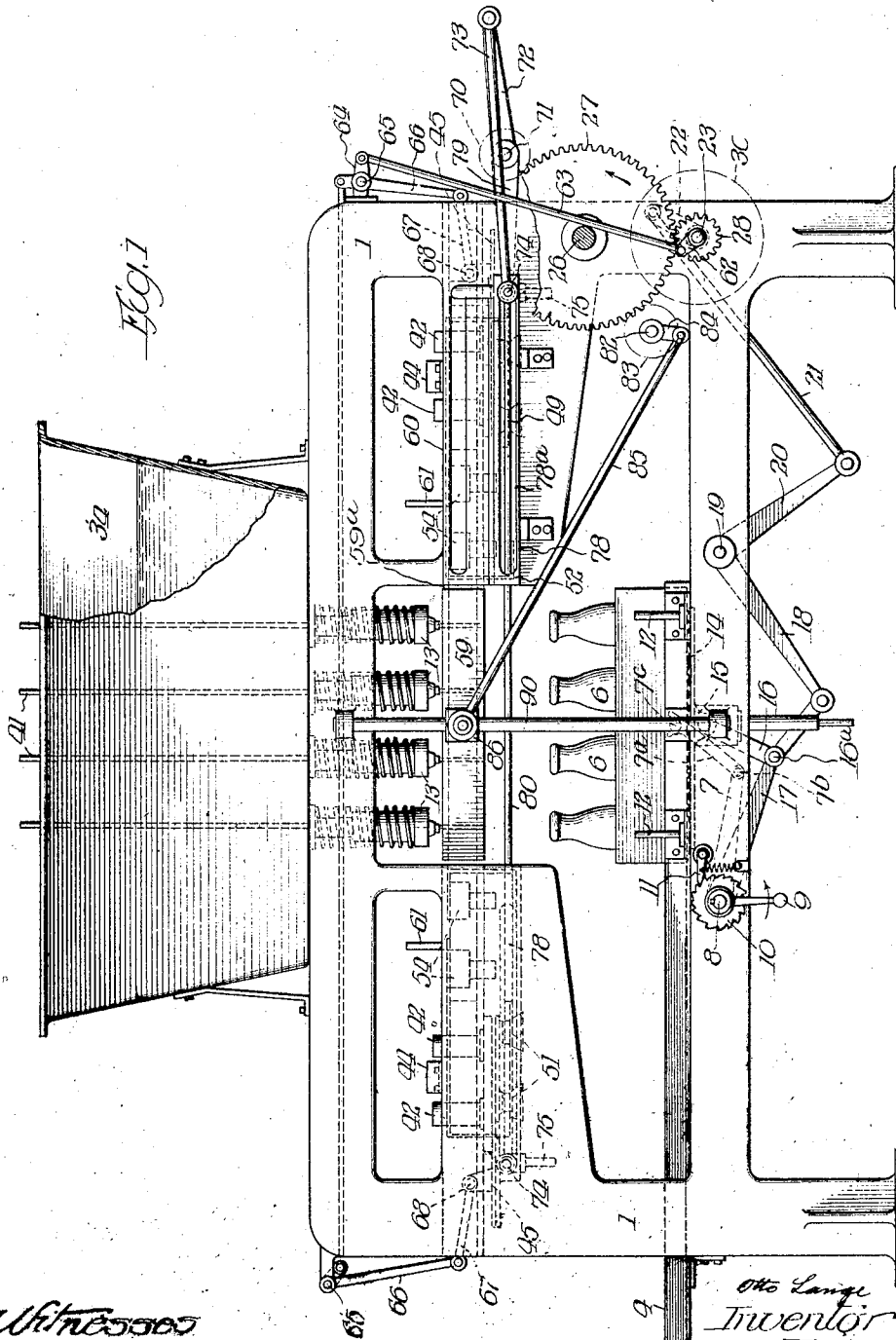


O. LANGE.
BOTTLE FILLING AND CAPPING MACHINE.
APPLICATION FILED MAY 28, 1913.

1,109,075.

Patented Sept. 1, 1914.

4 SHEETS-SHEET 1.



Witnesses
Geo. C. Larson
Carl Miller

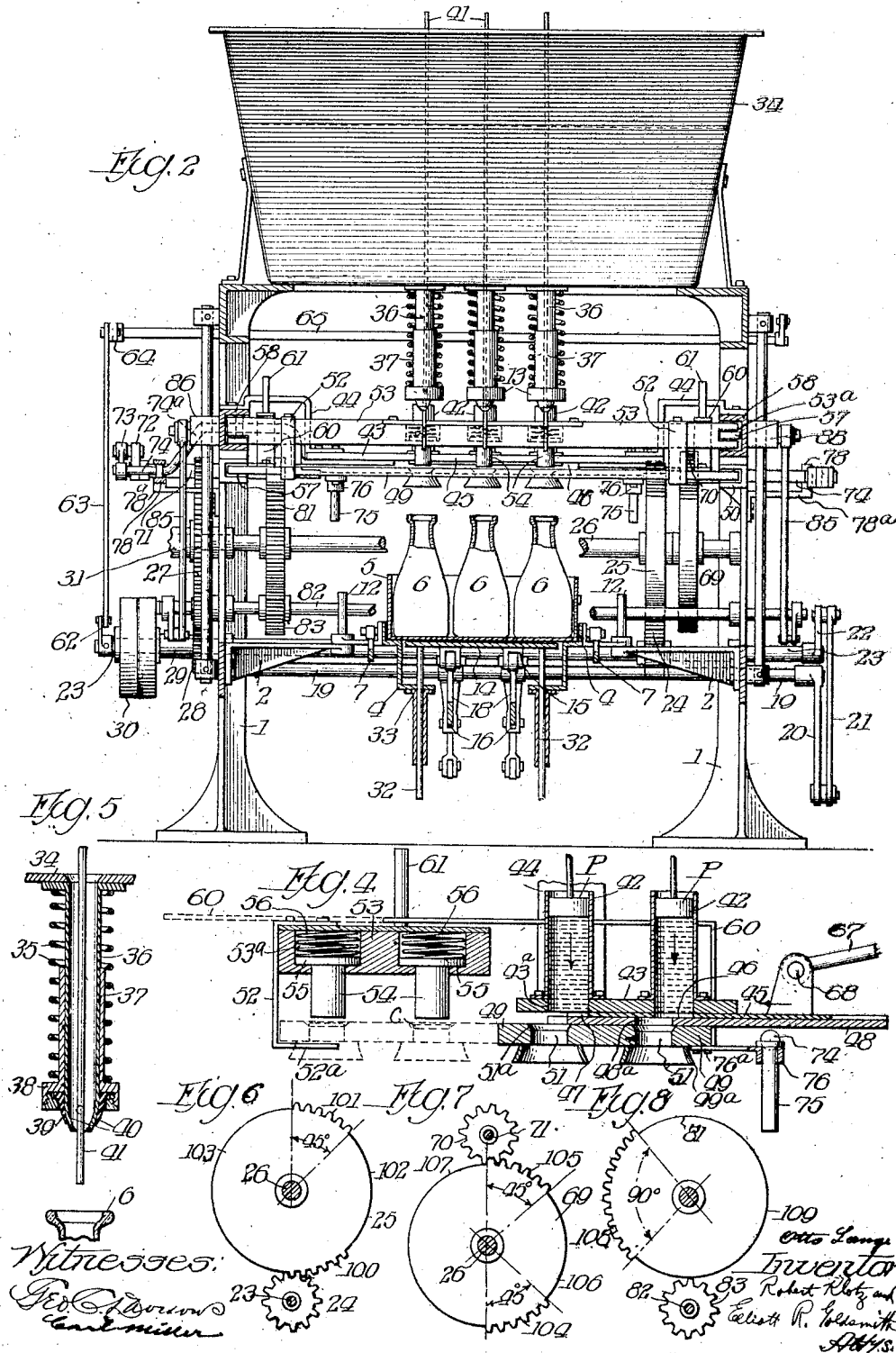
Otto Lange
Inventor
Rolt. Klotz and
Belmont R. Klotz
Attorneys

O. LANGE.
BOTTLE FILLING AND CAPPING MACHINE.
APPLICATION FILED MAY 28, 1913.

1,109,075.

