

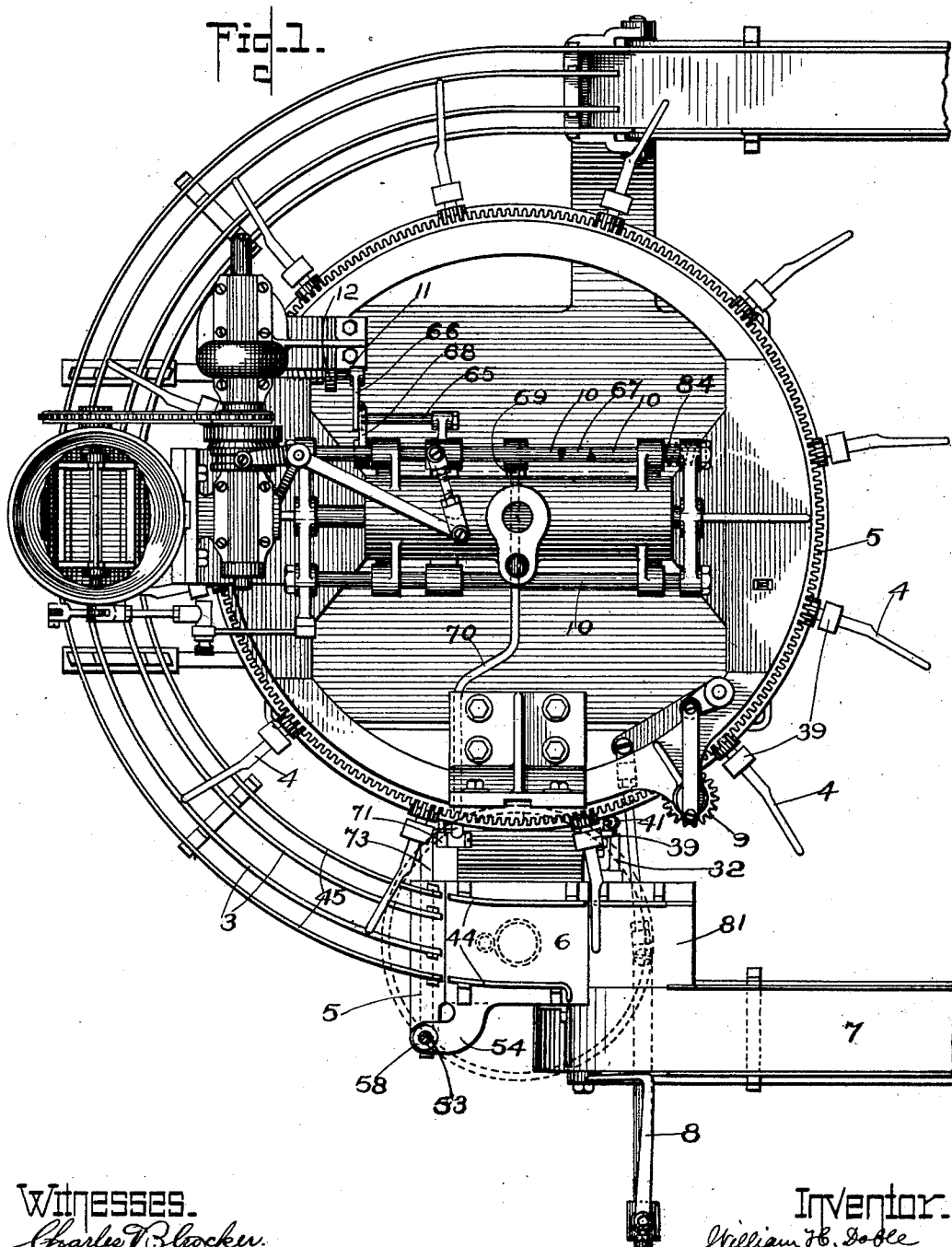
No. 714,875.

Patented Dec. 2, 1902.

W. H. DOBLE.
PACKAGING MACHINE.
(Application filed May 17, 1902.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses.

Charles T. Blocker.
Fred W. H. Lunde.

Inventor.

