May 27, 1930. J. J. LACH 1,760,859

CAN CAPPING MACHINE

Filed Dec. 10, 1921 4 Sheets-Sheet 1

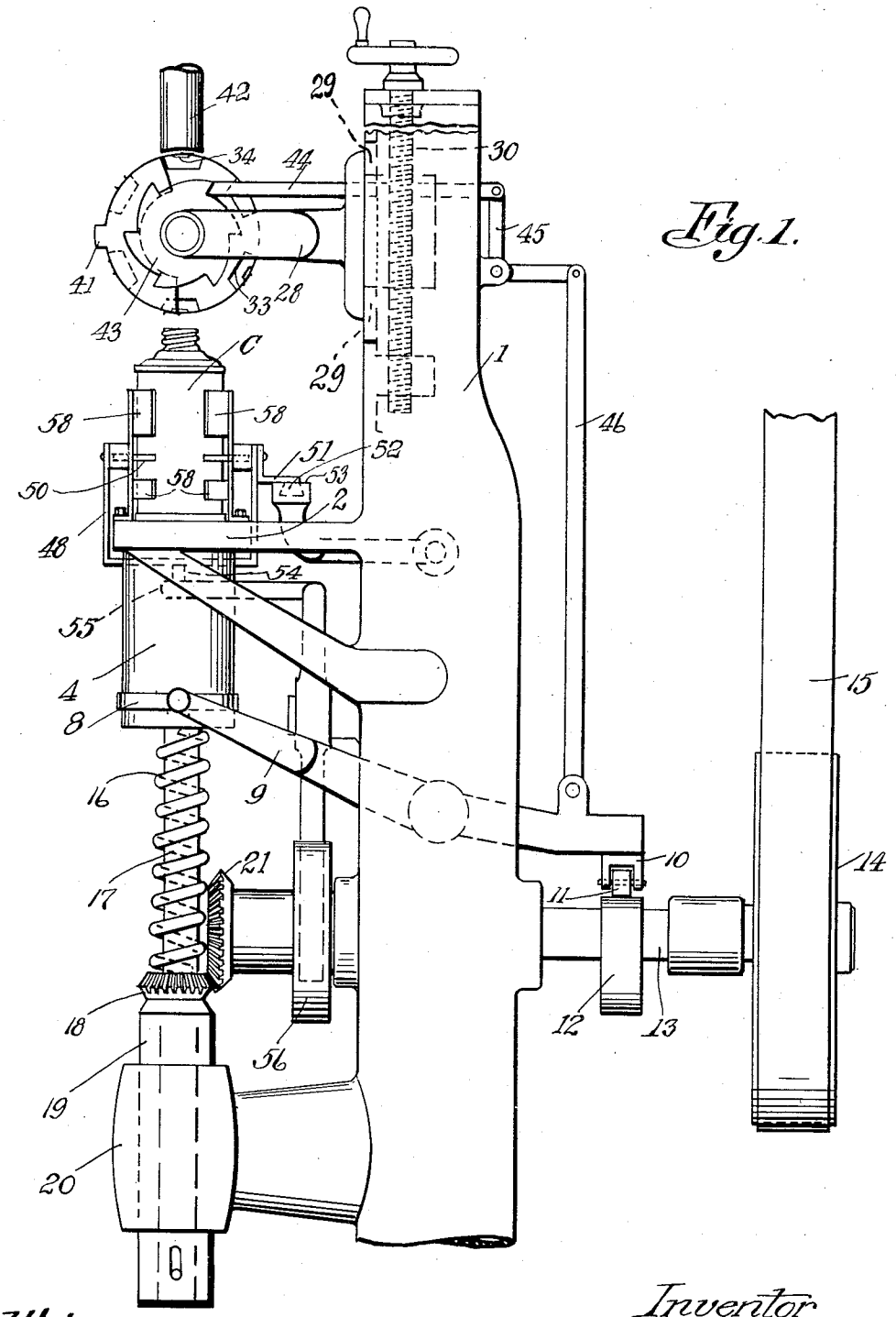


Fig. 1.

