

1,022,591.

Patented Apr. 9, 1912.

5 SHEETS-SHEET 1.

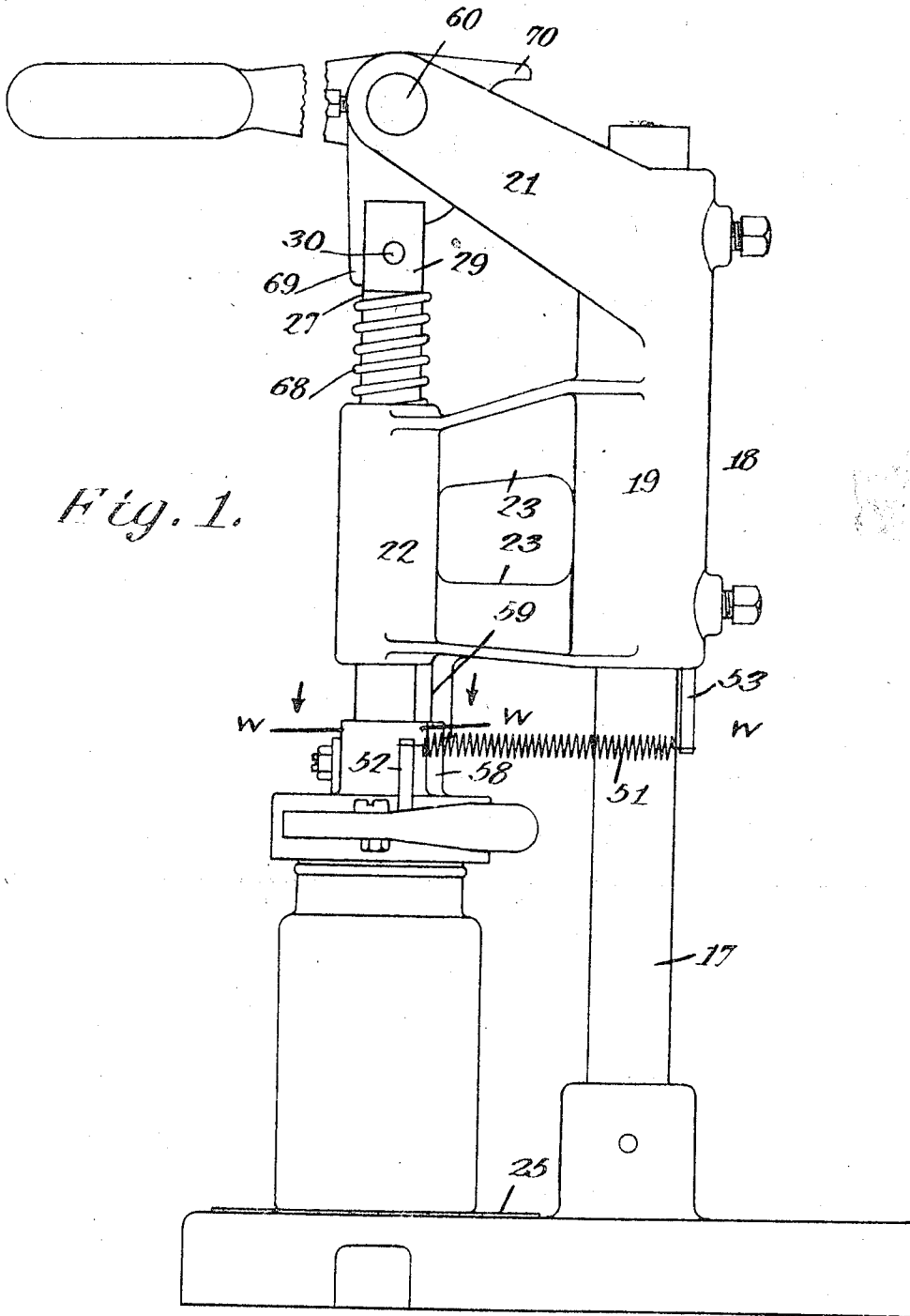


Fig. 1.