William H. Doble
by Wm. A. Leopold
Attorney

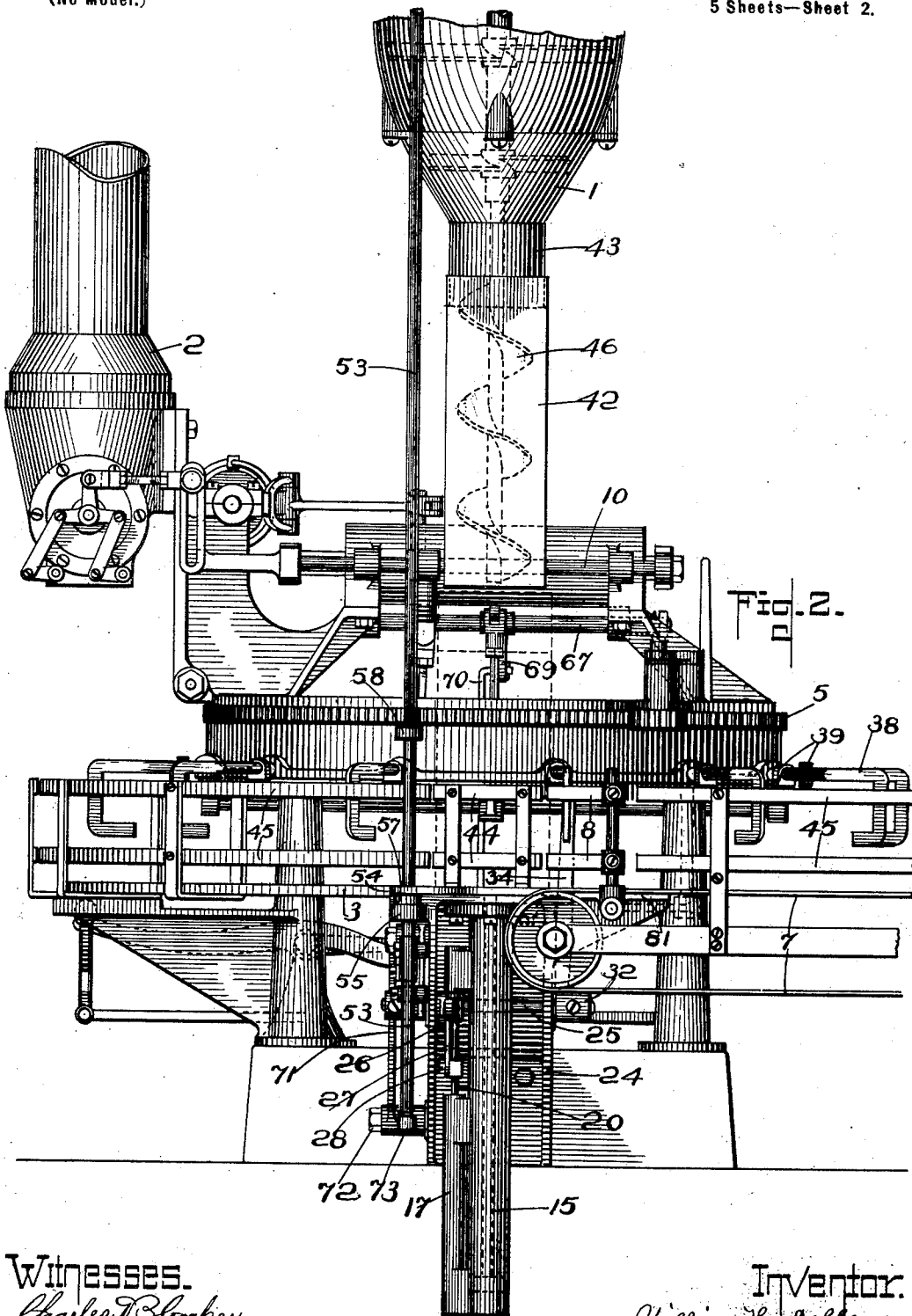
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5 Sheets—Sheet 2.