Witnesses
Berthold Oblatt
A. J. Friedman

Inventor
John J. Lach
By Joshua R. H. Potts
His Attorney

May 27, 1930. J. J. LACH 1,760,859

CAN CAPPING MACHINE

Filed Dec. 10, 1921 4 Sheets-Sheet 2

Fig. 2

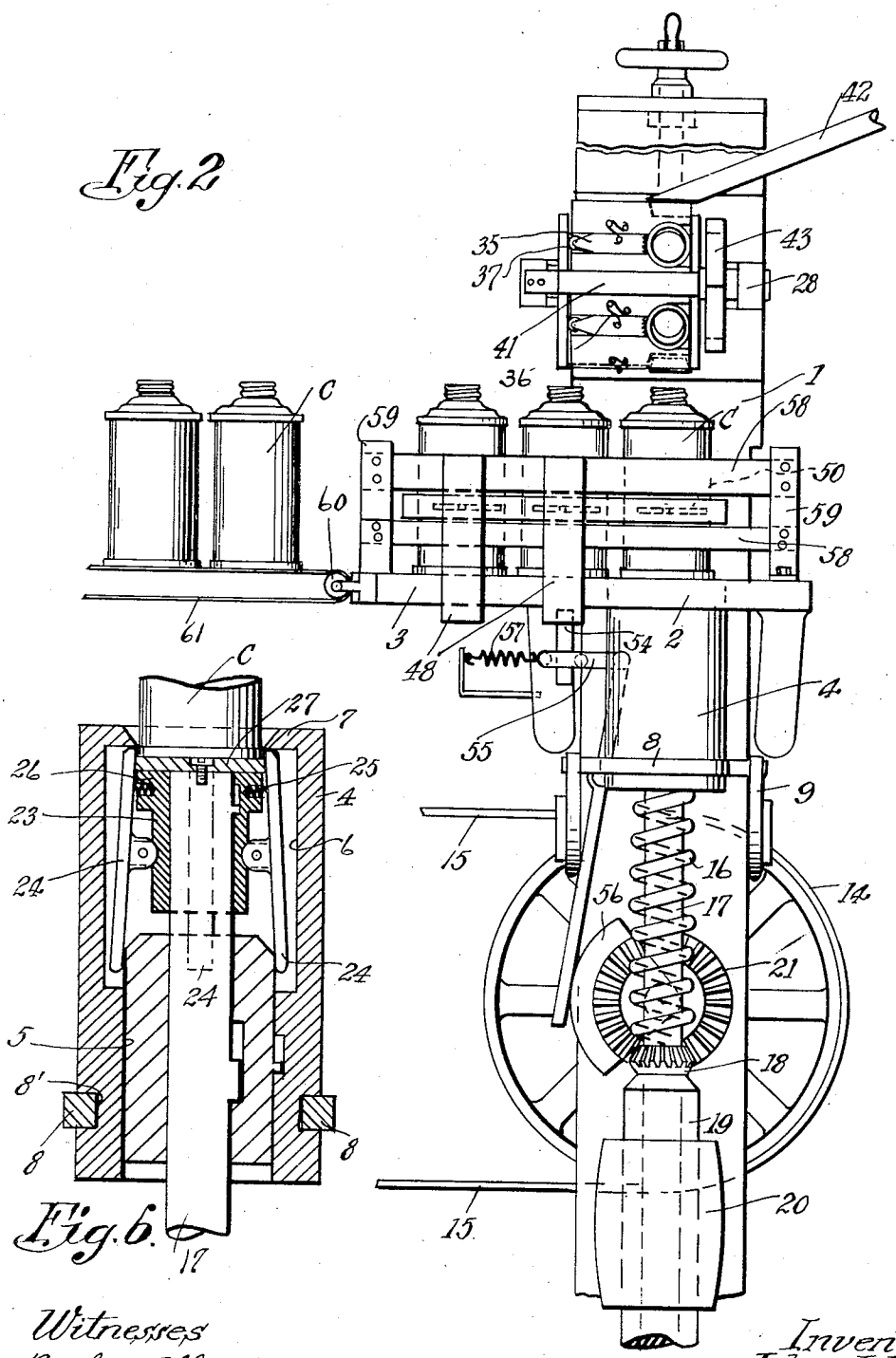


Fig. 6.

