M. MARSA.

BOTTLE CROWNING MACHINE.

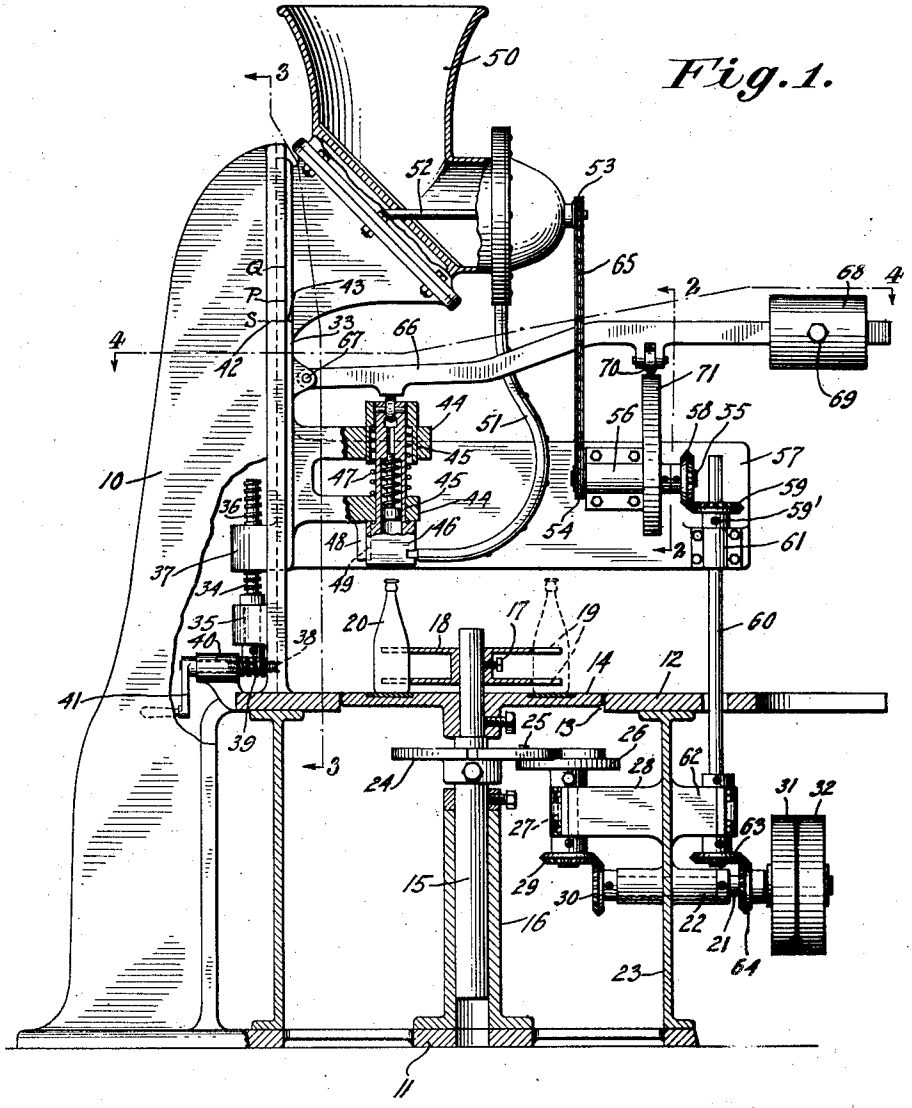
APPLICATION FILED MAR. 29, 1920.

1,379,118.