Witnesses.
Charles T. Blocker.
Geo W. W. Lunde

Inventor.
William H. Doble
by Wm A. Capeland
attorney

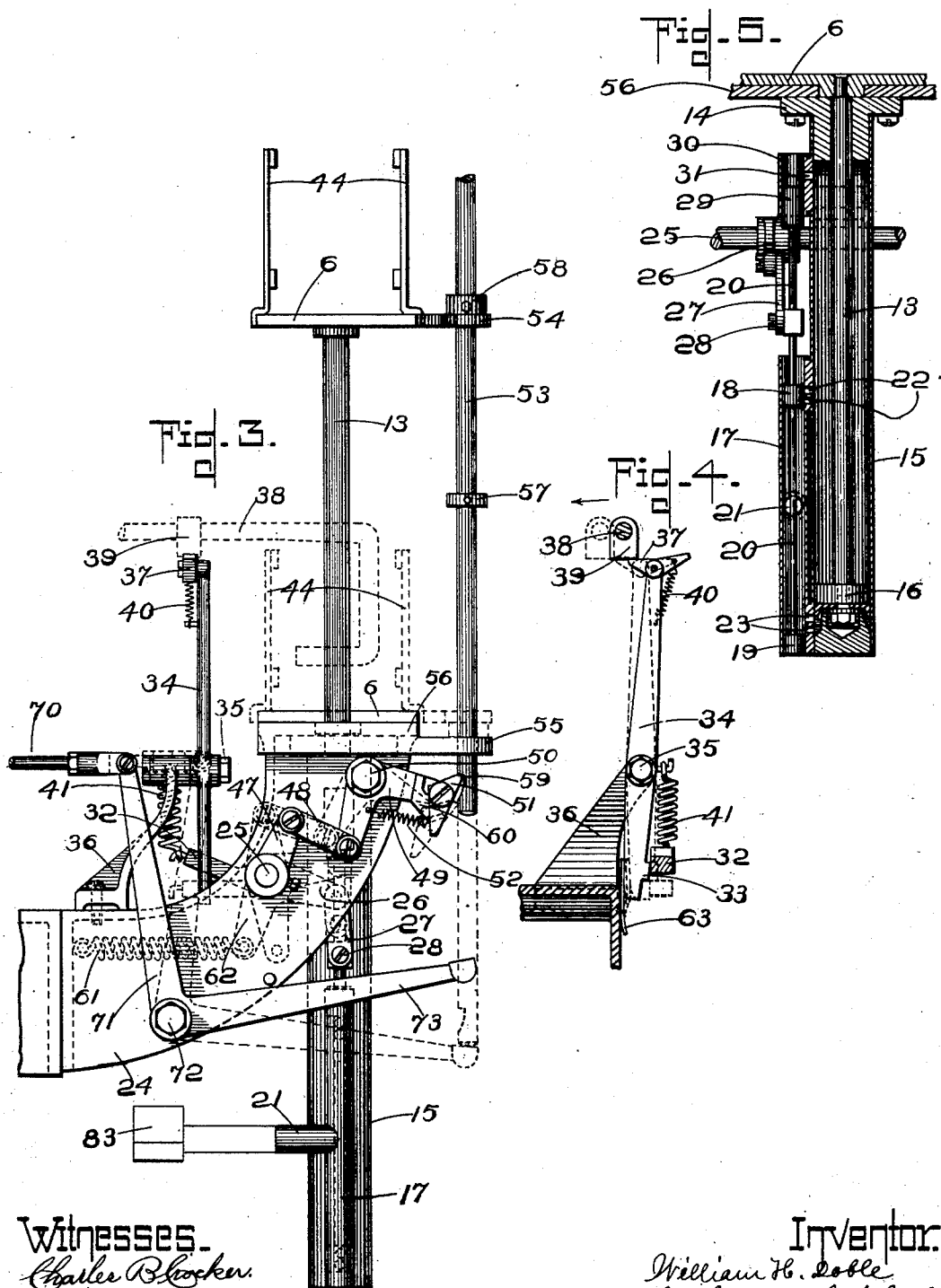
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5 Sheets—Sheet 3.