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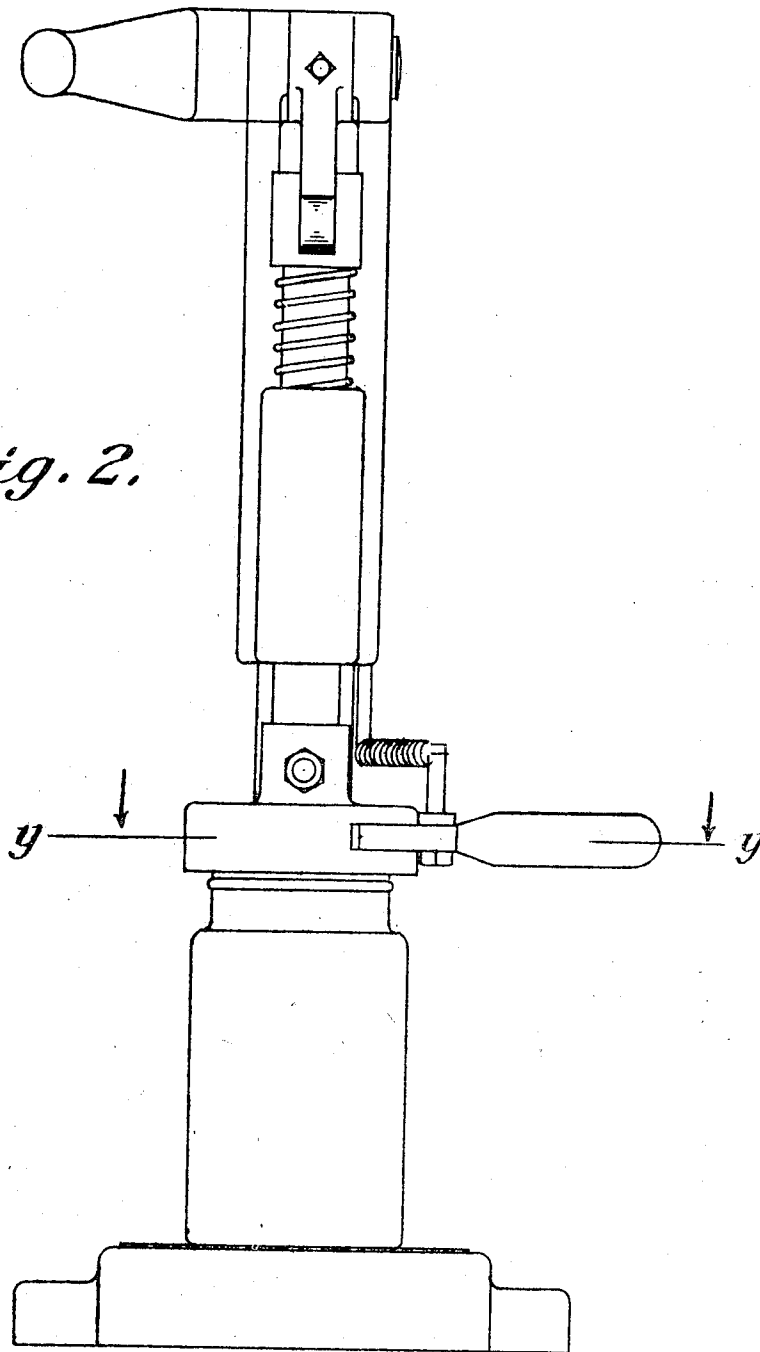
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CAPPING MACHINE.
APPLICATION FILED NOV. 24, 1909.

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5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

Fig. 3.