Witnesses
Berthold Oblatt
H. S. Friedman

Inventor
John J. Lach
By Joshua R. H. Cobb
His Attorney

May 27, 1930. J. J. LACH 1,760,859

CAN CAPPING MACHINE

Filed Dec. 10, 1921 4 Sheets-Sheet 3

Fig. 3.

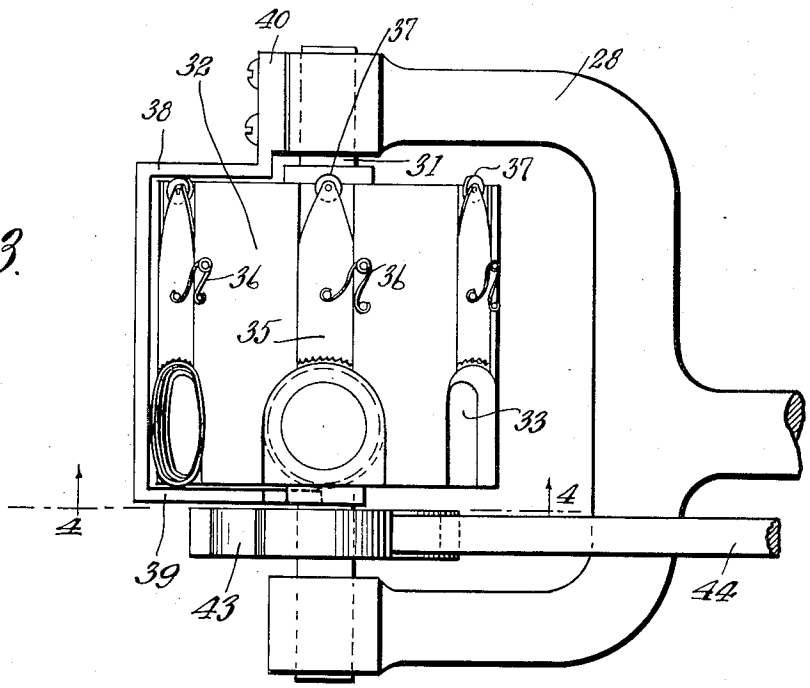
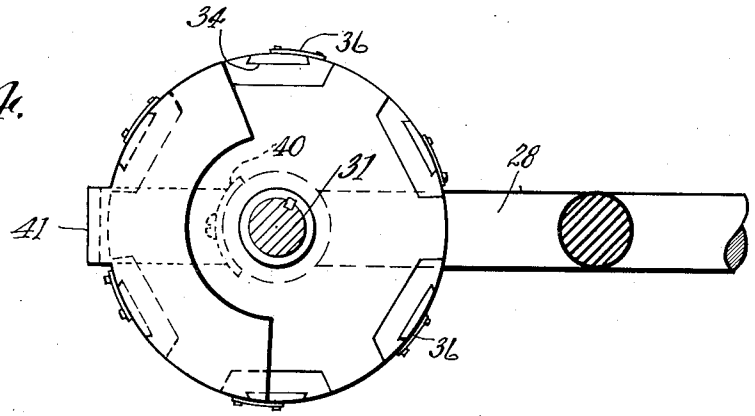


Fig. 4.



Witnesses
Berthold Oblatt
K. S. Friedman

Inventor
John J. Lach
By Joshua R. H. Potts
His Attorney

May 27, 1930. J. J. LACH 1,760,859

CAN CAPPING MACHINE

Filed Dec. 10, 1921 4 Sheets-Sheet 4

Fig. 5.