Witnesses.
Charles Blocker.
Wm. A. Copeland

Inventor.
William H. Doble
by Wm. A. Copeland
attorney

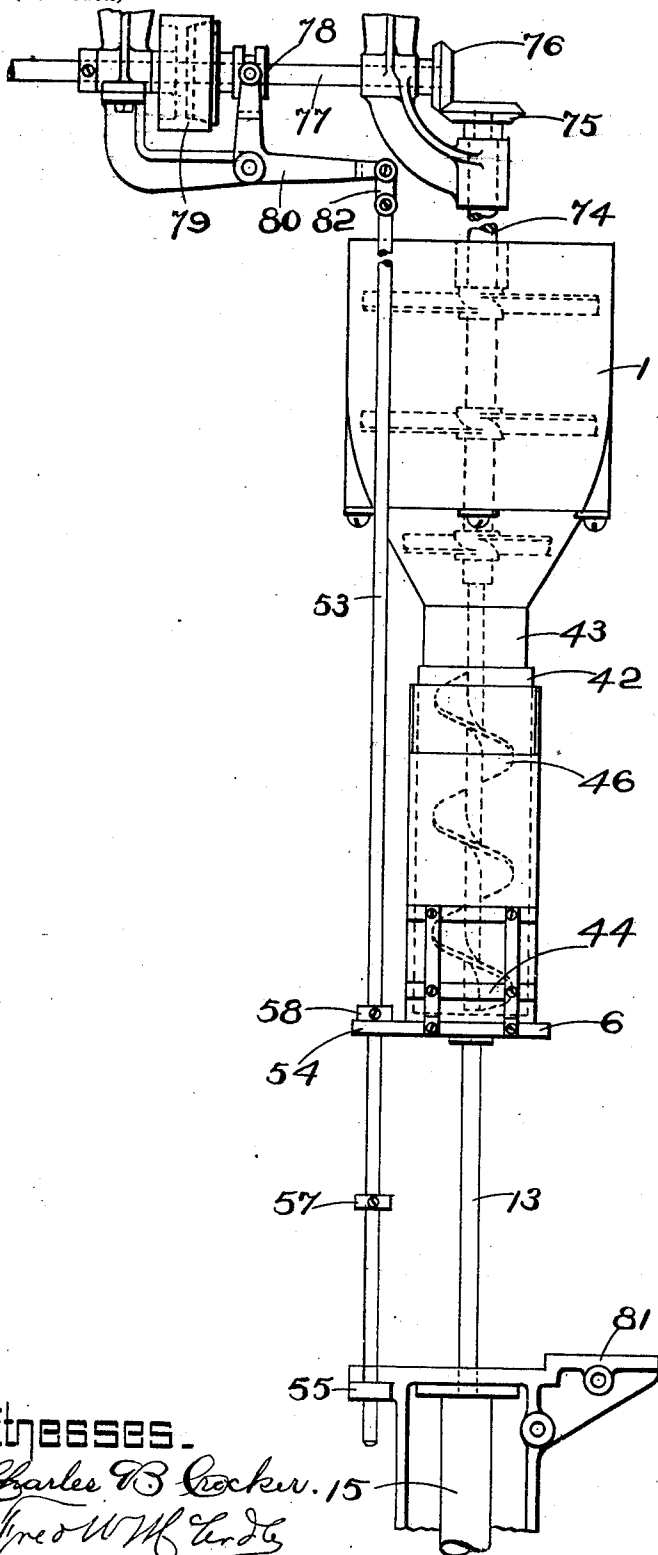
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5 Sheets—Sheet 4.

(No Model.)



Witnesses.