Patented May 24, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor

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By his Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

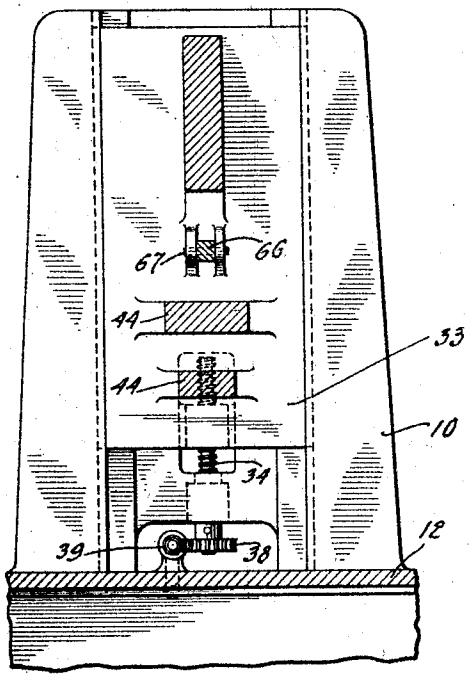
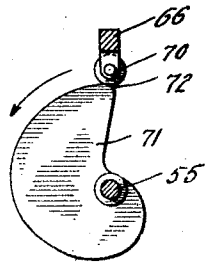


Fig. 2.



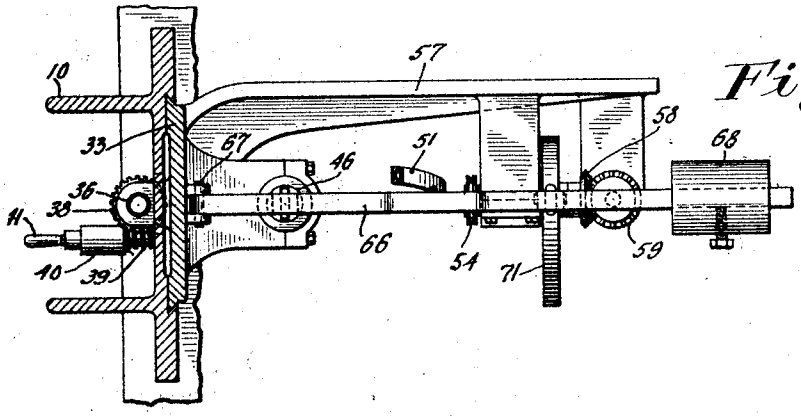


Fig. 4.

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UNITED STATES PATENT OFFICE.

MELCHOR MARSA, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL CORK COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

BOTTLE-CROWNING MACHINE.

1,379,118. Specification of Letters Patent. Patented May 24, 1921.

Application filed March 29, 1920. Serial No. 369,522.

To all whom it may concern:

Be it known that I, MELCHOR MARSA, a citizen of Spain, and a resident of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Crowning Machines, of which the following is a specification.

The present invention relates to a mechanism for applying metal closures, such as the well-known crown corks, to fragile receptacles, for instance bottles.

These machines are commonly known as bottle crowning machines, and are designed to apply the closures to bottles or like receptacles of substantially uniform length or height. Because of the varying height of the receptacles, it has been found necessary to employ a mechanism controlling the pressure to be applied during the capping operation, as otherwise breakage or injury of the fragile receptacles would result, due mainly to the fact that the capping mechanism is designed to produce movements of the same extent for each capping operation. In practice it has been found that the pressure controlling mechanisms are rather complicated in construction, expensive to manufacture and are liable to get out of order.

The main object of the present invention is to provide an improved mechanism for applying metal closures to bottles or similar receptacles, which is simple in construction, operates efficiently at high rate of speed and acts by gravity, thereby greatly simplifying the construction in that the pressure controlling device is done away with.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a central vertical section taken through a bottle crowning machine constructed in accordance with the present invention, certain elements being shown in elevation; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a section taken on line 3—3 of Fig. 1; and Fig. 4 is a section taken on line 4—4 of Fig. 1.

In the drawings the numeral 10 indicates the main frame of the crowning machine, said frame including a base 11 and a table portion 12, located a substantial distance above the said base. The table portion is provided with a circular opening 13, in which is disposed, flush with the upper face of the table portion, a disk-shaped bottle-carrier 14. This carrier is fastened to a vertically disposed shaft 15, that is rotatably mounted in a bearing 16, rising from the base 11. Above the carrier is secured to the shaft 15, by means of a clamping screw 17, a star wheel 18, between the projecting fingers 19 of which are fed, in any suitable manner, the bottles, denoted in the drawings by the numeral 20.