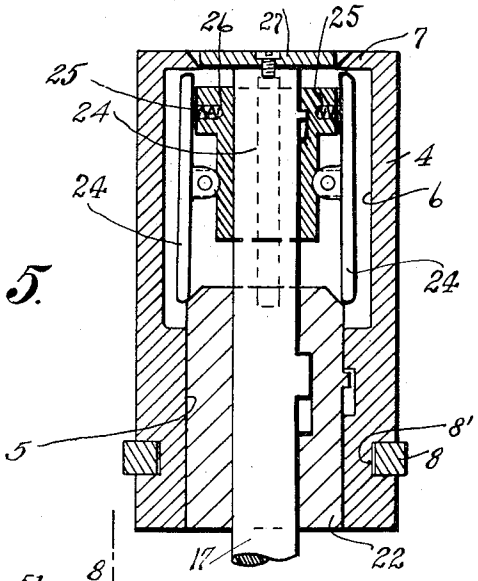


Fig. 7.

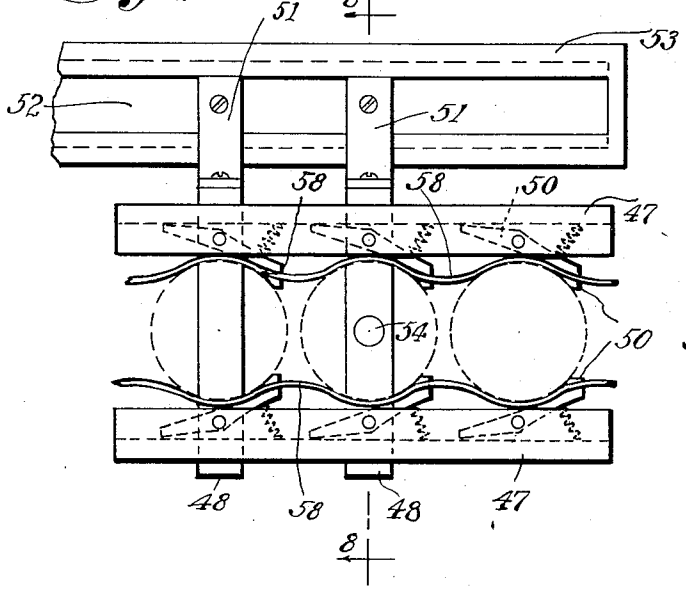
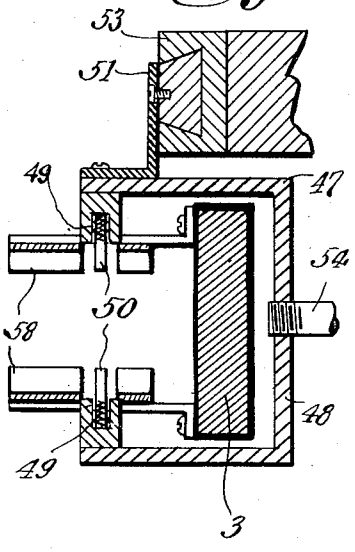


Fig. 8.



Witnesses
Berthold Oblatt.
N. S. Cheidman

Inventor
John J. Lach
By Joshua R. H. Potts.
His Attorney

Patented May 27, 1930 1,760,859

UNITED STATES PATENT OFFICE

JOHN J. LACH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ANDERSON COMPANY, OF GARY, INDIANA, A CORPORATION OF INDIANA

CAN-CAPPING MACHINE

Application filed December 10, 1921. Serial No. 521,417.

This invention relates to can capping machines having means for automatically feeding cans to operative position, threading caps thereon, and then discharging such cans after such threading operation.

Another object of the invention, is to provide a rotary chuck which successively receives and presents the cans in position to have caps threaded thereon.

Still another object of the invention is to provide a cap holding and feeding mechanism which at proper intervals, provides a cap to be threaded onto the can presented thereto by said chuck.