Charles B. Coker. 15
Fred W. M. Lundy

Inventor

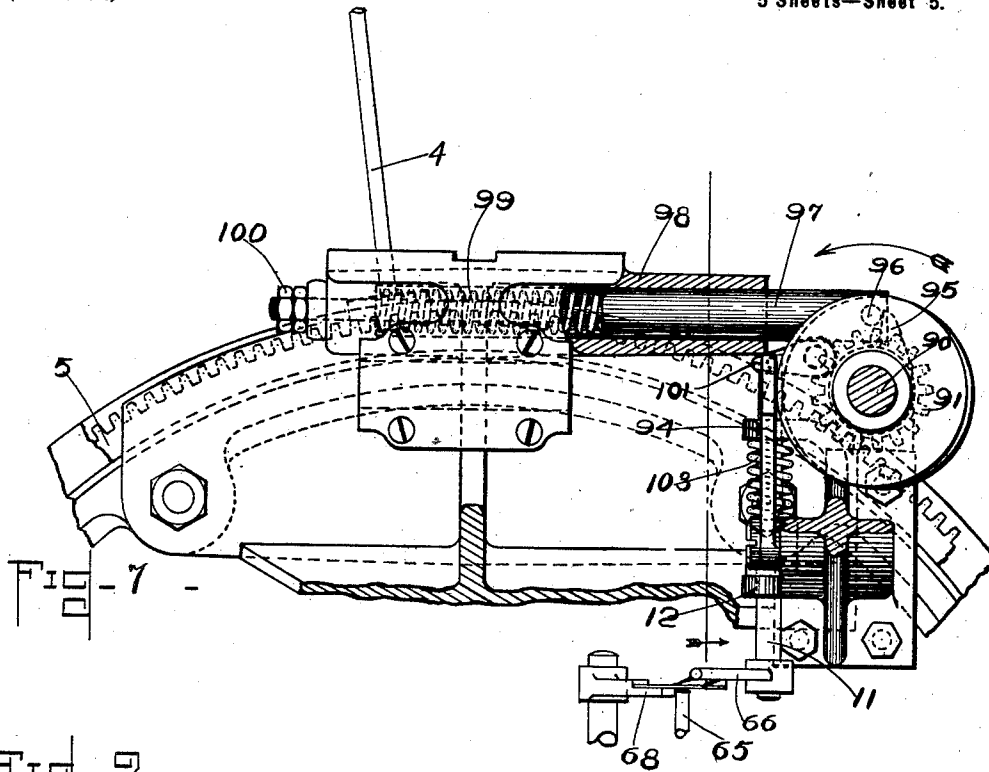
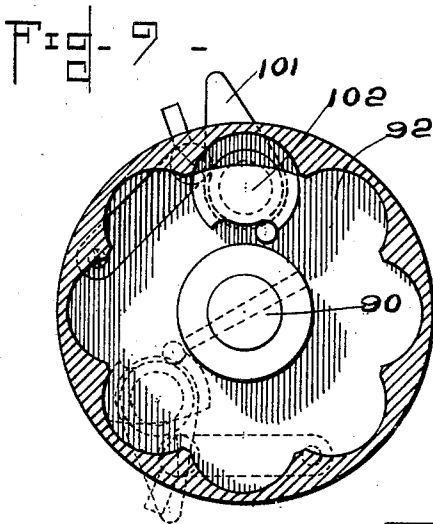
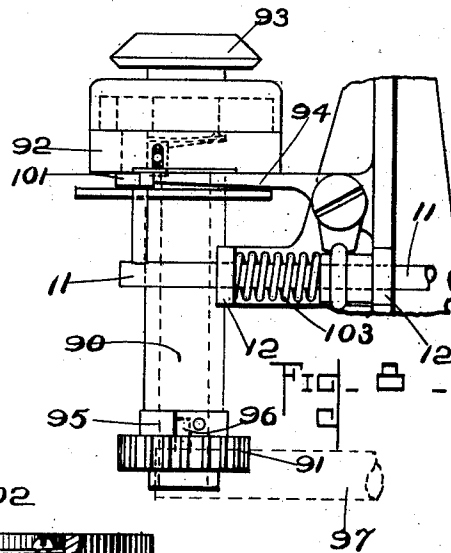
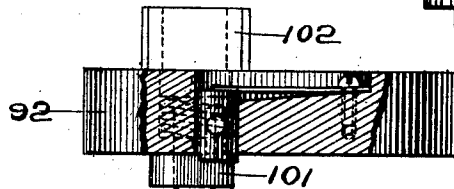
William H. Doble
by Wm. A. Copeland
attorney.

W. H. DOBLE.
PACKAGING MACHINE.

(Application filed May 17, 1902.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses—
Charles B. Crocker.
Fred W. Ford.

Inventor:
William H. Doble
by *Wm. A. Copeland*
attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. DOBLE, OF QUINCY, MASSACHUSETTS, ASSIGNOR TO PNEUMATIC SCALE CORPORATION, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

PACKAGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 714,875, dated December 2, 1902.

Application filed May 17, 1902. Serial No. 107,820. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DOBLE, a citizen of the United States, and a resident of Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Packaging-Machines, of which the following is a specification.

One object of the invention is to provide mechanism to elevate the package into engagement with the feed-nozzle and to hold it in engagement therewith while being filled and mechanism to lower the package as the goods rise in the package.

The invention has other objects which will be hereinafter set forth.

The invention is especially intended to be applied to use in a packaging-machine in which each package is partially filled from one chute or hopper and receives the remainder of its supply from another chute or hopper; but it is adapted in many of its features to be employed in a simple packaging-machine with only one feed-chute and which does not weigh the goods. The machine shown in the drawings, however, is of the double-hopper type.

The invention will now be fully described, reference being made to the accompanying drawings, and the novel features thereof will be particularly pointed out in the claims at the close of the specification.