The shaft 15 is intermittently rotated from a power shaft 21, which is journaled in a bearing 22 on a cylindrical shell 23, that surrounds the shaft 15, it being mounted on the base 11 and supporting the table portion 12 of the machine frame. Any suitable mechanism may be provided for converting the continuous rotary motion of the shaft 21 into intermittent movement of the shaft 15. For instance, there may be fastened to the shaft 15 the star wheel 24 of a Geneva movement, co-acting with a pin 25 upon a disk 26. This disk is fastened to a shaft 27, journaled in a bearing 28 on the shell 23, and provided with a bevel gear 29, in mesh with a similar gear 30 upon the shaft 21. On the shaft 21 is mounted a fixed pulley 31 and a loose pulley 32, over which runs a belt, not shown.

On the frame 10 is mounted, above the table portion 12, a slide 33, that is adapted to be shifted on the frame in a vertical plane. Any suitable means may be provided for shifting the slide and for fixing the same in position upon the frame. For instance, there may be provided a vertically extending screw-threaded spindle 34, that is rotatably mounted in a lug 35 on the frame 10, but held against a movement in the direction of its longitudinal axis. The threads 36 of this spindle mesh with those

of a nut 37, the latter being secured to the slide 33. To the spindle 34 is keyed, or otherwise fastened, a worm gear 38, in mesh with a worm 39, the shaft of which is rotatably mounted in a bearing 40 on the frame 10 and provided with a crank 41. A graduated scale 42 is provided on the frame 10, and adjacent thereto is provided on the slide 33 a mark 43. The purpose of this arrangement will be described hereinafter.

From the slide 33 project outwardly over the carrier 14 horizontally disposed tool supports 44, provided with registering bores 45, in which is mounted a vertically reciprocable capping die 46. This die is held in its upper position by a spring 47, and is prevented from rotary movement by a lug 48, that projects downward from the underface of the lower support 44 and is seated in a recess 49 in the capping die. The Geneva movement above referred to is so timed that, when carrier 14 is held stationary, a bottle 20 is kept in alinement with the capping tool.

The metallic closures are placed indiscriminately into a hopper 50 upon the slide 33, a suitable mechanism being provided for feeding the closures in proper positions into a chute 51, that leads to the capping die 46, discharging the closures, one after the other, into the said die in the well-known manner. The cap feeding mechanism is actuated from the power shaft 21 in any suitable manner. This mechanism includes a shaft 52, carrying, outside of the hopper, a sprocket wheel 53, in alinement with a similar wheel 54 on a shaft 55. This shaft is mounted in a bearing 56 upon a bracket 57, the latter being fastened to the slide 33. To the shaft 55 is fixed a bevel gear 58, in mesh with a similar gear 59 on a shaft 60. The shaft 60 is journaled in bearings 61 and 62 on the bracket 57 and shell 23, respectively. Below the bearing 62 there is rigidly secured to the shaft 60 a bevel gear 63, in mesh with the bevel gear 64 on the power shaft 21. A chain 65 runs over the sprocket wheels 53 and 54.

A lever 66 is fulcrumed at 67, above the capping die, to the slide 33, it resting a slight distance from its fulcrum upon the capping die and carrying adjacent its free end a weight 68. This weight is adjustably held upon the lever, for instance, by a clamping screw 69. The distance between the weight, that is to say the power, and the resistance, that is the capping die, is many times that between the resistance and the fulcrum 67, so as to necessitate a comparatively small sized weight. The lever 66 carries between the resistance and weight an antifriction roller 70, coöperating with a cam 71, which is fixed to the shaft 55. This cam rotates in the direction shown in Fig. 2 of the drawings, lifting the lever 66 and releasing it entirely at its salient point 72 thereby permitting the weight 68 to act upon the capping die. The weight is sufficient to apply or crimp the cap, yet insufficient to break the bottle.