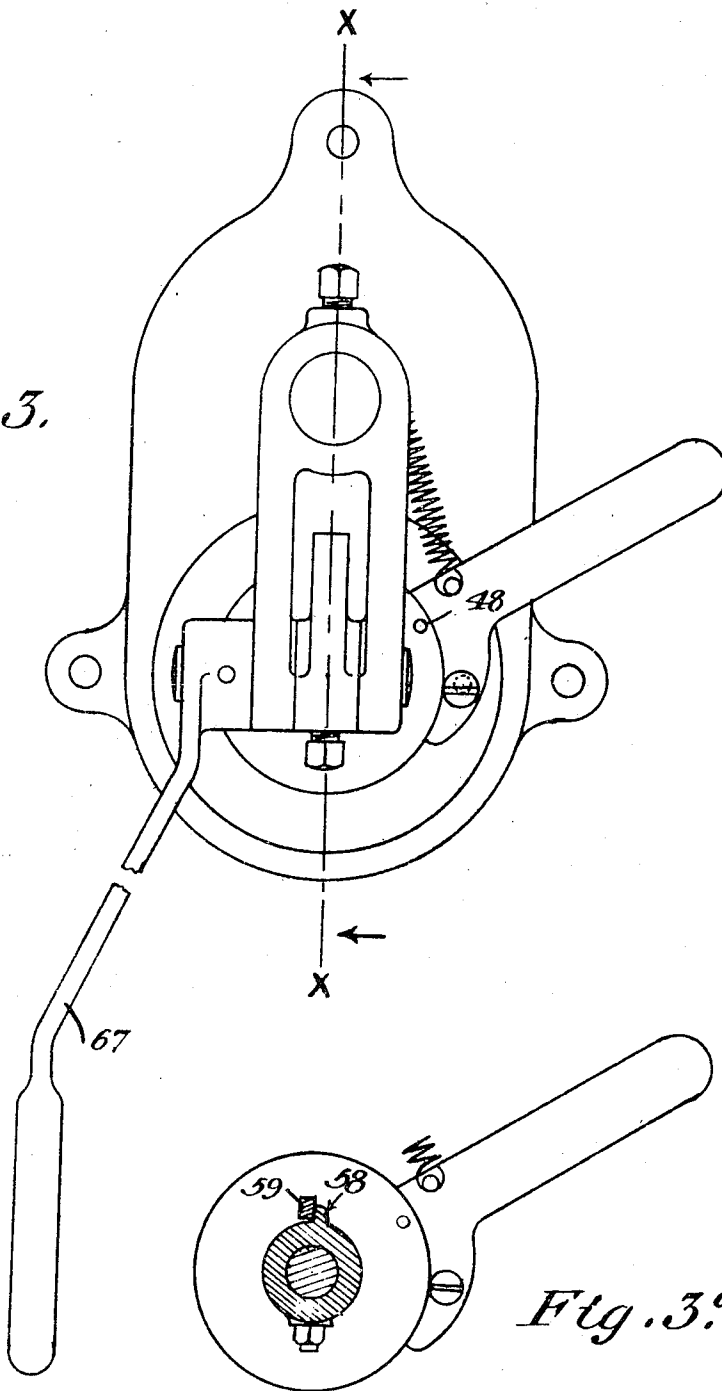


Fig. 3a

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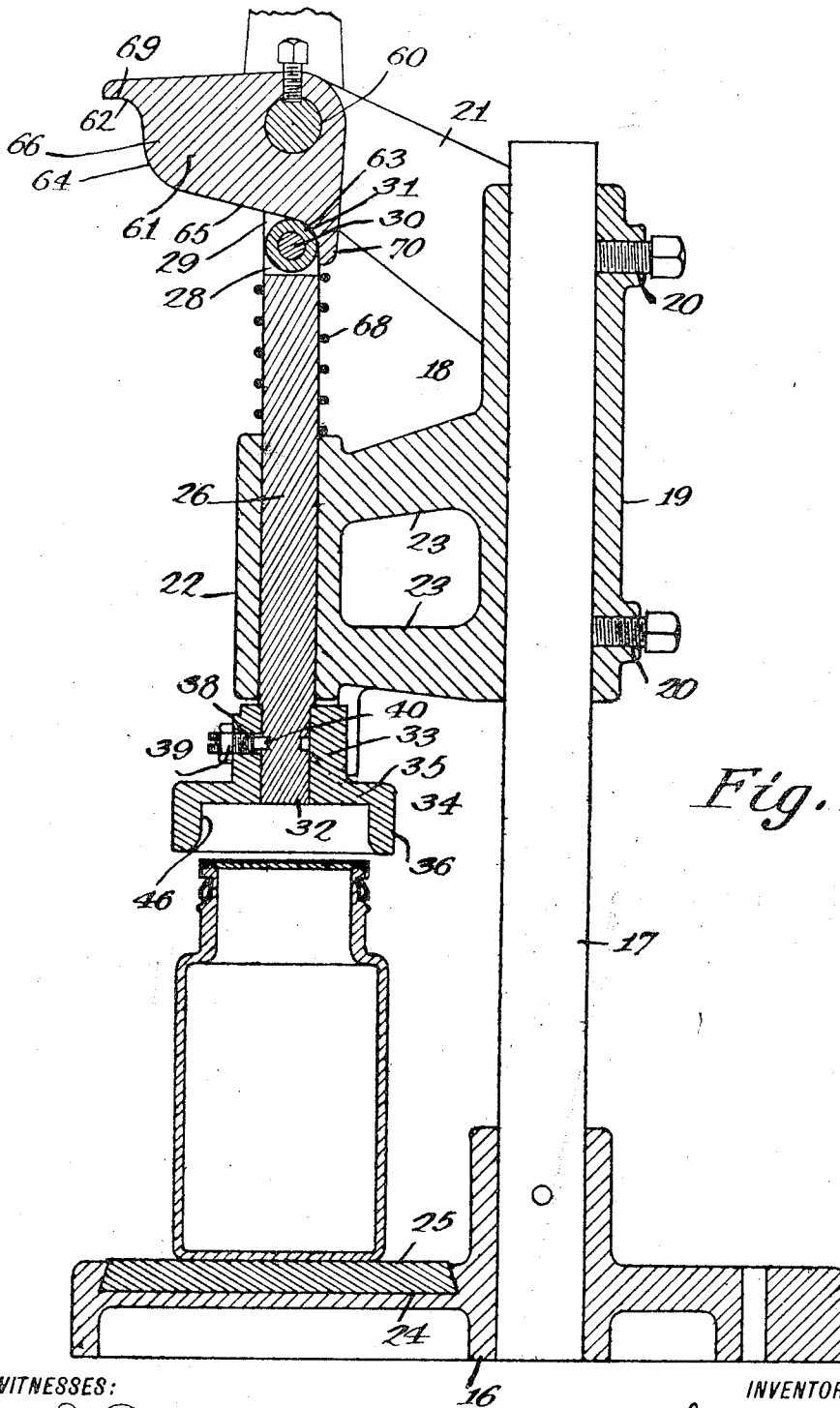


Fig. 4.

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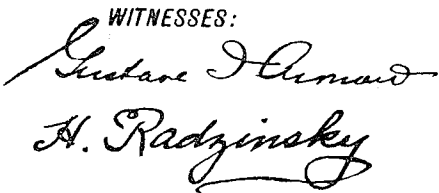
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

EUGENE L. PERRY, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN STOPPER COMPANY,
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CAPPING-MACHINE.

1,022,591.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed November 24, 1909. Serial No. 529,692.

To all whom it may concern:

Be it known that I, EUGENE L. PERRY, a citizen of the United States, residing at 170 Cumberland street, in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Capping-Machines, of which the following is a specification.

My invention relates to machines for capping vessels such as bottles, jars, and the like, and the object of my invention is to simplify the construction and to make more certain and effective the operation of machines of this class.

My machine is specifically designed for the purpose of applying a jar-cap such as shown in the application for patent for jar and bottle closures filed January 5th, 1909, by Edmund Hoffman, No. 470,748, or the same may be used with or without modification for the purpose of applying other styles or forms of jar or bottle caps.

My invention consists in the construction and combination of parts hereinafter described and further pointed out in the claims.

In the drawing forming part of this specification: Figure 1 is a side elevation of a machine embodying my improvements showing the plunger head in the depressed position. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view. Fig. 3^a is a sectional and plan view taken on the line *w-w* Fig. 1, looking in the direction of the arrows. Fig. 4 is a sectional elevation taken approximately on the line *x-x*, Fig. 3, looking in the direction of the arrows, showing the plunger and rotative head in the elevated position. Fig. 5 is an enlarged sectional view of a portion of the head and a cap, the section being taken approximately on the line *y-y*, Figs. 2 and 6 looking in the direction of the arrows. Fig. 6 is a sectional elevation enlarged of a portion of the head, a jar, and a cap, showing the adjustable bolt for the cap-turning lever in section, it being taken approximately on the line *z-z*, Fig. 5, as per the arrows. Fig. 7 is a front elevation of the jar having a neck provided with grooves adapted to receive the particular form of cap for which this machine is especially designed. Fig. 8 is a plan view of the cap; and Fig. 9 is a side elevation thereof.