In the drawings, Figure 1 is a plan of a machine embodying the invention. Fig. 2 is a side elevation viewed from the front of the machine—that is, the side of the machine at the bottom of Fig. 1. Fig. 3 is a detail side elevation of the elevator mechanism viewed at right angles to Fig. 2, enlarged from Fig. 2 and showing the package-holder in the elevated position. Fig. 4 is a detail showing the manner in which the block on one of the package-moving fingers engages with a dog on the lever which controls the mechanism for elevating the package-holder. Fig. 5 is a vertical section through the cylinder of the elevator-piston and the valve-cylinder, the parts being shown in the position that they occupy just after the valves have been shifted to elevate the package-holding platen. Fig. 6 is a detail view showing the mechanism for operating the worm-feed. Fig. 7 is a detail plan

of the recoil mechanism for causing the carrier to recoil after leaving the package in position on the scale. Fig. 8 is a detail of the clutch-actuating mechanism for driving the carrier-ring. Fig. 9 is a sectional detail of the clutch. Fig. 10 is a side elevation of Fig. 9, partly in section.

Referring now to the drawings, 1 represents a hopper through which the package receives its preliminary supply of goods, and 2 is the drip-hopper, through which the package receives the completion of its load. The packages are carried from the first hopper to the second along the track 3 by means of fingers 4, which project from the rotary carrier-ring 5. The empty packages are deposited one at a time on the elevator-platen 6 beneath the hopper 1 in any suitable way as fast as the partially-filled packages are removed. The means shown in the drawings for so delivering the empty packages consists of a belt 7 and reciprocating push-fingers 8, which are actuated by mechanism connected with pinion 9, engaged by the rotary carrier-ring 5, whereby at each rotation of said pinion 9 a package is pushed forward onto the table 81 and engaged by one of the carrier-fingers 4, which pushes it onto the elevator-platen 6. The carrier-ring is moved when the feed is shut off and is at rest when the feed is open, the arc of movement of the carrier being so adjusted that said pinion makes one revolution during each period of movement.

The style of packaging-machine shown is also a weighing-machine, the package being on the scale when it receives the drip-feed from the second hopper. When the scale tips, a reciprocating member 10 is caused to move in a direction to close the scale-hopper feed.

The carrier-ring 5 is rotated intermittently by a shaft 90, having a pinion 91, which engages with said shaft, and a clutch 92, which connects said pinion-shaft through bevel-gear 93 with a driving-shaft, (not shown,) means being provided for disengaging the clutch at the end of each revolution. The mechanism for thus driving the carrier-ring is not shown in detail in the drawings, suitable mechanism for doing this being shown and described in Patent No. 633,253 to G. W.

Watson, dated September 19, 1899. A sliding pin 11, supported in a bearing 12, is actuated by the mechanisms which shut off the feed through both hoppers to release the de-
 5 tent 94 from the clutch 92, so that the carrier-ring-driving mechanism may become again operative.

Hopper 1 has a downwardly-projecting cylindrical part 43, to which is attached an ex-
 10 tension 42, conforming to the shape of the package and adapted to enter into it. This extension 42 contains the worm 46, which is rotated at the proper times by shafts 74 and 77, which are connected by gears 75 and 76.
 15 One object of the invention is to provide mechanism to automatically elevate the package into a position where the nozzle of the hopper will extend into the package and mechanism to press the goods down in the
 20 package while the feeding is in progress, the elevator being caused to descend by the pressure upon the goods in the package. The best method of raising the elevator now known to me is by mechanism operated by fluid-
 25 pressure, preferably pneumatic, and actuated by the movement of the rotary carrier-ring, which brings the package to the elevator. Mechanism is provided which is actuated by the movement of the carrier-ring 5
 30 in bringing a package to the elevator-platen 6 to move the valves so that the pressure will be admitted to raise the platen. The pressure of the feed-worm on the material in the package causes the partial descent of the ele-
 35 vator, and thereby actuates mechanism which stops the worm-feed and actuates mechanism which shifts the valves, so as to complete the descent of the elevator. The descent of the elevator actuates mechanism which coöper-
 40 ates with other mechanism to start the package-carrier ring.

The elevator mechanism will now be described.