Patented Sept. 1, 1914.

4 SHEETS-SHEET 2.

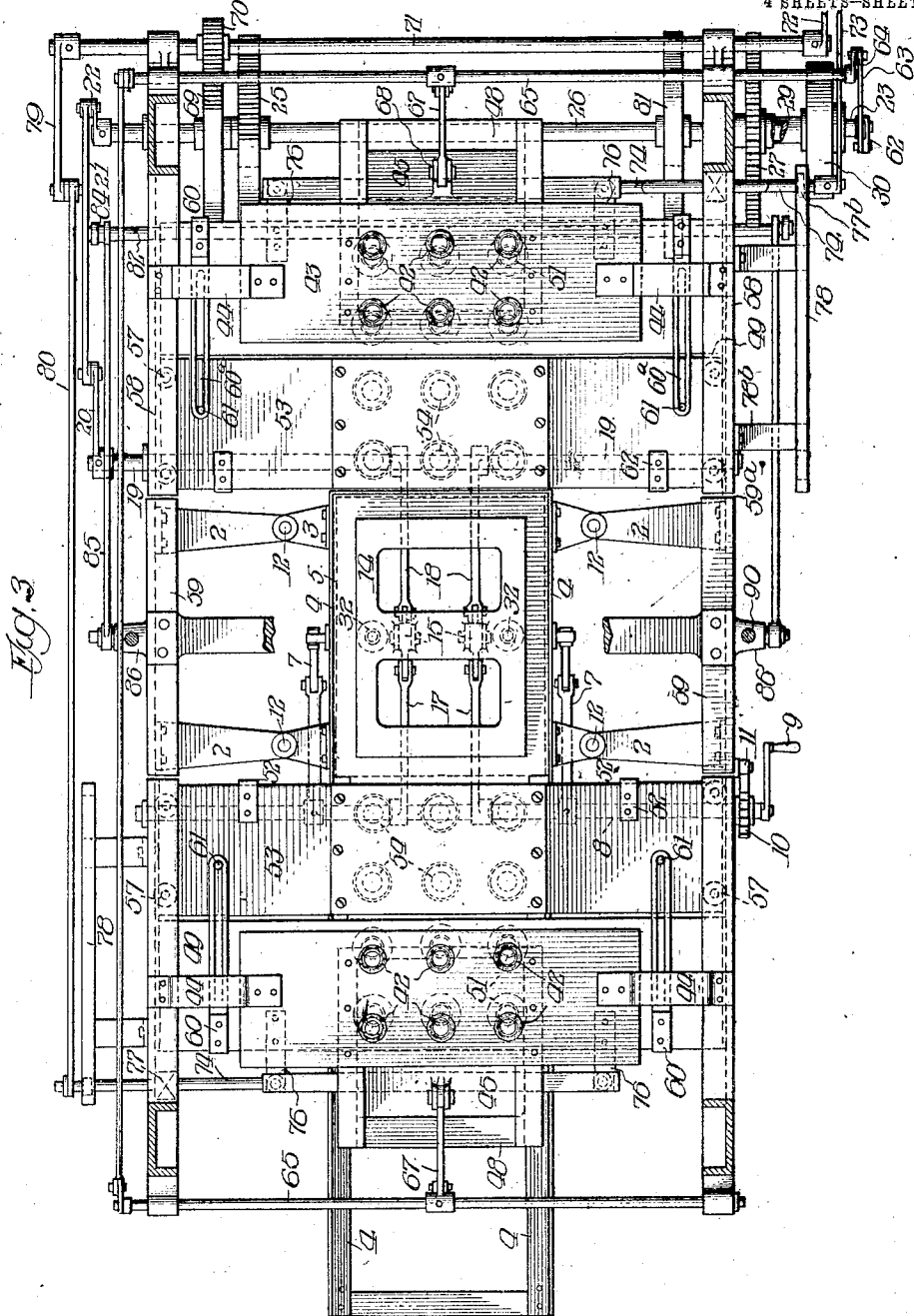


O. LANGE.
BOTTLE FILLING AND CAPPING MACHINE.
APPLICATION FILED MAY 28, 1913.

1,109,075.

Patented Sept. 1, 1914

4 SHEETS—SHEET 3.



Witnesses:
Geo. Davidson
Charles Miller

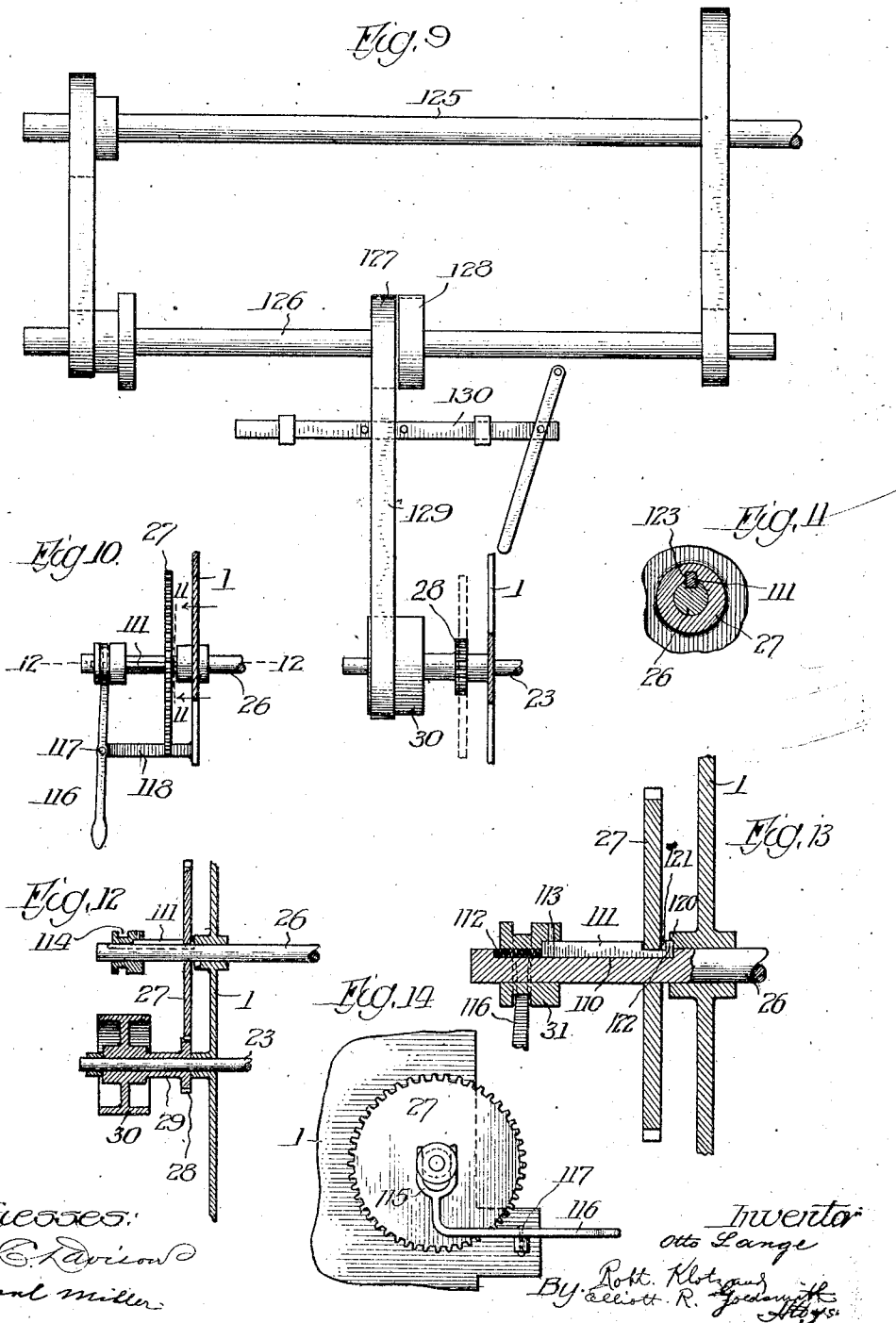
Inventor
Otto Lange
By Robert Klotz and
Elliott R. Colman

O. LANGE.
BOTTLE FILLING AND CAPPING MACHINE.
APPLICATION FILED MAY 28, 1913.

1,109,075.