Similar reference characters indicate corresponding parts throughout the several views.

The machine comprises a suitable frame or standard bracket or other support for a perpendicularly movable plunger; means for moving the plunger against the stress of a spring; means for holding the plunger in a locked position at the end of its downward movement; a head or chuck rotatable in a horizontal plane upon the end of the plunger; and adjustable means for rotating the head and gripping the bottle or jar-cap contained therein. This constitutes a broad statement of the main elements of construction of my machine, and I will now proceed to describe it in detail.

The particular jar or bottle cap for the application of which this machine has been designed is as follows: The cap shown in Figs. 5, 6, 8 and 9 comprises a crown 1 and a pendent side-flange 2. The side-flange 2 has inwardly extending lugs or projections 3 struck out on the metal of the flange. Between these inclined lugs are a series of projections 4 designed for the purpose of allowing the head-turning mechanism to simultaneously grip the cap and turn it.

In Fig. 7 is shown a jar or bottle having a neck 6 in which are formed a series of grooves 7 having open entrant portions 8, lower straight portions 9, terminating in a contracted terminal 10, the upper wall 11 of the grooves being inclined downwardly toward the inner terminal 10, and the lower wall 7^a inclining inwardly toward the face of the neck 6 and having an outer terminal 12 which is rounded upwardly as at 13.

In placing the cap on the jar or bottle the inclined lugs 3 are presented to the entrant portions of the grooves. The cap is usually provided with a cork or other suitable lining 14, and the bottle with a sealing rib 15 so that when it is placed on the bottle neck the lugs 3 will not go entirely to the bottom of the grooves. Pressure on the crown of the cap will force it down on the rib 15 compressing the cork disk, as shown in Fig. 6 and causing the lugs 3 to bear on the inclined wall 7^a of the grooves, as shown in Fig. 6; then by turning the cap the lugs are finally caused to bear against the upper wall 11 with constantly increasing friction as the ends of the grooves are approached.

My machine is not only specially adapted for the purpose of applying this particular form of cap or seal to a bottle or jar, but it is intended that the means for so doing shall embody further means for applying the cap to the bottle or jar by a yielding pressure, so that the frictional contact between the cap and the jar or bottle may be regulated according to the special requirements in each case.

As specifically embodied my invention comprises a machine having a base 16 and an upright shaft 17, a bracket 18 comprising a barrel 19 through which the shaft 17 passes, bolts 20 for securing the bracket in various positions of adjustment on the shaft, upwardly extending paired arms 21 and a guide-block 22 connected to the barrel 19 by intermediate webbing 23, the bore of the guide-block 22 being circular to receive a plunger to be described. The base 16 is recessed at 24, and in this recess is preferably located a sheet or block of rubber 25. Within the guide-block is adapted to move vertically a rod or plunger 26, the upper end of which is provided with a head 27 having a slot 28 forming two side arms 29, and on a shaft 30 extending between the arm is rotatively mounted an anti-friction roller 31. The lower end 32 of the plunger is reduced in diameter, and carries the hub 33 of a rotatable head or chuck 34, comprising the hub 33 and an upper-crown 35 and an annular depending flange 36. That portion of the plunger which extends into the hub 33 of the head is provided with an annular groove 37, and the head-hub 33 is provided with a threaded opening 38 into which passes a set screw 39 having a terminal 40 entering into this groove. This method of uniting the head with the plunger allows it to rotate horizontally at the same time preventing any longitudinal movement relative to the plunger.

The head 34 comprises means for turning it and placing the cap upon the bottle or jar with a yielding pressure, further means for freeing the cap from contact with the turning means, and returning both the head and said latter means to their original position. The turning means comprises a pinch-bar 41 having a handle 42, a nose or projection 43, and an angular disposed corner 44. The inner face 45 of the pinch-bar nose is conformed on the same circle as the interior face or cup 46 of the head 34. The flange 36 is provided with a circumferential and horizontal slot 47, into which the fore part, including the nose 43, of the pinch-bar is projected, and a pin 48 extended through the flange 36, slot 47 and the pinch-bar pivotally supports the bar in position for horizontal movement. The end 49 of the slot 47 and the squared-corner 44 of the pinch-bar are preferably spaced a short distance

apart so as to allow of an independent turning movement of the pinch-bar before it comes to bear against the end of the slot of the head. The inner surface of the nose of the pinch-bar is provided with corrugations or gripping-surfaces 50 which preferably conform to the corrugations or projections 4 formed on the pendant flange of the cap as shown in Figs. 5, 8 and 9.