The elevator-platen 6 is mounted on the up-
 45 per end of a plunger 13, which extends up through the head 14 of cylinder 15, the lower end of said cylinder being closed and said plunger having attached thereto a piston 16, which fits in said cylinder. The hub of the
 50 platen rests on the head 14 of cylinder 15, and the platen rests on a depressed extension 56 of table 81. Fixed at the side of said cylinder 15 is a cylinder 17, in which slide the two piston-valves 18 19, carried by rod 20. Lead-
 55 ing into the cylinder 17 between the two valves 18 19 is a pipe 21, which connects with an air-chamber 83. Leading from cylinder 17 into cylinder 15 are two sets of ports 22 23, one set of said ports being above and the other
 60 below the air-pipe 21, the lower ports 23 entering the cylinder 15 below the seat of piston 16. Cylinder 17 has an opening to the outside air above the ports 22 and also below the ports 23, as by leaving the ends of the
 65 cylinder open or by any suitable vent. On the upper end of valve-rod 20 is a piston-valve 29, which slides in a cylinder 30, fixed

to the side of the cylinder 15. A port 31 leads from cylinder 15 into cylinder 30 and is adapted to be opened and closed by the movement
 70 of valve 29. The ends of said cylinder 30 are open. Journaled in bearings in the frame 24 is a rock-shaft 25, having an arm 26, connected by a link 27 with a stud 28, projecting from or fastened to the valve-rod 20, 75 whereby the valve-rod and valves are operated. When the carrier-ring is moving to bring a package to the elevator-platen 6, the platen should be in its lowermost position, level with the track, until the package is de-
 80 livered onto the platen. In order to so retain the platen, the valve-rod 20 will be raised slightly above the position shown in Fig. 5, so that valves 18, 19, and 29 will be in such position as to close ports 31 and the upper
 85 one of ports 23 and leave at least one of ports 22 communicating with the air-chamber, so as to admit compressed air to the cylinder 15 on the upper side of piston 16. When the
 90 valves 18, 19, and 29 are in the position shown in Fig. 5, the vent 31 from cylinder 15 above piston 16 is open and compressed air is admitted through ports 23 to cylinder 15 below
 95 piston 16, so that piston 16 and plunger 13 will rise, carrying up the platen 6, as will be more particularly described hereinafter.

Carried on shaft 25 on that side of the table which is toward the approaching package is an arm 32, adapted to be engaged on the
 100 upper side thereof by a projection 33 on the lower arm of lever 34, which is fulcrumed on stud 35, mounted in a fixed support 36. A spring 41 tends to pull the arm 32 upward, and thereby turn the shaft 25, so as to push
 105 down the valve-rod 20 into the position shown in Fig. 5; but it is prevented from pulling up said arm far enough to push the valve-rod entirely down to that position when the arm 32 is engaged by the stop projection 33.

Pivoted to the upper end of lever 34 is a
 110 dog 37. Mounted on arms 38, which push the packages along, are downwardly-extending blocks 39, which in their onward movement ride over the cam-faced dog 37. Said
 115 dog 37 is pivoted on the upper end of lever 34 and is normally held by a spring 40 in a position to be engaged by the blocks 39. When the carrier-ring nears the end of its
 120 movement, one of said blocks 39 engages the upper face of dog 37 and presses down the dog as the block rides over it, lifting the tail of the dog against the tension of the spring
 125 40 as shown in dotted lines in Fig. 4. The position of the lever and dog are such that when the carrier-ring reaches the end of its forward movement the block 39 will not have
 130 moved entirely off from the dog, but will rest on the outer end of it, as shown in dotted lines in Fig. 4. When the carrier-ring reaches the end of its forward movement, it has a
 slight recoil movement or backward kick before it comes to a rest, as will be hereinafter described, and this backward movement carries the block 39 and lever 34 from the dot-