Patented Sept. 1, 1914.

4 SHEETS-SHEET 4.



Witnesses:
Ed. C. Davidson
Earl Miller

Inventor
O. Lange
By Robt. Klotsch
and
By Elliott R. Jordan
Attorneys

UNITED STATES PATENT OFFICE.

OTTO LANGE, OF CHICAGO, ILLINOIS.

BOTTLE FILLING AND CAPPING MACHINE.

1,109,075.

Specification of Letters Patent

Patented Sept. 1, 1914.

Application filed May 28, 1913. Serial No. 770,409.

To all whom it may concern:

Be it known that I, OTTO LANGE, a subject of the Emperor of Germany, and a resident of Chicago, Illinois, have invented certain new and useful Improvements in Bottle Filling and Capping Machines, of which the following is a specification.

The primary object of this invention is to provide a machine for automatically filling and capping (or otherwise closing) bottles. In the drawings, the bottles depicted are ordinary milk bottles and the closures which are adapted to be applied thereto are the customary caps or disks of wood pulp or similar material; but the machine, however, is adapted to operate upon bottles of any size or shape, milk bottles being shown merely by way of example, and the machine will apply any form of closure which can be forced into place either within or upon the mouth of a bottle by pressure from above.

Most bottle-filling and capping machines now upon the market are very complicated and expensive, and, moreover, require several experienced attendants for each machine. Those bottlers transacting only a limited volume of business, therefore, could not profitably heretofore employ a bottle-filling and capping machine, but continue to do the work by hand. The machine forming the subject-matter of this application, however, is far more simple in construction than most of the machines now upon the market, and can be operated by a single attendant. In this machine, a case of empty bottles is manually placed in position beneath the filling head before the machine begins to operate, the case containing the empty bottles being set in the path of travel of a vertically-reciprocating table which carries the bottles upwardly toward the filling head. This table moves vertically but not longitudinally, and the single attendant places the empty bottles above the table and then removes the same after they have been both filled and capped. The bottles are carried upwardly in Figs. 1 and 2 toward the filling devices; and the mechanism for capping the bottles is carried toward the bottles and the caps applied thereto, the capping mechanism being thereafter automatically withdrawn from the capped bottles to starting position.

In most prior machines the bottles are first moved into engagement with the filling mechanism and then the filled bottles themselves are transferred to another part of the machine where the bottles come into engagement with the capping devices; hence such prior machines require at least one attendant to feed the empty bottles to the machine at one end, another attendant or attendants being required to remove the filled and capped bottles at the opposite end of the machine; and if the attendants do not work in harmony or if one continues to work while the other is idle, the bottles are frequently broken and their contents destroyed. This machine, however, is an improvement upon the old-style construction, and is so built that the capping mechanism is moved toward and away from the stationary bottles. A single attendant can wait upon this machine, for one man can both place the empty bottles and remove the full ones. The single attendant, moreover, can wait upon several machines, for while the bottles in one machine are being filled, he may busy himself by placing empties in a second machine, and so on. This machine, too, can be driven with much less power than most prior machines, for it is easier to move the capping devices (which are relatively light in weight) than it is to transfer the heavy filled bottles from one place to another.

In the drawings, Figure 1 is a side elevation of the machine; Fig. 2 is an end elevation looking toward the left, Fig. 1, some of the parts, however, being shown in section; Fig. 3 is a top plan view looking down from above, the milk tank and filling-head being removed; Fig. 4 is a detailed sectional view of a part of the apparatus for selecting caps from the magazines and forwarding the same; Fig. 5 is a sectional view of one of the valves in the filling-head; Figs. 6, 7, and 8 are diagrammatic views indicating the arrangement of the teeth upon the mutilated gears forming part of the driving mechanism; Fig. 9 is a diagrammatic view, indicating the driving shafts which are belted to the machine; Fig. 10 is a detail of the clutch shifting devices; Fig. 11 is a section on the line 11—11, Fig. 10; Fig. 12 is a vertical section on the line 12—12, Fig. 10; Fig. 13 is an enlarged detailed view of the parts shown in the upper half of Fig. 12; and

Fig. 14 is a detailed view of the clutch-shifting mechanism taken at right angles to the view of Fig. 10.

The general organization of the machine includes the following groups of parts: (1) mechanism to receive the empty bottles and to cause the same to be engaged by the devices for filling the bottles with milk or other liquid; (2) mechanism to select the caps to be applied from suitable storage magazines and to feed the caps forward to a point above the mouths of the bottles; (3) mechanism to depress the cap-holding devices to a point within reach of the mouths of the bottles, and to apply the caps to the bottles; (4) and mechanism for actuating each of the above-mentioned groups of parts, each of said parts being actuated at the proper time, in the proper sequence, and during the period of time necessary for such group properly to perform its part in the whole process of filling and capping the bottles.

The specific machine which is shown in the drawings is adapted to fill and cap 12 bottles simultaneously, the bottles being arranged in three longitudinal and four transverse rows. The machine is provided, also, with two separate groups of capping devices, one upon each side of the center of the machine. This particular machine, therefore, is a double-working machine and, hence, has a very large capacity, but a machine with a single group of capping devices can be built, which machine will be ample for the requirements of a small establishment. Some of the parts are described as being provided with either three or six perforations, this being the proper arrangement for a 12-bottle machine, but is subject to change corresponding to any variation in the number of bottles to be capped at any one operation.

The machine is provided with two side frames 1, which support arms 2 (Figs. 2 and 3), which arms project inwardly from the sides 1 and carry the brackets 3, Fig. 3. To said brackets 3 are attached the rails or track 4 which hold the case 5 in position. The bottles 6 are placed within the case 5, the size of the case and its exact construction being determined by the number, size, and shape of the bottles. The rails 4 extend outwardly beyond the left end of the machine, Fig. 3, and the case is adapted to be placed upon the projecting ends of the rails, after which the case with the empty bottles is pushed by hand toward the center of the machine until it reaches the position shown in Fig. 1. A suitable stop (not shown) limits the movement of the case 5 toward the right and thus makes sure that the various bottles 6 come directly beneath the appropriate nozzles of the filling-head.

Since the machine is intended to be used for filling and capping bottles of various

sizes, it is desirable to raise and lower the track 4, for the track 4 must be held higher for short bottles than is necessary for tall ones. Levers 7, Figs. 2 and 3, are keyed upon a shaft 8 extending transversely of the machine, Fig. 3. Said shaft 8 is journaled in the side frames 1 and at one end is provided with a crank 9 by which it can be rotated. The ratchet 10 is fixed upon said shaft and the locking pawl 11 is pivoted to the side 1. The guide brackets 3 are adapted to slide freely upon the studs 12, which studs are held rigidly by the arms 2, and the brackets 3 prevent binding of the parts when the track 4 and case 5 are being raised. At one end of crank 9 the arm 7^a is pivoted at 7^b. The opposite end of arm 7^a is provided with a crotch or notch (Fig. 1) which receives a pin 7^c secured to the rails 4. It will be obvious, therefore, that the rotation of the crank 9 is translated by means of shaft 8, crank 7, and arm 7^a into movement of the rails 4, and rotation of the crank 9 in one direction, therefore, will elevate the rails, whereas rotation in the opposite direction will depress them, and thus to adapt the machine to bottles of different heights.

The case 5, when in the position depicted in Fig. 1, is immediately above the vertically-reciprocating table 14, and by means hereinafter described in detail, said table can be elevated or depressed. As it moves upwardly, it lifts the case 5 off of the rails 4, and carries the mouths of the bottles 6 into engagement with the valves 13 of the filling-head. The filling-head used is of old and well-known construction and no particular novelty is claimed for the filling mechanism, though it should be of that type in which the valves are opened as the bottles are pressed into and retained in engagement with them and automatically closed as the bottles drop out of engagement with said valve 13. The machine is adapted to hold the table 14 and its contents in elevated position for a length of time sufficient to enable the milk or other liquid to fill the bottles; and after the bottles have been so held long enough to be filled, the table 14 drops, and, as the mouths of the bottles pass out of engagement with the valves 13, the same are automatically closed. The distance between the floor of the table 14 in starting position and the valves of the filling-head is always the same, and in order to accommodate the machine to smaller bottles than those shown by way of example in the drawings, pieces or lifts of wood may be placed upon the table 14.