The pinch-bar 41 is connected with the frame of the machine, preferably with the barrel 19 by means of a spring 51 one end of the spring passing over a pin 52, secured to the handle of the pinch-bar; its other end being secured to stud 53 secured to the barrel 19. The inner end of the pinch-bar, specifically its nose, is provided with a bolt 54, having a stem 55 passing through the pinch-bar, a nut 56 and a head 57 on its upper end, which is eccentric to the axis of the stem of the bolt, the nut 56 permitting the setting of the head 57 in the particular position of adjustment desired. The object of this arrangement is to limit the inward thrust of the nose of the pinch-bar, so that the pressure to be exerted by the pinch-bar upon the jar or bottle cap may be readily regulated, the regulation being had by turning the head 57, of the bolt so that its greater or lesser dimension will be presented between its stem and the pendant flange 36 of the plunger head as shown in Figs. 3 and 6. In order to prevent the spring 51 rotating the plunger-head and the pinch-bar too far rearwardly, the hub of the plunger-head is provided with a lug 58 which is adapted to strike a lug 59 pendant from the lower web 23 of the bracket 18.

The means for raising and lowering the plunger with the head will now be described.

At 60 is a shaft passing through the arms 21, and to this shaft is rigidly secured a cam 61. The cam has two rounded terminal surfaces 62 and 63, the latter being located nearest the axis of the shaft, the former farthest from the axis of the shaft, and between these two rounded surfaces is an outwardly curved surface forming a shoulder 64. The surface of the cam from the intermediate shoulder 64 as it approaches the terminal 63 being rapidly inclined as at 65, the other being slowly inclined as at 66.

At 67 is an operating handle fixedly secured to the shaft 60 outside of one of the arms 21. Surrounding the plunger 26 above the guide-head 22 and bearing against its upper portion and the head 27 is a spiral spring 68.

In Fig. 4 the minor plane or terminal 63 of the cam 61 is in line with the plunger, and the spring has raised the plunger and the head 34 into its uppermost position of elevation, at which point the parts are locked. The handle being moved downwardly, the inclined surface 65 of the cam

is moved over the roller 31. When the shoulder 64 is reached the plunger will receive its maximum downward thrust. This will bring the plunger head 34 down upon the cap (which has been seated on the bottle or jar neck as before described) and press it upon the neck of the bottle. When the shoulder 64 passes over the roller the slight incline 66 from it to the maximum plane or terminal 62 of the cam will slowly and further press the head 34 down upon the cap, the point 69 of the cam acting as the stop to prevent further downward movement of the operating handle, as shown in Fig. 1; as does the point 70 prevent further upward movement. The spring 68 is then pressing the roller 31 against the cam so that the plunger and the head 34 are held firmly and in a locked position. In order to prevent the plunger from turning, it is provided that the cam at all stages of its movement, works between the two arms at the top of the plunger.

The operation is briefly as follows: A jar or bottle is placed upon the flexible bed 25 and a cap such as previously described with a cork, waxed paper, or felt lining 4 is placed over the neck of the bottle the inclined lugs 3 being in line with the entrant portion of the grooves 7 in the neck of the bottle. The operating handle is then moved downwardly so as to force the head 34 on to the cap, pressing the lining down upon the annular neck 15 of the bottle with a force sufficient to make the seal desired. As this may vary, depending upon the character of the goods contained in the jar or the bottle, means for regulating this pressure, without interfering with the operation of the handle or the full throw or movement of the cam, is provided for by causing the bracket 18 to be adjustably secured to the pillar or shaft 17, as before described. This movement of the head causes the inclined lugs of the cap to occupy their proper position in the bottle grooves, the degree to which they are forced down into the grooves depending upon the amount of force which it is deemed advisable to use in applying the cap. Then the pinch-bar 41 is moved toward the operator, the gripping surface 50 on the nose of the pinch-bar first strikes the corrugations 4 on the flange of the cap with sufficient friction to enable both the head 34 and the cap to be rotated, which forces the inclined edge 71 of the lugs against the inclined wall 11 of the grooves in the neck of the bottle. This arrangement permits the head to be rotated just far enough to bring the cap lugs entirely home or to the end of the groove, or to any distance between the entrant portion of the grooves and their terminals.

