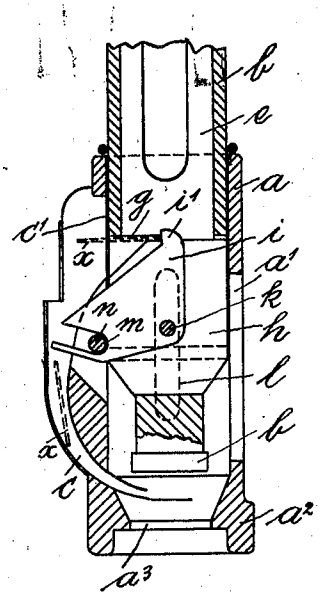


Fig. 3.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR CLOSING MILK BOTTLES WITH CARDBOARD DISKS

Application filed May 13, 1927, Serial No. 191,037, and in Germany May 15, 1926.

This invention relates to an apparatus for closing milk bottles with cardboard disks, in which the cardboard disks are stored in the shaft of the closing piston and drop through a channel to underneath the piston. In apparatus of this type and of known construction the conveying channel is arranged in the piston so that the cardboard disks ejected from the magazine traverse the piston and drop through a slot in the pressing surface of the piston upon the narrow portion in the cylindrical casing. With apparatus of this construction clogging and checking can easily occur in the guide channel and which, as this guide channel is not directly accessible, may cause disturbances of service of long duration.

This inconvenience is obviated, according to the invention, by arranging the guide channel for the cardboard disks easily accessible on the outer side of the cylindrical casing, so that the pressing piston preserves a plane pressing surface.

A closing apparatus according to the invention is illustrated, by way of example, in the accompanying drawings, in which:—

Figs. 1, 2 and 3 show each a vertical section.

Fig. 4 is a front elevation.

The closing apparatus consists of a cylindrical casing a having a window a' and in which a pressing piston b, controlled by a spring d, is mounted so that it is movable in vertical direction. The lower end of the cylindrical casing a forms a mouth piece a^2 and is preferably made of aluminium or similar soft material so that, when placed upon the neck of the bottle, it does not damage the same. On the outer side of the cylindrical casing a a curved guide channel c is arranged which communicates at one end with the bore of cylinder a through the opening c' to receive a bottle cap from the piston b as hereinafter described. The upper part of the pressing piston b is tubular and serves as magazine for the cardboard disks, which are inserted into the magazine chamber e through the open top end of the piston. The part b' of the piston serves as handle.

A horizontal slot g in the piston b at the height of the bottom f of the magazine chamber e has a downwardly inclined surface g' which communicates with the curved channel c. In the portion of the piston b below the horizontal slot g a vertical slot h is arranged in which a lever i is oscillatively mounted on a shaft k, said lever having a disk engaging projection or nose i' at the upper end. The shaft k is guided in slots l of the cylindrical casing a, said slots and said shaft serving to limit the ascending and descending movements of the piston. A slotted part m of lever i receives a pin n fixed in the casing a, thus providing an actuating means for oscillating the lever when the piston is reciprocated.

The operation of the apparatus is as follows:—

The cardboard disks are superposed in the magazine chamber e of the piston b, it being supposed that one cardboard disk x is underneath the piston from the preceding operation. (Fig. 1). This cardboard disk x rests in a narrowed portion a^3 of the mouth piece a^2 so that the rim of this cardboard disk will be bent in upward direction by the pressure exerted by the piston. The apparatus gripped at the handle b' is placed upon the bottle so that the mouth piece a^2 stands over the upper edge of the bottle neck. The piston b is then depressed, putting spring d under tension, and by the descent of the piston the lever i is oscillated, the cardboard disk x being at the same time pushed into the bottle neck (Fig. 2).

The piston b is returned into the intial position by the action of the spring d. At this occasion the lever i is oscillated backwards as it is guided on the stationary stud m so that its nose i' strikes against the edge of the lowermost cardboard disk in the magazine a and pushes the same through the slot g until it drops over the incline g' into the curved guide channel c (Fig. 3). The cardboard disk x slides downwards in the channel c to underneath the piston b to be pressed at the next following operation into the bottle neck.

The apparatus described may be used for closing single bottles by hand, but several

such apparatus might be united to simultaneously close a greater number of bottles.

I claim:—

1. A bottle capping device of the character described, comprising an open ended casing, a piston reciprocable vertically in said casing and formed to receive a plurality of bottle caps, means operative upon the up stroke of the piston to remove a cap from the piston and transfer the same to the casing, and means carried by the casing for conveying the removed cap to a position in the casing beneath the piston.

2. A bottle capping device, comprising an open ended casing, a piston reciprocable vertically in said casing and formed to provide a cap magazine, a cap removing device carried by said piston and operating during the up stroke of the piston for shifting a cap from the magazine to the casing, and means carried by the casing for receiving and conveying a removed cap to position to be acted upon by the piston.

3. A bottle capping device, comprising a cylinder, a piston reciprocable vertically in said cylinder, said piston being chambered to receive bottle caps and further having a lateral discharge opening, an ejector carried by the piston and operating upon the up stroke of the piston to force a cap from the piston chamber outwardly through said lateral discharge opening, and means carried by and arranged at a side of the cylinder to receive a cap from the discharge opening to convey it and a point beneath the piston.

4. A botle capping device, comprising a cylinder, a piston reciprocable in said cylinder, said piston being chambered to receive bottle caps and further having a lateral opening for the discharge of caps, an oscillatory ejector carried by the piston adjacent the lateral opening to force caps therethrough, means carried by the cylinder and engaging the ejector to oscillate the same upon movement of the piston, and means carried by the cylinder to receive an ejected cap and convey the same to position beneath the piston.

5. A bottle capping device comprising an open ended casing, a piston reciprocable vertically in said casing and formed to provide a cap magazine having a lateral discharge opening, a laterally oscillatory cap ejector having a cap engaging projection at one side thereof and operative on the upstroke of the piston to engage and force a cap from the magazine outwardly through the discharge opening, and means carried by the casing for receiving and conveying a removed cap to a position to be acted upon by the piston.

In testimony wherof I affix my signature.

FRANZ CARL THEODOR RADBRUCH.