In order to elevate and lower the table 14, there are two eyes 15 (Fig. 1) to which are connected the arms 16. At 16^a the arms 16 are pivotally connected both to the crank arm 17 and to the left end of the bell-crank 18, said bell-crank 18 being fixed upon the shaft 19 journaled in side-frames 1, having

its ends or one of them projecting out beyond the side-frame as shown on the right, Fig. 2. To said projecting end the lever 20 is fixed, said lever 20 being pivoted to the crank 21, which, in turn, is pivoted to the smaller crank 22. Said crank 22 is fixed upon the shaft 23, which carries the pinion 24, Fig. 2. Gear 24 meshes with and is driven by the mutilated gear 25, which gear 25 is fixed upon the main shaft 26. When the teeth on gear 25 are in mesh with pinion 24, the two wheels will rotate in unison, but when the toothed segment or arc of the gear has passed out of engagement with the pinion 24 the shaft 26 will rotate independently of the shaft 23.

Upon the left end, Fig. 2, is the gear 27, which gear is freely revoluble upon shaft 26, as an axis. Said gear 27 meshes with and is driven by the pinion 28, which pinion 28 is provided with a long hub 29 to which the pulley 30 is secured and is adapted to rotate freely upon the projecting end of shaft 23, this construction being shown in the lower left-hand corner of Fig. 2, and the lower right-hand corner of Fig. 3. The pulley 30 and gear 28 are mounted upon the projecting end of shaft 23 merely as a matter of convenience and as tending to produce a stronger structure than would result were said pulley and gear to be mounted upon a bracket or shaft supported only on one side of the machine. Upon its left end, Fig. 2, the shaft 26 carries a clutch 31, the construction of which is elsewhere explained in detail, and when said clutch 31 is shifted in one direction, it locks the gear 27 to the shaft 26, and a belt, not shown, passes over the pulley 30 and rotates the same continuously in one direction. This rotation of the pulley 30 is communicated through pinion 28 to the gear 27, and the gear rotates continuously. Part of the time said gear is rotating idly upon shaft 26, but when the clutch 31 locks the gear 27 and shaft 26 together, the rotation of the pulley 30 is communicated to the shaft 26. Assuming, for example, that the clutch has been thrown to lock the gear 27 to the shaft 26, the mutilated gear 25 will thus be caused to rotate, and it will so rotate until the teeth at 100 (Fig. 6) mesh with the pinion 24. The size of the parts and their arrangement is such that as the gear 25 rotates and the teeth at 100 mesh with the pinion 24, the crank 22 will be turned 180 degrees, and this rotation of the crank 22 operates the reciprocating table 14 and elevates the table 14 to its highest position. Since the mutilated gear 25 will continue to rotate, the mutilated arc 102 (Fig. 6) is next presented to the pinion 24, during which time the shaft 23 will remain idle, thus permitting the reciprocating table 14 to be elevated long enough for the filling-head 13 to fill the

bottles 6. As the gear 25 continues to rotate, however, the toothed segment 101 (Fig. 6) will mesh with the pinion 24, thus causing the shaft 23 again momentarily to rotate, which rotation will continue long enough to carry the crank 22 one hundred eighty degrees, thus forcing the table 14 to move downwardly to starting position, in which the case 5 will rest upon the rails 4. During the time that the toothless space 103 of the gear 25 is presented to the pinion 24 the table 14 will remain in its lowest position, the capping operation being then performed.

To guide the reciprocating table 14, the pins 32 slide within nipples 33, which depend from the rails 4 and are fastened thereto, this construction being desirable in order to prevent vibration of the table 14. The milk or other liquid with which the bottles are to be filled is retained within a tank 34, to the bottom of which the valves or nozzles, best shown in Fig. 5, are secured, there being as many nozzles in the filling-head as there are bottles to be filled at each operation. Various forms of nozzle may be employed, but in the one depicted in the drawings there is a helical spring 35 encircling the nipple 36, upon which nipple the sleeve 37 is adapted to slide. Said sleeve 37 carries the flange 38 upon which the spring 35 rests, and at the lowest end there is a mouth-piece 39 of rubber. When a bottle 6 is forced upwardly, the mouth of the bottle engages the mouth-piece 39 and lifts the sleeve 37 high enough to carry the member 39 (which acts also as a valve) clear of the perforations 40. The milk is then free to pass through said apertures 40 and into the bottle. When the bottle descends, however, the spring 35 returns the sleeve 37 and connected parts to the starting position, shown in Fig. 5, thus closing the mouths 40 and preventing the further passage of milk into the bottle.

The bottom of each nipple 36 is closed (except for apertures 40) and a pipe 41 extends through the bottom of the nipple and upwardly beyond the top of the tank, said pipe serving as an outlet for the air which is forced out of the bottle as the milk enters the same.

The mechanism for feeding the caps forward to a point where they are in position to be applied to the bottles is best shown in detail in Fig. 4. The caps themselves are circular disks and are retained within the tubular magazines 42, there being as many such magazines as there are bottles to be capped at each operation, each side of the machine having two transverse rows of three magazines each. The caps within the magazines are pressed downwardly by weights P, and the magazines are fixed upon plates 43 secured to the framework by angle-

brackets 44, each plate being provided with six perforations 43^a, corresponding to the number of magazines 42 on each side of the machine. Sliding beneath each base plate 43 is a selecting plate 45 which is provided with three circular perforations 46, and at its left-hand edge, Fig. 4, with three semi-circular recesses 47. The selecting plates 45 are of approximately the same thickness as the caps and are adapted to reciprocate longitudinally, being supported by the guide plates 48, which are provided with ways 48^a on which the selectors 45 are adapted to slide. Beneath each member 48 a cap-carrier 49 is adapted to reciprocate, and said carrier moves from the full line position, Fig. 4, to the dotted line position in the same figure. There are two carriers 49, one on each side of the machines, but only one is shown in Fig. 4. Each cap-carrier extends transversely of the machine and reciprocates longitudinally in the grooved guides or tracks 50 (Fig. 2) which are fixed to the sides 1. The cap-carriers 49 are each provided with six perforations 51, and at the top 51^a said perforations flare outwardly, whereas, the main part of each perforation 51 is of such diameter that the caps C (Fig. 4) can not drop therethrough by gravity, but require positive actuation to force them through. Upon the lower side of the cap-carriers 49 and registering with the perforations 51, are bell-shaped guides 49^b which are adapted to fit over the mouths of the bottles when the same are being capped and thus hold the bottles properly centered and without vibration.