The pressure of the nose of the pinch-bar is regulated by the eccentric bolt-head 57 so that just the exact amount of pressure de-

sired will be exerted upon the surface of the cap flange. This will prevent a breaking of the bottle and injury to the surface of the cap. The frictional contact between the nose of the pinch-bar and the flange of the cap is released when the lugs on the cap have been set in the proper position on the bottle, allowing the gripping-surface of the pinch-bar to slide freely over the projections on the cap flange. In order to insure the completeness of this arrangement, when the pinch-bar is freed, and rotated back, its blunt corner 44 being spaced apart from the end 49 of the slot 47, the spring 51 will not at once exert its maximum power to rotate the head 34 backward, the pinch-bar having a free movement outward on the pin 48 before it will strike the end of the slot. By the time it strikes the end of the slot its gripping-surface will be entirely free from contact with the cap allowing the head to be rotated back to its original position. By means of this arrangement the operator is prevented from using his full strength when forcing the pinch-bar against the cap during either direction of rotation of the cap.

It is clear that my invention may be embodied in a structure differing in details of construction and arrangement of parts from that described and shown herein without departing from the spirit of my invention, so I do not intend to limit myself to the specific disclosure made herein, but intend that my invention shall extend to all structures coming within the scope of the appended claims.

Having described my invention, I claim:

1. In a machine of the class described, the combination of a bottle or jar support, a perpendicularly movable plunger, means for moving the plunger against the stress of a spring, means for limiting the movement of the plunger and locking it in its lowered position, a head rotatable in a horizontal plane on the end of the plunger, and means for rotating the head and means for gripping the cap by a limited pressure.

2. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for rotating said head or chuck, means for moving said head or chuck to or from said bottle or jar support, and means for regulating the pressure without effecting the full throw of said head or chuck.

3. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving said head or chuck to and from said support, a bracket through which the means carrying said head is movable, means for adjustment of said bracket, and means causing sufficient friction to enable the head and the applied cap to be rotated in unison.

4. In a machine of the class described, a bottle or jar support, a rotatable head or

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 chuck, means for moving said head or chuck to and from said support, a bracket through which the means carrying said head is movable, means for adjustment of said bracket, means causing sufficient friction to enable the head and the applied cap to be rotated in unison, and eccentric means for regulating the pressure of the operating means.

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 10 5. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving said head or chuck to and from said support, a bracket through which the means carrying said head is movable, means for adjustment of said bracket, means causing sufficient friction to enable the head and the applied cap to be rotated in unison, eccentric means for regulating the pressure of the operating means, and means for releasing the frictional engagement as the head is reversely rotated.

6. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving the same to and from said support, a pinch bar having a projection and an angularly disposed corner.

7. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving the same to and from said support, a pinch bar having a projection and an angularly disposed corner, and means for allowing an independent

turning movement of the pinch bar prior to its contact with the head.

8. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving the same to and from said support, a pinch bar having a projection and an angularly disposed corner, means for allowing an independent turning movement of the pinch bar prior to its contact with the head, and yielding means connecting said pinch bar with the frame of the machine.

9. In a machine of the class described, a bottle or jar support, a rotatable head or chuck, means for moving the same to and from said support, a pinch bar having a projection and an angularly disposed corner, means for allowing an independent turning movement of the pinch bar prior to its contact with the head, yielding means connecting said pinch bar with the frame of the machine, and means to prevent said spring from rotating the head and pinch bar beyond predetermined limits.

Signed in the city, county and State of New York, this 23rd day of November, 1909.

EUGENE L. PERRY.

Witnesses:

GUSTAVE I. ARONOW,
 H. RADZINSKY.