The cam 71 is so timed that it permits the lever 66 to drop and act upon the capping die, when the carrier 14 is held stationary. The carrier is kept stationary for some time during the upward movement of the lever 66 and then given part of a turn, thereby bringing the next bottle in the series into alinement with the capping die.

The operation of this machine is as follows: The slide 33 is first shifted on the machine frame 10 into the position required for the size of bottles to be capped. The mark 43 on the slide is brought into alinement with the graduation mark S if half-pint bottles or splits are to be capped, into alinement with the graduation mark P if larger bottles are to be capped, for instance pint bottles, and into alinement with the graduation mark Q if still larger bottles are to be operated on, for instance quart bottles. In shifting the slide, the elements carried thereby are moved therewith, said elements maintaining their relative positions. Before moving the slide, the clamping screw 59′ is to be loosened, thus permitting the bevel gear 59 to move with the slide. When the said slide is in the proper position, the clamping screw 59′ is screwed in to fix the said bevel gear to the shaft 60. The star wheel 18 is raised or lowered on the shaft 15 according to the requirements, that is to say, it is raised when larger bottles are operated upon and lowered when smaller ones are to be fed to the carrier 14.

The proper adjustment having been made, the bottles are transported in any suitable manner to the carrier 14, and forwarded by the latter, step by step, into alinement with the capping die 46. When a bottle is in alinement with the said die, the weight 68 is allowed to descend, it being released by the cam 71, causing the capping die to move, against the action of its spring 47, downward and applying the closure therein to the bottle. The weight is then lifted by the cam, and the next bottle in the series brought into operative relation to the capping die, the cycle of operation being then repeated.

As stated above, the bottles vary slightly in length or height. With the construction herein described, however, the force exerted upon the bottles by the capping die never exceeds the force developed by the weight 68, so that a constant pressure is kept on the caps or crowns regardless of any variations in the length or height of the bottles. This is mainly due to the fact that the lever 66 is in constant engagement with the capping die, there being no sudden shock or

motion imparted to the latter, even though the weight 68 is permitted to suddenly drop after the salient point of the cam has passed the roller 70. From the foregoing it appears that the machine herein described does away with the use of pressure controlling or compensating devices, commonly employed upon capping machines heretofore in use.

Attention is called to the fact that, while herein a specific bottle-carrier has been described, in combination with a specific capping die and hopper, others may just as well be used without departing from the invention, which lies mainly in the provision of a die operating mechanism that acts upon the die solely by its weight.

What I claim is:—

1. In a machine for applying metallic closures to fragile receptacles, the combination with a receptacle support, of a closure applying device reciprocably mounted in relation thereto, a weighted mechanism in continuous engagement with said applying device, a spring for moving said closure applying device away from said support, and means for intermittently opposing the gravitation of said weighted mechanism, thereby allowing said spring to move said applying device away from said support and then permitting said weighted mechanism to act on said applying device by its weight, whereby said applying device is caused to move toward said support.

2. In a machine for applying metallic closures to fragile receptacles, the combination with a receptacle support, of a closure applying device reciprocably mounted in relation thereto, a weighted lever in continuous engagement with said applying device, and means for intermittently opposing the gravitation of said lever, thereby permitting said applying device to move away from said support and then permitting said lever to act upon said applying device by its weight, whereby said applying device is caused to move toward said support.

3. In a machine for applying metallic closures to fragile receptacles, the combination with a receptacle support, of a closure applying device reciprocably mounted in relation thereto, a weighted lever in continuous engagement with said applying device, and a cam for elevating said lever, constructed to release said lever to the force of gravity, whereby said applying device is caused to move toward said support.

Signed at New York, in the county of New York and State of New York, this 13th day of March, 1920.

MELCHOR MARSA.