Plunger-heads 53 (Figs. 2 and 4) extend from side to side of the machine and carry the plungers 54 by which the caps C are rammed or driven into the mouths of the bottles. Plungers 54 are provided with heads 55 and are pressed downwardly by springs 56, the heads 55 being adapted to reciprocate within the cylindrical recesses 53^a in the plunger-head 53. Brackets or hangers 52, best shown in Fig. 4, depend downwardly from the left side of the plunger-head 53 and have arms 52^a extending toward the right. The size of parts and their arrangement is such that when the cap-carrier 49 has moved to the dotted line position, Fig. 4, its left edge will engage the depending arm of the hanger 52, and each perforation 51 will be in axial registration with a plunger 54, and after the cap-carrier 49 reaches the dotted line position, Fig. 4, the plunger-head 53 is adapted to be depressed, and thus enable the plungers 54 to force the caps through the perforations 51 and into the mouths of the bottles. From their starting position (Fig. 3) the cap-carrier 49 and plunger-head 53 first move longitudinally toward the center of the machine, after which they are depressed and

move vertically in order to force the caps into the bottles, finally returning upwardly and horizontally to starting position, the means for moving said parts being herein-after described in detail. Plunger-heads 53, as best shown in Fig. 2, extend from side to side of the machine, and upon the outer edges said members 53 carry suitable rollers 57. Secured to the side-members 1 are channel irons or tracks 58, within which said rollers 57 are adapted to travel, and guides or tracks 59 are provided, being shaped similarly to members 58, which guides 59 are adapted to reciprocate vertically, not being fastened to the sides of the machine. When the parts are in the position shown in Figs. 1 and 2, the members 58 and 59 are in horizontal alinement, being separated at the joint 59^a, and the plunger-heads 53, when moving longitudinally toward or away from the center of the machine, use both members 58 and 59 as tracks, passing from one to another and across the joint 59^a without difficulty. It is when the plunger-heads 53 are received within the guides 59 alone that said plunger-heads and all parts borne thereupon are reciprocated vertically to perform the capping operation. The tracks 50 do not extend beyond the joints 59^a, being on the same side of said joints as the fixed tracks 58; so when a carrier 49 has passed beyond the joint 59^a toward the center of the machine, said carrier is no longer supported by the rails 50 but is suspended from the plunger-head 53, this being done by the hangers 52 and 60. When the plunger-heads 53 move vertically because of the actuation of the tracks 59 (means for moving which are also herein-after described) each plunger-head carries with it one of the cap-carriers 49. Each cap-carrier 49 has the angle-bracket or hanger 60 secured thereto, which member 60 (Figs. 3 and 4) extends upwardly from the carrier 49 and toward the left, Fig. 4, across the companion plunger-head 53. When the parts are in the dotted line position, Fig. 4, the carrier 49 will be supported from its companion plunger-head 53 on the left side by the hangers 52 and on the right side by the angle irons 60, it being obvious that the members 52 and 53 on one side and 49 and 60 on the other cooperate telescopingly together, and that the members 52 and 60 are each hook-like and serve to suspend the carrier 49 from the companion plunger-head 53. Fixed to the plunger-heads 53 are pins 61 which pass through the slots 60^a in the angle-brackets 60. When the cap-carrier 49 is pushed toward the left, Fig. 4, it will press upon the brackets 52 and carry the companion plunger-head 53 toward the left also, for the plunger-head 53 slides or rolls upon the track members 58 and 59, but when the cap-carrier 49 is forced toward the

right, it will ride from beneath the plunger-head 53 until it reaches the full line position, Fig. 4, whereupon the pins 51 will be engaged by the left ends of the slots 60^a; after which the members 60 will pull the plunger-head 53 toward the right. In other words, the plunger-head 53 is pushed toward the left when the cap-carrier 49 bears upon the hangers 52, and is pulled toward the right by the cooperation of the pins 61 and the slotted brackets 60. When the parts are in the dotted line position, Fig. 4, the carrier 49 is suspended from the plunger-head 53, and the weight of the carrier is borne upon the plunger-head 53 and movable tracks 59, but when the parts are in full line position, the carrier is supported upon the rails 50.

The selector 45 is actuated from the shaft 23. A crank 62 is keyed upon said shaft 23, and the crank rods 63 (left side, Fig. 1) levers 64, shaft 65, and link 66 (right side, Fig. 1) move the link 67 back or forth, which said link 67 is pivoted to the car 68 projecting upwardly from the selector 45. By this mechanism the rotation of the shaft 23 is converted into longitudinal reciprocation of the cap-selector 45. The cap-carrier 49 is actuated from the shaft 26, which carries a mutilated gear 69, Figs. 2 and 7, adapted to cooperate with the pinion 70, said pinion being fixed upon a shaft 71 journaled in the side frames 1 (right-hand, Figs. 1 and 3). Upon the projecting end of shaft 71 the crank 72 is fixed, same being pivoted to the connecting rod 73, which, in turn, is pivoted to a rod or bar 74. Said bar 74, Figs. 2 and 3, extends from side to side of the machine, being bent at 74^a, Fig. 2, to clear parts which would otherwise interfere with its movements. Depending from said bar 74 are pins 75, Figs. 2 and 4, and the strips 76 which are bolted at 76^a to the cap-carriers 49, are perforated at their right-hand ends, Fig. 4. When the cap-carriers 49 are caused to reciprocate vertically, the strips 76 slide upon the pins 75 without becoming disconnected therefrom, for while the bars 74 and the pins 75 are adapted to reciprocate longitudinally they are devoid of vertical movement. The bars 74 are provided with wheels or bearings 77, Fig. 3, which ride upon the rails 58, and with other rollers or bearings 77^b which ride in the slots of the guide strips 78, said members 78 being slotted at 78^a and being attached by brackets 78^b, Fig. 3, to framework 1.

When the plunger-heads 53 are held within the vertically-slidable frame 59, they will move in unison therewith, and as the plunger-heads 53 descend they will carry therewith the then suspended cap-carriers 49, until such time as the cap-carriers 49 strike the mouths of the bottles. Whenever the

under surface of either cap-carrier 49 engages the bottles, further downward movement of the cap-carrier is prevented, but since the plunger-heads 53 are positively actuated downwardly by moving frame 59, the plungers 54 will continue to move even though the carriers 49 may have come to rest upon the bottles, and said plungers will press the caps through the perforations 51 and will seat the caps within the mouths of the bottles. Since the plungers 54 are spring-controlled, they can adapt themselves to minor irregularities in the sizes of the bottles. The plunger-heads 53 can move downwardly toward the companion carriers 49 when the same are rendered immovable by the bottles because of the fact that the members 52 and 60 only loosely suspend the plunger-heads 53 from their respective carriers 49, and it is possible, therefore, for said members to approach much more closely together than shown in Fig. 4 although they cannot become spaced farther apart from each other than shown in said figure. In order to secure the vertical reciprocation of the tracks 59 and of the parts carried thereupon, the mutilated gear 81 is fixed upon the shaft 26, said mutilated gear being adapted to mesh with and drive the pinion 83 fixed upon the shaft 82, Figs. 1 and 8. A crank 84, Fig. 2, is secured to shaft 82 and from said crank 84 a rod 85 extends and is pivoted to the lug 86 which is secured to the frame 59. The lug 86 is perforated and a guide rod 90, which is fixed to the sides 1, passes through the perforation in the lug 86. If the parts are in starting position as shown in Fig. 1, and if the crank 84 be caused to rotate counterclockwise from the position of said figure, the pull of the crank 84 upon the rod 85 will be converted into downward movement of the lug 86, and, accordingly, of the tracks 59 and of such part or parts of the machine as may be supported thereby.

The mutilated gears 25, 59, and 81, Figs. 6, 7, and 8, are each four times the diameter of the pinions or gears 24, 70, and 83 with which said mutilated gears respectively cooperate. Each of said mutilated gears is fixed upon the shaft 26, and the exact extent of the toothed portion of each mutilated gear is indicated in degrees in the views aforesaid. The parts are so arranged that each complete revolution of the shaft 26 produces one complete revolution of each of the shafts 23, 71, and 82. Shaft 23 will be rotated 180 degrees as the space 100 of the mutilated gear 25 engages the pinion 24. Said shaft 23 will be idle while the mutilated space 102 passes over the small gear 24, and will rotate the remaining 180 degrees when the teeth at space 101 mesh with the teeth upon the wheel 24, shaft 23, therefore, receiving an intermittent rotation