Still another object of the invention is to provide an automatic feeder in which the cans are advanced to operative position by successive displacement thereof during reciprocation of the feeder.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which,

Fig. 1 is a side elevation of the invention,

Fig. 2 is a front elevation of the invention showing the feeding means in operative position,

Fig. 3 is a top plan view of the cap feeding and holding mechanism,

Fig. 4 is a side view of the cap feeding and holding cylinder on line 4—4, of Fig. 3,

Fig. 5 is a sectional view of the can holding chuck in inoperative position,

Fig. 6 is a similar view of said chuck in operative position,

Fig. 7 is a top plan view of the can feeding mechanism, and

Fig. 8 is a sectional view on line 8—8 of Fig. 7.

The invention consists of a supporting standard 1 provided with a supporting bracket 2, such bracket having an extension 3 thereon for a purpose hereinafter described. The bracket 2 is provided with an opening in which is slidably mounted a chuck 4. The chuck 4 is preferably provided with a bore 5 and a counterbore 6, an annular inwardly bevelled flange 7 being provided at the outer end of said counterbore as shown in Figs. 5 and 6. An annular groove 8′ surrounds the chuck 4 adjacent its lower end and in such groove is loosely mounted a ring 8, said ring being pivotally held between the forked ends of a rocker arm 9. The arm 9 is pivoted on the standard 1 and preferably has a bracket 10 at one end in which is mounted a roller 11, which rides on a cam 12 mounted on a shaft 13 driven by a suitable pulley 14 and belt 15. The roller 11 is normally held in engagement with the cam 12 by means of a spring 16 disposed about a shaft 17, such spring having one end abutting against the underside of the chuck 4, and its opposite end resting against the face of a bevel gear 18. The gear 18 is mounted on a sleeve 19 splined to the shaft 17 and rotatably journalled in a bearing 20 on the standard 1. The gear 18 is adapted to be driven by a bevel gear 21 mounted on the shaft 13, such gears being adapted to remain in mesh during vertical movements of the shaft 17.

The chuck 4 is preferably splined on a sleeve 22, the upper end of said sleeve preferably being bevelled for a purpose as will presently appear, and the sleeve 22 is also splined to the shaft 17 as shown in Figs. 5 and 6. Disposed above the sleeve 22 is another and smaller sleeve 23, such sleeve also being splined to the shaft 17. Pivotally mounted on the sleeve 23, intermediate their ends, are fingers 24, such fingers having their upper ends normally outwardly pressed by springs 25 mounted in a flange 26 on the upper end of the sleeve 23. The lower ends of the fingers 24 are normally engaged by the bevelled edge of the sleeve 22 as shown in Fig. 5. A platform 27 is mounted in any suitable manner on the upper end of the shaft 17. and is adapted to receive the can "C" thereon, and carry same to operative position. The upper surface of the chuck 4, when in inoperative position, is level with the platform 27, and also with the extension 3 and the bracket 2, as shown in Figs. 1 and 2. When a can is placed on the platform 27, upward movement of the rocker arm 9, caused by extension of

spring 16, raises the upper end of the chuck 4 beyond the level of the platform 27 and extension 3, thereby serving to properly center said can and retain same in position on the platform 27. Continued upward movement of the chuck causes the sleeve 22 to rise carrying with it, through the medium of the fingers 24 resting on the sleeve 22, the sleeve 23, the upward movement of the parts continuing until the sleeve 23 engages the undersurface of the platform 27, at which time the bevelled edge of the sleeve 22 is wedged between the lower ends of the fingers 24, causing same to clamp firmly on the bottom of the can "C". The parts splined on the shaft 17 are now at their upward limit of movement, and continued upward movement of the rocker arm 9 raises the shaft 17 together with the chuck to operative position, all of said parts of course rotating during the described operations.

