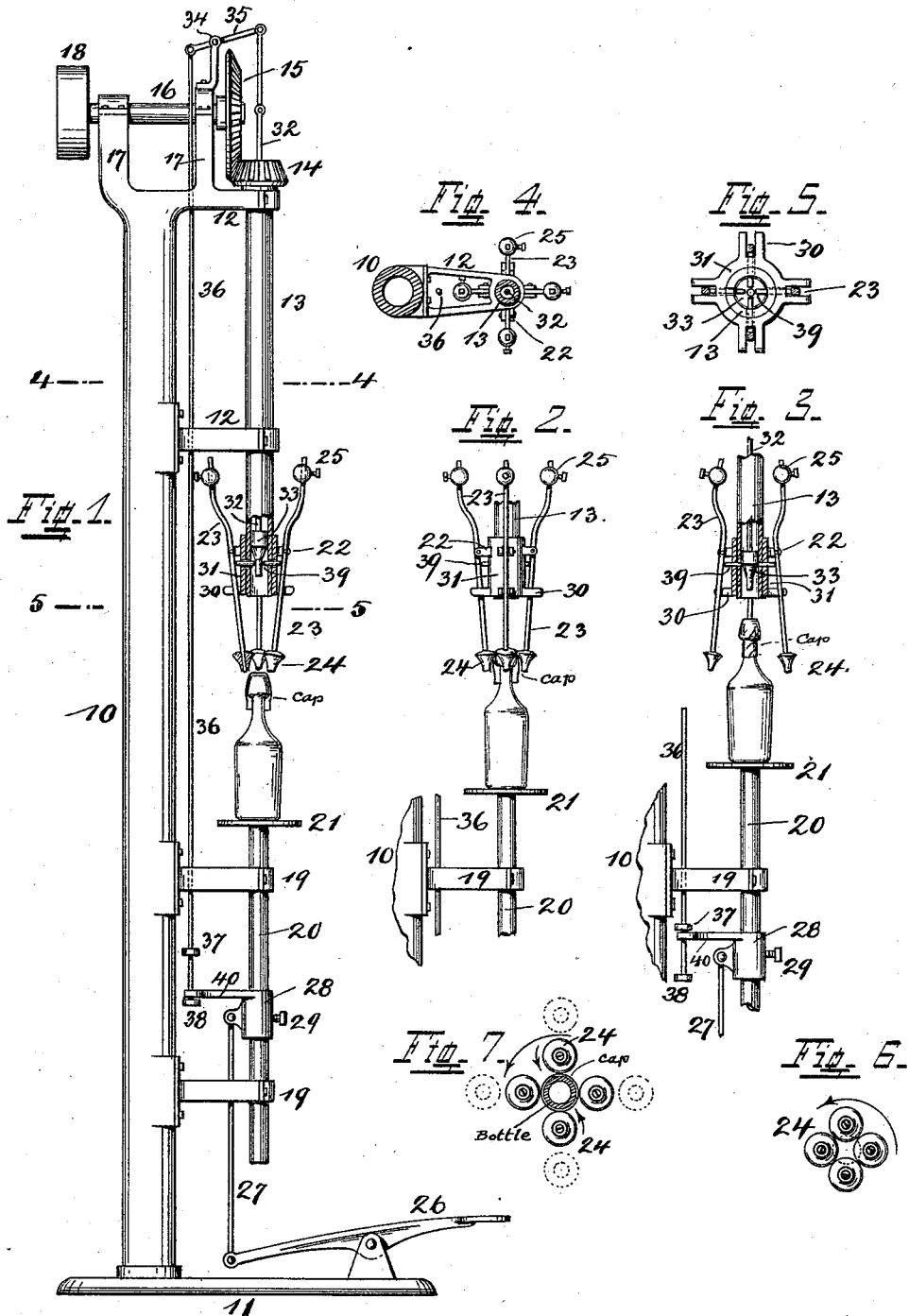


(No Model.)

L. E. KANE.
BOTTLE CAPPING MACHINE.

No. 538,259.

Patented Apr. 30, 1895.



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UNITED STATES PATENT OFFICE.

LOUIS E. KANE, OF CINCINNATI, OHIO.

BOTTLE-CAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 538,259, dated April 30, 1895.

Application filed October 13, 1894. Serial No. 525,788. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. KANE, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Bottle-Capping Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference numerals marked thereon, which form a part of this specification.