from the shaft 26. In the same manner, the shafts 71 and 82 are intermittently rotated from the shaft 26, though said shafts 23, 71, and 82 are not rotated simultaneously but receive their rotary movement each in the proper sequence. Shafts 23 and 71, moreover, are each adapted to rotate 180 degrees, then to come to a full stop of sufficient duration to permit the performance of some operation or the movement of some part or parts of the machine not dependent upon said shafts; after which said shafts rotate the remaining 180 degrees, and again stop. The shaft 26 is the main driving shaft of the machine, although the same does not rotate continuously. Said shaft 26 makes a complete revolution and then stops when the clutch is unlocked as hereinafter set forth, thus stopping the entire machine upon shifting of the clutch. When the empty bottles are first inserted or placed in position, the various operating parts which either move the bottles or move the capping devices to operate upon the bottles are at rest. As will be evident from the detailed description of parts, each complete revolution of the shaft 26 causes one, and only one, complete action of every other moving part; i. e., each complete revolution of the shaft 26 causes one complete vertical reciprocation of the table 14, one complete longitudinal reciprocation of the plunger-head 53 and associated parts, one complete vertical reciprocation of the frame 59 and the parts carried thereby, etc. After the shaft 26 has made one complete revolution, therefore, it is obvious that everything has been done which it is necessary to do in order to fill and then to cap one set of bottles. The clutch 31 is constructed so that it will automatically release the wheel 27 from the shaft 26, after each revolution of the shaft 26 is completed. This construction is desirable in order that the machine may come to a complete stop after each set or case of bottles is completely both filled and capped so as to prevent both breakage of bottles, waste of milk, and the like. The devices for controlling the clutch by which the shaft 26 and the gear 27 are locked to each other, are best shown in Figs. 10-14 inclusive. The shaft 26 is provided with a key-way 110, in which the key 111 is adapted to slide, said key 111 being normally pressed toward the right by the helical spring 112. A pin 113 screws the key 111 to the clutch-head 31, which head is adapted to slide upon the shaft 26, together with the key 111. The clutch-head 31 is provided with an annular groove 114, in which the forked end 115 of the lever 116 rests; said lever 116 is pivoted at 117 upon a bracket 118 which projects outwardly from the side frame 1. The side frame 1 is provided with a notch or crotch 120 into which the right-

hand end of the key 111 is adapted to project. Near its right-hand bend the key 111 is recessed at 121, which recess allows the gear 27 to rotate upon the shaft 26. When the parts are in the position most clearly shown in Fig. 13, the key 111 projects into the recess 120, and the gear 27 rotates idly upon the shaft 26. If the bottom end of the lever 116, (Fig. 10) be forced toward the right, the key 111 and the clutch-head 31 will thereby be pulled toward the left against the resistance of the spring 112. This right-to-left movement of the key 111 carries said key to a point where the nose or stud 122 locks in a suitable notch 123, in the hub of gear 27, and in this manner the key 111 locks the gear 27 to the shaft 26 and causes said members to rotate in unison. When the shaft 26 has made one complete revolution, the key will have returned to starting position, and when it reaches the starting position the spring 112 will force the key toward the right (Fig. 13), the end of the key being thereby seated in the notch 120, the position of the parts, under such circumstances, being indicated in Fig. 13. The left-to-right movement of the key 111, which is caused by the spring 112 each time that the key comes into registration with the notch 120, will obviously release the gear 27 from the shaft 26, and the gear 27 will continue to rotate while the shaft and all parts driven thereby are at rest. It is in this manner that the machine is automatically stopped after each complete revolution of the shaft 26, and the machine will not again operate until the lever 116 is shifted. The machine, therefore, will come to rest after each complete revolution.

In order to reduce the time required for the performance of the entire filling and capping process, and thus increase the output of the machine, it is desirable to drive the machine faster during the capping operation than during the filling operation. There is practically no limit to the speed at which the capping devices may move, whereas it is absolutely necessary to hold the bottles 6 against the filling nozzles (Fig. 5) long enough to fill them. The main power shaft 125 (Fig. 9), is belted at two places to the divided counter-shaft 126, one half of the countershaft running at a relatively high speed, the other at a relatively slow speed. The two adjoining ends of the halves of the countershaft carry pulleys 127 and 128, and the belt 129 which passes over pulley 30, can be shifted from one pulley to the other. During the time that the mutilated arc 102 (Fig. 6) is presented to the pinion 24, the belt 129 will be traveling upon the slow-speed pulley 127, but during the rest of the time, the belt may be driven by the high speed pulley 123. The belt is automatically shifted from one pulley to

the other by a shifting device 130, actuated by the machine, the shifting to the fast side being timed to occur just after the toothed arc 101 leaves the pinion 24, and the shifting to the slow side occurring as the toothed arc 100 comes into engagement with the pinion 24.

The operation of the machine may be summarized as follows: Assuming that all of the parts are in the starting position, shown in Figs. 1, 2, and 3, and that the key 111 has been thrown toward the left (Figs. 10-13) to lock the shaft 26 to the continuously rotating gear 27, the mutilated gears 25, 69, and 81 also rotate, since they are keyed or fixed upon shaft 26. As the shaft 26 rotates, the toothed segment 100 of the gear 25 engages the pinion 24, thus rotating the shaft 23 for 180 degrees and carrying the bottles 6 upwardly into engagement with the filling-head. During that interval of the time that the mutilated arc 102 of gear 25 is presented to the gear 24, the shaft 23 will remain idle and the bottles 6 will be retained in elevated position, being filled while so retained; but when the toothed space 101 reaches the gear 24, the shaft 23 will again be rotated half a revolution, thus causing the bottles 6 to descend to starting position. The shaft 23, in addition to actuating the reciprocating table 14, also produces the longitudinal reciprocation of the selecting device 45; and when shaft 23 receives its first half-revolution, the selector 45 moves toward the right, Fig. 4, simultaneously as the table 14 rises. When the shaft 23 receives its second half-revolution, the table 14 is depressed at the same time that the selector 45 is advanced toward the left, Fig. 4. As the selector 45 moves to the point where its perforations 46 and 47 come beneath the magazines 42, the bottom cap will drop out of each magazine and into one perforation in the selector 45. Since the selector and the caps are each of substantially the same thickness, only one cap at a time will pass into a perforation 46 or 47, and the perforations 46, 47, and 48^a are each preferably larger in diameter than the caps, in order to permit the caps to pass therethrough by gravity. The selector 45 is adapted to move a short distance toward the left, Fig. 4, beyond the position shown in that figure, and when the selector has advanced to a point where its perforations 46 and 47 are, respectively, in vertical registration with the perforations 51, the caps drop by gravity from the selector through perforations 48^a in the plate 48 and into the perforations 51 in the cap-carrier 49. Although the top of perforations 51 flare outwardly 51^a, the main body of each perforation 51 is of such diameter that the cap must be driven therethrough, and the caps will remain as indicated at the left,

Fig. 4, until the plungers 54 reach and act upon the caps. The selector 45 is actuated from the shaft 23 and will, of course, move in accordance with the rotations of said shaft 23, but the cap-carrier 49 derives its longitudinal reciprocations from the shaft 71. Said shaft 71 is driven from the shaft 26, though the two shafts do not always rotate simultaneously. The toothed spaces 104 and 105 of the mutilated gear 69, Fig. 7, are so disposed that the shaft 71 is rotated and the cap-carrier 49 actuated while the shaft 23 is at rest. After the selector 45 has moved toward the left, Fig. 4, one of the toothed parts of the gear 69 is presented to the gear 70, thus causing the shaft 71 to rotate 180 degrees and forcing the carrier 49 toward the left, Fig. 4. Then during the interval that the mutilated space 106, Fig. 7, is presented to the gear 70, the shaft 71 remains idle and the cap-carriers 49 remain in the center of the machine, being at that time supported by the vertically-moving frame 59, and while the mutilated space 106 is being so presented to the gear 70, said vertically-moving guides 59 and the plunger-head 53 and cap-carrier 49 which are then retained thereby or supported thereupon are first depressed, and then immediately elevated, there being no interval of time elapsing between the depression and the elevation of the vertically-moving frame 59, because there is only one toothed space 108, Fig. 8, to be presented to the gear 83 by means of which the shaft 82 is rotated and the frame 59 vertically moved. After the shaft 26 has made a complete revolution, the key 111 will slide from left to right (Fig. 13) and thus stop the machine.