Adjustably mounted adjacent the upper end of the standard 1 is a yoke 28, the inner end of said yoke projecting through a slot 29 in the wall of the standard 1. A screw 30 is threaded into the standard 1 and through the inner end of said yoke, and serves to adjustably secure said yoke to the standard 1. Journalled in the arms of the yoke 28 are the opposite ends of a shaft 31 and mounted on said shaft is a rotatable cylinder 32. Such cylinder is provided with circumferentially disposed recesses 33, such recesses being preferably located in the edge of such cylinder as shown in Figs. 3 and 4 and each having its top and one side open. Communicating with the recesses 33 are dovetailed slots 34 which slidably carry clamping tongues 35, such tongues being normally held in retracted position by springs 36. Each of the tongues 35 has its inner end curved and preferably serrated and its outer end provided with a roller 37. Preferably disposed at opposite sides of the cylinder 32 are segmental plates 38 and 39 one of said plates being used as a cam engageable with the rollers to press the tongues 35 inwardly of their slots and the other plate being used for retaining the caps in the recesses during a part of the rotation of the cylinder 32. Any suitable means may be provided for securing said plates in position, but I preferably provide the segmental plate 38 with an extension 40 which may be secured to one leg of the yoke 28, and the plate 39 on the opposite side of the cylinder is held in position by means of a cross piece 41. Disposed above the cylinder 32 in line with the recesses 33, is a chute 42, such chute being of any suitable construction which will feed caps one at a time, with the edges uppermost, to recesses successively brought into position thereunder. For imparting a step by step movement to the cylinder 32, I have provided a ratchet wheel 43, mounted on the shaft 31, such ratchet wheel being operated by a pawl 44 mounted in a suitable slot (not shown), in the standard 1, such pawl being actuated by a bell crank lever 45 which in turn is connected to the rocker arm 9 by a link 46, the construction being such that the cylinder is revolved in proper time with the chuck 4.

Any suitable means may be provided for feeding cans to the chuck 4. For the purpose, I have provided an automatic feeder preferably having side members 47 connected together by suitable brackets 48 loosely disposed about the extension 3 of the bracket 2. The side members 47 are preferably provided with grooves 49, in which are pivotally mounted at suitable intervals spring-held fingers 50, such fingers being yieldable in one direction but engageable in the opposite direction. Preferably secured to the brackets 48, at one side thereof, are the inner ends of supporting members 51, the outer ends of such members being mounted on a bar 52 slidably mounted in a dovetailed slot provided in a supporting arm 53 mounted on the standard 1. A stud 54 is preferably secured to one of the brackets 48, and is adapted to be engaged and reciprocated by one end of a suitable lever 55, the opposite end of said lever engaging a cam 56 mounted on the shaft 13, such end of the lever being retained in engagement with the cam 56 by means of a suitable spring 57 secured to the opposite end of said lever. Disposed adjacent to and co-operating with the reciprocating carrier are undulating springs 58, there being preferably two of such springs disposed at each side of said carrier and above and below same, the ends of such springs being secured by suitable means to standards 59 mounted on the bracket 2 and extension 3. Mounted to the rear end of the extension 3 is a suitable pulley 60 which carries a suitable belt 61 which is adapted to deliver the cans to the reciprocating feeder.

The driving gears of course are arranged to operate the parts in proper sequence. In operation cans "C" on belt 61 are slowly fed between the spring members 58 on the platform 3. The fingers 50 of the carrier on its backward movement yieldingly engage said can and on its forward movement carry said can with it, where it is held by springs 58 during the return rearward movement of the carrier, at which time said fingers once more grasp a can, and on the forward movement of said carrier advance the first named can one position in the springs 58. Still another rearward movement of the carrier permits the fingers to grasp another can and in like manner the forward stroke of the carrier advances the two cans already between the springs 58, which brings the foremost can to operative position, as shown in Fig. 1. It is of course necessary that the feeder contain several cans in order to properly present cans in operative