This invention relates to machines which put caps, usually of tinfoil and of gold, silver, bronze, or other fancy colors, over the stoppers and upper parts of necks of bottles containing liquors and beverages of various descriptions. These caps are principally put on for ornamental reasons but they also serve to exclude air and prevent leakage in case the stoppers are defective. These caps are spun on by pressure-rollers, revolving rapidly around the neck of the bottles and which are adjustable in a manner to be enabled to follow closely their shape so as to cause the cap to cover closely all parts of the neck of the bottle. These rollers are usually pivoted to levers, which by means of a collar moved by a hand-lever are swung against the neck of the bottle and the required contact, and respective adjustment whereby the levers with the rollers follow the shape of the neck of the bottle, are obtained by the pressure exerted by the operator upon the hand-lever. This kind of adjustment has the general fault of all hand-adjustments by being unequal and often either insufficient or excessive. Thus for instance in the hands of a strong man more pressure than necessary may be exerted, causing the foil to become torn as well as creating unnecessary friction which the machine has to overcome. Again a weaker operator, or one who has become tired becomes inclined to relax the pressure whereby the cap becomes not closely adjusted to the neck of the bottle and inferior work is the result.

The object of my invention is to do away with this mode of adjustment and substitute one which is not dependent on hand-power,

but produced automatically by the machine itself, whereby the pressure required remains the same and constant at all times, whereby overcrowding of the machine is avoided and perfect work results. For such purpose I utilize the centrifugal force developed by the rotating shaft which carries the rollers around the neck of the bottle and which force is always available when required and when properly adjusted is of unvarying and proper strength. Its effect ceases automatically when not required and the bottle becomes disengaged and free for removal. As a result the construction of this machine becomes very much simplified and improved for inasmuch as this force is developed and terminated by the rotation of the machine, no extra parts are required and all springs, collars, cams, hand-levers, special means to produce the pressure, to release the bottle and other parts become unnecessary and are removed.

Other features of the invention relate to the means for disengaging the rollers from the neck of the bottles after the operation is finished and to various details of construction which will be explained at the proper time.

In the following specification and particularly pointed out in the claims, is found a full description of my invention, its operation, parts and construction, the latter being also illustrated in the accompanying drawings, in which;—

Figure 1 is a side-elevation of the machine, with parts in section and showing a bottle with a cap loosely in position and ready to be operated upon. Fig. 2 shows a side-elevation of the middle-part of the machine with its parts in operative position while acting upon the cap on the neck of a bottle. Fig. 3 is a similar view but parts of it in section, and shows position of parts and bottle after the operation for putting the cap on, is finished. Fig. 4 is a horizontal section on line 4—4 of Fig. 1. Fig. 5 is a similar view taken on line 5—5 of Fig. 1, and looking upwardly. Fig. 6 is an under side view of the pressure rollers, looking upwardly and showing their position, relatively to each other, before the bottle-neck is inserted; and Fig. 7 is a similar view showing their position while acting upon a cap.

10, is a standard, supported on a base 11 and provided with brackets 12, which form bearings for an upright shaft 13, which revolves at great speed, being driven by a pair of bevel-wheels 14—15, the latter on a shaft 16, supported in bearings 17 and receiving motion from a pulley 18.

19 are additional brackets projecting from the lower part of the standard and serving as bearings for a guide-rod 20, which is centrally below and in line with shaft 13 and carries at its upper ends a platform 21.

To the lower end of shaft 13 are affixed bearings 22 to each of which is pivotally secured a lever 23, all of which latter are of equal length and carry at their lower ends, connected to be capable of rotation, rollers 24, while near their upper ends, adjustable weights 25 are provided. The rapid rotation of shaft 13 causes the upper ends of levers 23 to swing outwardly by reason of the developing centrifugal force acting upon weights 25, causing their lower ends with rollers 24 to approach each other with more or less pressure, which latter may be regulated by the position of weights 25 on levers 23.

Rollers 24 are preferably of hard-rubber and consist of two parts an operative one which is its widest part, and a guiding one below the latter and of the shape of an inverted cone. These lower parts of the rollers never come in contact with each other, (see Figs. 1 and 6) whereby a space is provided within which the neck of a bottle may be readily introduced and which permits the operative parts of the rollers to be smoothly guided upon said neck. (See Figs. 1 and 2.) Once in position and started, said rollers readily follow, in or out, the shape of the bottle-neck as its insertion proceeds, remaining always in contact therewith and carried rapidly about the same by shaft 13. Such insertion and advance is obtained by an upward motion of platform 21, which is lifted by means of treadle 26, acting upon guide-rod 20 and connected thereto by a link 27. This connection is accomplished by means of a sleeve 28 within which guide-rod 20 is held by a set screw 29 and whereby its height, respectively the height of platform 21 becomes adjustable, to suit the height of the bottles and permits them to be always placed immediately below rollers 24, obviating the more extended lift which shorter bottles would otherwise require.