The sequence of operations may be otherwise stated as follows: (1). The clutch 31 and the key 111 are manually shifted to start the machine. (2). The table 14 is elevated simultaneously as the selector 45 moves toward the right, Fig. 4. (3). The table 14 descends and the selector 45 advances toward the left. During both of these movements the shafts 71 and 82, and the cap-carrier 49, frame 59, and associated parts remain inoperative. (4). The cap-carrier 49 and the plunger-head 53 move toward the left, Fig. 4, to the center of the machine, or until they are supported by the vertically-slidable frame 59, while the selector 45 and the table 14 both remain inoperative. (5). The shaft 82 is given a complete rotation, thus causing the frame 59 and the plunger-head 53 to be depressed and immediately thereafter elevated again to the height shown in Fig. 1, while the devices for longitudinally moving the cap-carrier 49 and plunger-head 53 are idle. (6). The plunger-head 53 and the cap-carrier 49 are withdrawn toward the right, Fig. 4. (7). The clutch 31 automatically returns to start-

ing position, thus stopping the machine. (8). The clutch is manually shifted, as before, the table 14 is elevated simultaneously as the selector 45 is withdrawn also toward the right, and then the same sequence of steps or operations is repeated. A case of empty bottles is placed in the machine before the key 111 is shifted in the first instance, which case is removed and a second case inserted while the machine is idle after the aforesaid automatic return of the key (111) to starting position. Since this machine will not again operate until the attendant shifts the clutch or otherwise positively acts to start the machine, the machine is kept idle except at those times when there are bottles in the machine ready to be filled and capped, and the danger of damage to or breakage of the bottles is thus reduced to the minimum.

As previously stated, the machine is built double; that is to say there are two carriers 49, two plunger-heads 53, and the like, one of which moves from left to right simultaneously as the other moves from right to left. It is unnecessary, however, to provide more than one set of gears or devices for translating the rotation of the pulley 30 into movement of said duplicated parts. There are, for example, two bars 74 both actuated from the same shaft 71, one bar 74 being actuated by the crank 72 and a link 73 as shown in the lower part of Fig. 3, and the other bar 74 being actuated by the crank 79 and link 80. In a similar and obvious manner the shafts 65 are cross-connected to rotate simultaneously, though in opposite directions, and all of the devices constituting part of the capping mechanism which are shown on the right side, Figs. 1 and 3, or in Fig. 4, are duplicated on the left side by corresponding members, each member being adapted to move simultaneously with the corresponding part, though usually the corresponding parts move in opposite directions during all longitudinal movements but in the same direction when the frame 59 is moving vertically, whether up or down. It will be obvious, moreover, that the specific machine shown and described in this application is only one embodiment of the invention, and that many changes in details of construction may be made without departing from the scope of the various claims.

I claim as my invention:

1. A machine of the character described comprising means for holding the bottles, said holding means being devoid of horizontal movement, means to elevate and lower said holding means, means to fill the bottles when in elevated position, means to move the caps to a point where said caps are above the filled bottles after the same have been lowered, and means to apply the caps to the

bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

2. A machine of the character described comprising means for holding the bottles, said holding means being adapted to reciprocate vertically only, means to fill the bottles when in elevated position, laterally moving means to advance the caps to a position above the mouths of the bottles while said bottles are at rest and in lowered position, and a vertically-moving means to apply the caps to the bottles, said means being adapted to operate while the bottles are in lowered position.

3. A machine of the character described comprising means for holding the bottles, a fixed support, means for reciprocating the bottle-holder vertically within said fixed support, laterally-moving means adapted to advance the caps to a position above the mouths of the bottles, and means to apply the caps to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

4. A machine of the character described comprising means to receive the bottles, said means being adapted to reciprocate vertically, means to fill the bottles when in elevated position, means to store a supply of caps to be applied to the bottles, laterally-moving means to feed said caps from said storage means to a point above the bottles, and means to apply the caps to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

5. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, means to store the caps to be applied to said bottles, means to select the caps from said storage means; means to advance the caps to a position above the mouths of the bottles, means to depress the cap-holding devices to a point adjacent the mouths of the bottles, and means to apply the caps to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

6. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, means to store a supply of caps to be applied to the bottles, means to select the caps individually from said storing means and to feed the selected caps to a point above the mouths of the bottles, and means to transfer the caps from said feeding means and apply the same to the bottles, said last-mentioned means being

adapted to operate when the bottles are in lowered position.

7. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the empty bottles when in elevated position, means to store a supply of caps, means to select the caps individually from said storage devices, means to feed each cap forward to a point above the mouth of a bottle, said feeding means being adapted also to hold each cap in position above the mouth of a bottle, means to depress the cap-holding means to a point adjacent the bottles, and means to transfer the caps from the cap-holding means and apply same to the bottle, said last-mentioned means being adapted to operate when the bottles are in lowered position.

8. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, a valve to fill each bottle when the same is in elevated position, a plurality of magazines within which the caps to be applied to the bottles are stored, a selecting means adapted to remove one cap at a time from each magazine, means to advance the caps thus selected to a point where each cap is in alinement with the particular bottle to which such cap is to be applied, and vertically moving means to apply the caps to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

9. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower same, a valve to fill each bottle when the same is in elevated position, a plurality of magazines within which the caps to be applied to the bottles are stored, a selecting means adapted to remove one cap at a time from each magazine, means to advance the caps thus selected to a point where each cap is in alinement with the particular bottle to which such cap is to be applied, said cap-forwarding means being provided with perforations to receive and retain the caps, and a vertically-moving means adapted to eject the caps from said perforations and apply said caps to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

10. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower same, a valve to fill each bottle when the same is in elevated position, a plurality of magazines within which the caps to be applied to the bottles are stored, a selecting

means adapted to remove one cap at a time from each magazine, means to advance the caps thus selected to a point where each cap is to be applied, said cap-forwarding means being provided with a plurality of tapering perforations each adapted to receive a cap, and a plunger-head carrying plungers adapted to press said caps through said perforations and to apply same to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

11. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, a valve to fill each bottle, a plurality of magazines within which the caps to be applied to the bottles are stored, a selecting means adapted to remove one cap at a time from each magazine, means to advance the caps thus selected to a point where each cap is in alinement with the particular bottle to which such cap is to be applied, said cap-forwarding means being provided with a plurality of tapering perforations each adapted to receive a cap, a plunger-head carrying plungers adapted to press said caps through said perforations and to apply same to the bottles, said cap-forwarder being provided with perforations to receive and retain the caps, a track comprising a fixed section and a vertically-movable section upon which said forwarder is adapted to travel, means for depressing said movable section thereby to carry the caps within reach of the mouths of the bottles, and means to expel the caps from the perforations in said carrying means and place said caps in position in the bottles.

12. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, a table adapted to hold the bottles, a plurality of valves adapted to fill the bottles, a plurality of magazines adapted to retain the caps, a selector adapted to cooperate with said magazines and remove the caps one at a time therefrom, means for reciprocating the selector, a plate upon which the selector is adapted to slide, said plate having perforations through which the caps are adapted to pass, a cap-carrier provided with perforations within which the caps are adapted to be received, means for advancing the carrier to a point above the bottles to which the caps are to be applied, and means for pressing the caps through the perforations in the carrier and into position upon the bottles.

13. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, a plurality of valves to fill the bottles when the same are in elevated

position, a plurality of storage devices within which the caps are retained, a reciprocating selector adapted to remove one cap at a time from each storage device, a
 5 reciprocating carrier to which the caps are transferred from the selector, and means to apply the caps fed forward by the carrier to the bottles, said last-mentioned means being adapted to operate when the bottles
 10 are in lowered position.

14. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means for elevating and
 15 lowering said bottle-holding means, a plurality of valves adapted to fill the bottles when the same are in elevated position, a holding means for the caps, a reciprocating selector having perforations into which the
 20 caps from said holder are adapted one by one to pass, a plate beneath the selector having perforations therethrough through which the caps from the selector are adapted to pass, a reciprocating carrier provided
 25 with recesses to receive the caps after same have passed through said plate, means for advancing the carrier to a point above the bottles to which the caps are to be applied, and means for removing the caps from the
 30 carrier and applying same to the bottles, said last-mentioned means being adapted to operate when the bottles are in lowered position.