position, the position of the foremost can being on the platform 27 heretofore described. In its proper turn, a cap is fed from the chute 42 into a recess 33, of the cap holding cylinder 32, such cap being held in said recess during rotation of the cylinder by engagement of the roller 37 with the plate 38 and by engagement of the side of the cap with the plate 39, the caps being successively fed and intermittently presented in proper position above the can on the platform 27. The chuck 4 is now ready to make an operative movement. In proper time the rocker arm 9 is actuated by the spring 16 to raise the flanges 7 of the chuck to center the can on the platform 27. Continuous upward movement of said chuck successively engages the fingers 24 and raises the platform 27, so as to bring the neck of the can held on said platform into engagement with the cap held by the revoluble cylinder 32, the rotary movement of the can threading the cap thereon, the mechanism being timed so that the can is retracted after making a sufficient number of revolutions to thread the cap on said can. The cap is comparatively lightly held in the recess 33 by reason of the fact that the cam plates 38 and 39 terminate just a fraction of an inch past the operative point so that when the cap has been threaded onto the can, a slight movement of the cylinder 32 just prior to the retraction of the can releases the slide 35, whereby the tension of spring 36 will move the slide away from the cap thus releasing the cap held in the recess 33. The chuck 4 and platform 27 then resume their original positions due to the cam 12, and the cylinder 32 is advanced one step to present another cap in position to be threaded onto the next can presented thereto. The carrier on its next operative movement presents another can to the platform 27, and in so doing, pushes the finished can from the platform into any suitable receptacle. The machine is now ready for another operative cycle.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Mechanism of the class described comprising a rotatable can carrying platform; cap holding mechanism co-operating with said platform; means for centering said can on said platform; gripping means for holding said can on said platform; means for raising said platform; and means whereby said centering means and said gripping means are successively engaged prior to the actuation of said raising means, substantially as described.

2. Mechanism of the class described comprising a rotatable can carrying platform; cap holding mechanism co-operating with said platform; means for centering said can on said platform; gripping means for holding said can on said platform; means for raising said platform; and means whereby said centering means, said holding means, and said raising means are successively actuated before presentation to said cap holding mechanism, substantially as described.

3. Mechanism of the class described comprising a can carrying platform; gripping means adapted to secure a can on said platform; and a cylindrical body adapted by movement thereof to cause the actuation of said gripping means and provide means for centering said can on said platform, substantially as described.

4. Mechanism of the class described comprising a movable shaft having a can carrying platform mounted thereon; gripping means mounted on said shaft and adapted to secure a can on said platform; and a body member slidably mounted on said shaft and adapted to be projected above said platform to center a can thereon, to cause the engagement of said gripping means, and lift said shaft to raise said platform to operative position substantially as described.

5. Mechanism of the class described comprising a movable and rotatable shaft having a can carrying platform thereon; a cylindrical body splined on said shaft; and means for raising said cylindrical body to operative position, further movement of said cylindrical body serving to raise said platform, substantially as described.

6. Mechanism of the class described comprising a rotatable shaft having a can carrying platform thereon, a cylindrical member splined on said shaft and having a can receiving opening, gripping means splined on said shaft to secure a can on said platform, means whereby the cylindrical member is moved to receive a can in said opening for centering the can on said platform, and means causing actuation of said gripping means during the last-mentioned movement of said member.

7. Mechanism of the class described comprising a movable rotatable shaft having a can carrying platform thereon, a cylindrical body splined on said shaft and having a can receiving opening, gripping means splined on said shaft to secure a can on said platform, means whereby the cylindrical body is moved to receive a can in said opening for centering the can on said platform, and means for successively actuating said gripping means and raising said platform upon continued movement of the body.

8. Mechanism of the class described comprising a can carrying platform; a revoluble cap holding mechanism cooperating with said platform to thread a cap on said can; means for rotating said platform, means for moving a can on said platform into engagement with a cap in said holding means; means for feeding caps to said cap holding mechanism; means for retaining said caps in said cap holding mechanism during revolution thereof; and means whereby to release said caps to permit retraction of the same one at a time from said cap holding means.

9. Mechanism of the glass described comprising a revoluble cylinder having recesses adapted to receive caps therein; means for retaining said caps in said recesses during revolution of said cylinder; and means whereby to release said caps, one at a time, from said retaining means to permit retraction of the caps from said recesses.