30 are guides between the pivotal bearings of levers 23 and their lower ends, between which the lower parts of said levers move radially in or out, whereby lateral strain on their bearings is prevented, and which hold the rollers to their proper position on the bottle. These guides and bearings may for convenience sake form part of a sleeve 31, which is rigidly affixed to the lower end of shaft 13.

In order to make the useful operation of this machine as rapid as possible, the spinning-action of the rollers upon the bottles stops automatically and at the proper time,

as soon as the caps are completely in position and in full contact with the bottle-necks. For this purpose shaft 13 is hollowed, to admit a rod 32 with a cam 33, partly cylindrical and partly conical, at its lower end, the whole being vertically adjustable by means of a lever 35, pivotally supported at 34 and a rod 36 provided with collars 37 and 38.

39 are pins capable of longitudinal movement only, within passages in shaft 13 and sleeve 31, respectively, and otherwise closely confined therein, on the outside by levers 23 and on the inside by said cam 33.

As platform 21 is lifted upwardly and puts the bottle-neck with the cap thereon gradually in contact with rollers 24, a bifurcated arm 40, extending out from guide-rod 20, strikes at the proper time, that is, when the lower end of a cap has passed upwardly and beyond the action of rollers 24, collar 37 on rod 36, which causes rod 32 to carry the conical part of cam 33 against the inner ends of pins 39 and forces them outwardly against levers 23 whereby they, with the rollers thereon spread apart and cease to act upon the bottle whereby the end of the operation is indicated to the attendant. (This position is shown in Fig. 3, and by dotted lines in Fig. 7.) The latter now removes his foot from the treadle whereupon the platform with the bottle thereon descends, the latter being removed as soon as sufficiently low to clear the rollers. During the latter part of this downward motion, but not before the bottle has been removed, arm 40 strikes the other collar 38 on rod 36 and moving it down, lifts again rod 32 with cam 33 to a position as shown in Fig. 1, whereby the action of pins 39, in opposition to the centrifugal action of weights 25 ceases, and sliding inwardly permit the rollers to approach each other to be in ready position for action upon the next bottle.

As will be seen no extra parts are required to hold the rollers in contact with the bottle-neck and the pressure of such contact remains always the same and of proper degree. The action starts and ceases automatically and no extra parts are required for such purpose, all of which simplifies, cheapens and improves the construction.

Having described my invention, I claim as new—

1. In a bottle-capping machine, the combination of a shaft 13, means to support and rotate it, levers 23 carrying rollers 24 at one end and weights at their other, said levers pivoted between their ends to shaft 13, whereby the centrifugal force generated by the rotation of the latter causes the weight on levers 23 to swing outwardly, bringing rollers 24, together, and an adjustable bottle-support whereby the neck of the bottle may be introduced between the rollers.

2. In a bottle-capping machine, the combination of a shaft 13, means to support and rotate it, levers 23 carrying rollers 24 at one end and weights at their other, said levers pivoted

between their ends to shaft 13, whereby the centrifugal force generated by the rotation of the latter causes the weights on levers 23 to swing outwardly, bringing rollers 24 together, guides 30 engaging the levers between rollers 24 and their bearings, to prevent lateral strain on the latter and to hold the rollers to their position.

3. In a bottle-capping machine, the combination of an upright hollow shaft 13, means to support and rotate it, levers 23 pivoted near its lower end provided with rollers 24 at their lower ends, which have a normal tendency to approach each other, a guide-rod 20 supported below and in line with shaft 13 and carrying a platform 21 to support the bottles, a treadle-mechanism connected to guide-rod 20 for the purpose of raising the platform, a bifurcated arm 40 extending out from said

guide-rod, a rod 36, with collars 37 and 38, all located so that either one of said collars may be acted upon by arm 40, during the latter part of the treadle-movement, a rod 32, connected to rod 36 by a lever 35 and extending down within shaft 13, a cam 33 at the lower end of rod 32 and within shaft 13, pins 39 passing through the latter and confined between levers 23 and said cam, whereby said pins are enabled to act upon levers 23 in response to the action of cam 33, all as shown and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS E. KANE.

Witnesses:

MORRIS L. BETTMAN,
C. SPENGEL.