15. A machine of the character described comprising means to receive the bottles, said
 35 means being substantially free from horizontal movement, means for elevating and lowering said bottle-holding means, a plurality of valves adapted to fill the bottles when the same are in elevated position, a
 40 holding means for the caps, a reciprocating selector having perforations into which the caps from said holder are adapted to pass one by one, a plate beneath the selector having perforations therethrough through
 45 which the caps from the selector are adapted to pass, a carrier having perforations therethrough within which perforations the caps are adapted to be received, means for advancing the carrier to a point above the bot-
 50 tles to which the caps are to be applied, and means for pressing the caps through the perforations in the carrier and into position upon the bottles, said last-mentioned means being adapted to operate when the bottles
 55 are in lowered position.

16. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and
 60 lower the same, a plurality of valves to fill the bottles when the same are in elevated position, a holding means for the caps, a reciprocating selector having perforations into which the caps from said holder are
 65 adapted one by one to pass, a plate beneath

the selector having perforations there-
 through through which the caps from the
 selector are adapted to pass, a carrier hav-
 ing perforations therethrough within which
 perforations the caps are adapted to be re- 70
 ceived, means for advancing the carrier longitudinally to a point above the bottles
 to which the caps are to be applied, means
 for depressing the carrier vertically to a
 point where the caps are adjacent the bot- 71
 tles, and means for forcing the caps through
 said perforations and into position upon
 the bottles, said last-mentioned means being
 adapted to operate when the bottles are in
 lowered position.

17. A machine of the character described comprising means to receive the bottles, said
 means being substantially free from horizontal movement, means for elevating and
 85 lowering the bottle-supporting means, means for filling the bottles when in elevated position, means to store the caps
 to be applied to the bottles, a reciprocating selector adapted to remove one
 90 cap at a time from the storage devices, a reciprocating carrier to which the caps are transferred by the selector, and
 means to apply to the bottles the caps which
 have been fed forward by the carrier, said
 last-mentioned means being adapted to operate 95
 when the bottles are in lowered position.

18. A machine of the character described comprising means to receive the bottles, said
 means being substantially free from horizontal movement, means for elevating and
 100 lowering the bottle-supporting means, means for filling the bottles when in elevated position, a plurality of storage devices within
 which the caps are retained, means for removing one cap at a time from each storage
 105 device, means to feed said caps forward horizontally to a point above the bottles,
 and means to force said caps thereafter vertically downwardly, thereby to apply the
 110 caps to the bottles, said last-mentioned means being adapted to operate when the
 bottles are in lowered position.

19. A machine of the character described comprising means to receive the bottles, said
 115 means being substantially free from horizontal movement, means for elevating and lowering the bottle-supporting means,
 means for filling the bottles when in elevated position, a plurality of storage devices
 120 within which the caps are retained, a reciprocating selector adapted to remove one
 cap at a time from each storage device, a shaft adapted to actuate said selector and
 said table-actuating means, a reciprocating
 125 carrier to which the caps are transferred from the selector, a shaft adapted to actuate
 said carrier, means to remove the caps from the carrier and apply same to the bottles,
 and a shaft to control said last-mentioned 130

means, said cap-applying means being adapted to operate when the bottles are in lowered position.

20. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means for filling the bottles, a plurality of storage devices within which the caps are retained, a reciprocating selector adapted to remove one cap at a time from each storage device, a shaft adapted to actuate the selector, a reciprocating carrier to which the caps are transferred from the selector, a shaft to actuate the carrier, means to remove the caps from the carrier and apply same to the bottles, a shaft to actuate said last-mentioned means, a main shaft, a plurality of mutilated gears upon said main shaft, and means whereby said mutilated gears produce rotation of said first-mentioned, second-mentioned, and third-mentioned shafts.

21. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to fill the bottles, a plurality of means for storing the caps, a reciprocating selector adapted to remove one cap at a time from each storage means, a shaft to actuate the selector, a reciprocating carrier adapted to receive the caps from the selector, there being a perforated member intermediate the selector and the carrier, a shaft to actuate the carrier, a vertically-moving means to remove the caps from the carrier and apply the same to the bottles, a shaft controlling said vertically-moving means, and means for actuating said shafts successively, but not simultaneously.

22. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, a plurality of means for storing the caps, a reciprocating selector adapted to remove one cap at a time from each storage means, a reciprocating carrier to which the caps are transferred from the selector, said carrier being provided with perforations through which the caps are adapted to be forced, a head carrying a plurality of plungers adapted to press said caps through said perforations, and means for moving said plunger-head, said last-mentioned means being adapted to operate when the bottles are in lowered position.

23. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, a plurality of means for storing the caps to be applied to the bot-

tles, a reciprocating selector adapted to remove one cap at a time from each storage device, a reciprocating carrier adapted to receive the caps from the selector, a plunger-head carrying plungers adapted to cooperate with said carrier and said carrier being provided with perforations within which the caps are retained and through which they are adapted to be forced, means to depress the plunger-head and thereby apply the caps to the bottles, and means for suspending said carrier from said plunger-head, said depressing means being adapted to operate while the bottles are in lowered position.

24. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, a plurality of means for storing the caps to be supplied to the bottles, a reciprocating selector adapted to remove one cap at a time from each storage device, a reciprocating carrier adapted to receive the caps from the selector, a plunger-head carrying plungers adapted to cooperate with said carrier, said carrier being provided with perforations within which the caps are retained and through which they are adapted to be forced, means to depress the plunger-head and thereby apply the caps to the bottles, and angle-brackets adapted to suspend the carrier from the plunger-head, said depressing means being adapted to operate while the bottles are in lowered position.

25. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means to elevate and lower the same, means to fill the bottles when in elevated position, a plurality of means for storing the caps to be applied to the bottles, a reciprocating selector adapted to remove one cap at a time from each storage device, a reciprocating carrier adapted to receive the caps from the selector, a plunger-head carrying plungers adapted to cooperate with said carrier, said carrier being provided with perforations within which the caps are retained and through which they are adapted to be forced, means to depress the plunger-head and thereby apply the caps to the bottles when the bottles are in lowered position, angle-brackets adapted to suspend said carrier from said plunger-head, one of said brackets being slotted, and a pin upon the plunger-head projecting upwardly through said slot.

26. A machine of the character described comprising means to receive the bottles, said means being substantially free from horizontal movement, means for elevating and

lowering the bottle-supporting means, valves
to fill the bottles when in elevated position,
a plurality of storage devices within which
the caps are retained, means for removing
5 one cap at a time from each storage device,
means to feed said caps forward horizontally
to a point above the bottles, a track or guide
in which said feeding means is adapted to
travel, said guide comprising a fixed section
10 and a movable section, and means to ac-
tuate said movable section, thereby to ap-
ply the caps to the bottles, said last-men-
tioned means being adapted to operate when
the bottles are in lowered position.

15 27. A machine of the character described
comprising means to receive the bottles, said
means being substantially free from hori-
zontal movement, means to elevate and
lower the same, means to fill the bottles when
20 in elevated position, a plurality of storage
devices within which the caps are retained,
a carrier to feed the caps forward to a point
above the bottles, a track or guide in connec-
tion with which said carrier is adapted to
25 travel, said track or guide comprising a
fixed section and a movable section, and
means for actuating said movable section,
thereby to apply the caps to the bottles, said
movable section being adapted to move only
30 after the carrier has passed beyond the fixed
section, said last-mentioned means being

adapted to operate when the bottles are in
lowered position.

28. A machine of the character described
comprising means to receive the bottles, said
means being substantially free from hori- 35
zontal movement, means to elevate and
lower the same, means to fill the bottles when
in elevated position, a plurality of storage
devices within which the caps are adapted 40
to be retained, a carrier adapted to feed the
caps forward to a point in juxtaposition to
the bottles, said carrier being provided with
perforations through which the caps are
adapted to be forced, a plunger adapted to 45
press the caps through said perforations, a
head which carries said plunger, a guide or
track in which said head is adapted to travel,
said track comprising a fixed section and a
vertically moving section, means to suspend 50
said carrier from said head, means to ac-
tuate said movable track, thereby to depress
the plunger-head and apply the caps to the
bottles when the bottles are in lowered posi-
tion, and means to reciprocate the carrier. 55

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

OTTO LANGE.

Witnesses:

ELLIOTT R. GOLDSMITH,
ROBT KLOTZ.