10. Mechanism of the class described comprising a revoluble cylinder having recesses, said cylinder having slots communicating with said recesses; clamping means slidably mounted in said slots; and can means cooperating with said cylinder for engaging said clamping means to hold said caps in said recesses, substantially as described.

11. Mechanism of the class described comprising a revoluble cylinder having recesses for receiving caps therein; plates adjacent the sides of said cylinder; and means actuated by said plates for retaining said caps in said recesses during operative movements of said cylinder, substantially as described.

12. Mechanism of the class described comprising a rotatable can carrying platform, cap holding mechanism cooperating with said platform, means for raising said platform, means for centering a can on said platform, means for clamping a can on said platform, and means for moving said clamping and centering means to operative position prior to the engagement of said raising means with said platform.

13. Mechanism of the class described comprising a shaft carrying a can supporting platform, can centering means cooperating with said platform, gripping means adapted to secure a can on said platform, and means whereby said gripping means and said platform are moved to cooperative position by the movement of said can centering means.

14. Mechanism of the class described comprising a rotatable shaft having a can carrying platform mounted thereon, gripping means splined on said shaft for securing a can on the platform, a cylindrical member splined on said shaft, and means for successively actuating said gripping means and said cylindrical member during rotation of said shaft.

15. Mechanism of the class described comprising a movable and rotatable shaft having a can carrying platform mounted thereon, gripping means splined on said shaft for securing a can on said platform, a cylindrical member splined on said shaft, and means whereby raising of said cylindrical member provides means for centering a can on said platform, causing said gripping means to resume operative position and raise said platform.

16. Mechanism of the class described comprising a rotatable shaft having a can carrying platform thereon, a sleeve splined on said shaft, a second sleeve splined on said shaft, gripping fingers pivoted on said second sleeve to secure a can on said platform, a stop for limiting the movement of said second sleeve, and means whereby movement of said first sleeve causes said second sleeve to engage said stop whereby continued movement of said first sleeve will cause said first sleeve to operatively engage said fingers.

17. In a device of the class described, means for feeding cans intermittently, means for centering, clamping, and raising said can while continuously rotating it, and means operatively connected with the aforesaid means for feeding caps intermittently to be engaged by a can supported by said can engaging means, and for releasing a cap immediately prior to the retraction of a can.

18. In a device of the class described, means for feeding cans intermittently, means for centering a can, clamping it at the base thereof and raising it into engagement with a cap while continuously rotating it, and means operatively connected with the aforesaid means for feeding caps intermittently to be engaged by a can supported by said can engaging means, and for releasing a cap immediately prior to the retraction of a can.

19. In a device of the kind described and in combination, cap feeding means, means successively engageable with a series of cans for feeding and discharging them singly, means for actuating said cap feeding means and said can feeding means for successively bringing a cap and a can into registry, means for screwing a can to a cap comprising a rotatable chuck engageable with the registered can, and means for lifting and lowering said rotating chuck in a predetermined manner.

20. In a device of the kind described and in combination, means for singly feeding caps, means for singly feeding cans into registry with said caps and for discharging the capped cans, means for gripping a can at the base thereof when in registry with a cap, means associated with said gripping means for rotating said can upon its longitudinal axis, and means for simultaneously bringing said can and a cap into engagement so as to screw said can to said cap.

21. In a device of the kind described and in combination, means for singly feeding

caps, means for singly feeding cans into registry with said caps and for discharging the capped cans, means for gripping a can at the base thereof when in registry with a cap, means associated with said gripping means for rotating said can upon its longitudinal axis and for simultaneously raising said can into engagement with a cap so as to screw said can to said cap.

22. In a device of the kind described and in combination, means for singly feeding caps, means for singly feeding cans into registry with said caps and for discharging the capped cans, means for gripping a can at the base thereof when in registry with a cap, means associated with said gripping means for rotating said can upon its longitudinal axis and simultaneously raising said can into yielding engagement with a cap so as to screw said can to said cap.

In testimony whereof I have signed my name to this specification.

JOHN J. LACH.