ted-line position to the full-line position shown in Fig. 4, thus tripping the stop 33 from the arm 32. Attached to the lower arm of lever 34 is a spring 63, which when the lever 34 is turned on its pivot by the recoil of the carrier-ring just described will be compressed against the frame 24. Lever 34 thus being turned back against the pressure of spring 63, arm 32 is carried up past the stop 33 by spring 41. Spring 63 is sufficiently powerful to overcome the friction of dog 37 on block 39 exerted by spring 40, so that lever 34 will be thereby turned part way back, with the stop 33 bearing against the side of lever 32, as in Fig. 4. As soon as arm 32 is carried down by the turning of the rock-shaft 25 when the elevator descends in the manner hereinafter explained spring 63 will throw the lever 34 into position to engage arm 32. As soon as the stop 33 is tripped from arm 32 said arm 32 will be raised by its spring 41, thereby turning the rock-shaft 25 and carrying valve-rod 20 and valves 18, 19, and 29 down into the position shown in Fig. 5. Compressed air will thus be admitted to the cylinder 15 through ports 23 on the under side of piston 16, as already described. The adjustment of the parts is such that this will occur just as the carrier-ring comes to a rest with a package on the platen 6. The piston will be carried to the upper end of the cylinder 15, as shown in dotted lines in Fig. 5, carrying up the platen 6, as shown in Figs. 2 and 3, with the package outside of the nozzle 42. The platen 6 is furnished with side rails 44 in line with the guide-rails 45 at the sides of the track 3. When the platen 6 has been elevated to its highest position, as just described, the worm-feed 46 will be started, and as the package begins to fill the pressure of the worm will pack the goods down and tend also to depress the elevator platen and plunger, and the upward pressure of the air against the under side of the piston 16 will still tend to push the elevator upward. The downward pressure, however, is stronger than the upward pressure, and the elevator will descend, driving back the compressed air into the cylinder and chamber; but the two opposite pressures will pack the goods compactly in the package. The elevator cannot, however, complete its descent without providing a vent for the compressed air. Mechanism is provided to shift the valves, so as to make a vent when the elevator has descended far enough for the package to be filled to the required amount and the feed stopped and to bring the air-pressure to bear upon the upper side of the piston, so as to cause the elevator to complete its descent. The mechanism for doing this will now be described.

Fixed to shaft 25 is an arm 47, connected by link 48 with one arm of bell-crank lever 49, pivoted at 50. Pivoted to the other arm of said bell-crank is a dog 51, the tail of which is connected with said bell-crank by a spring 52, which pulls the tail so that the head of the dog will be kept in contact with the rod 53 and will throw the head of the dog into the notch 59 when the rod has risen high enough to bring said notch 59 opposite the dog, as shown in Fig. 3. Rod 53 passes loosely through a flange 54, which projects from the elevator-platen 6, and through a flange 55, which projects from the bed 56 of the elevator. A collar 58 on said rod is engaged by the flange 54 in the upward movement of the elevator to raise the said rod, and a collar 57 is engaged by said flange 54 in the descent of the elevator to push down said rod for the purposes to be hereinafter described. The collar 57 forms a stop which limits the descent of said rod, and when said rod and said elevator are both in their lowermost positions on their seats collar 57 will rest on flange 55 and the flange 54 will rest on collar 57. When the elevator rises, therefore, it will not begin to raise the rod until flange 54 comes into engagement with collar 58, and when it descends it will not push the said rod down until it moves down far enough for flange 54 to again engage collar 57. This is adjusted to occur when the feed stops. When the elevator has descended far enough for flange 54 to engage with collar 57, it will begin to push down rod 53, the dog 51 being now in engagement with notch 59. A back-stop 60 on the side of bell-crank 49 engages the tail of the dog 51 and prevents the dog from being turned on its pivot by the downward pressure of the said rod. The effect, therefore, of the downward movement of the rod is to turn the bell-crank 49 on its pivot, and thereby through link 48 and arm 47 it will turn rock-shaft 25 in a direction to lift the valve-rod 20 and the valves carried thereby, so that valve 29 will close port 31, valve 18 will be raised to open communication from the compressed-air chamber through ports 22 into cylinder 15, and valve 19 will be raised above ports 23, so as to afford a vent to the outside air for the compressed air beneath piston 16. The adjustment of collar 57 on rod 53 is such that the piston 16 will have descended below the ports 22 before the valves are thus shifted and the pressure on the upper side of piston 16 will complete the descent of the elevator. Before the rod 53 has completed its descent the bell-crank 49 will be turned on its pivot far enough for the dog 51 to be disengaged from the notch 59 and the rock-shaft 25 will be turned in a reverse direction by a spring 61, one end of which is connected with the arm 62 of bell-crank 26 and the other end of which is fastened to the frame 24, acting in cooperation with spring 41, which is connected with arm 32, thus causing valve-rod 20 to descend. Arm 32 will thus be turned upward and will again come into engagement with the under side of stop 33 to limit the downward movement of the valve-rod, as previously described, the lever 34 having been turned by spring 63 again into position for such engagement as soon as arm 32 was carried downward. The

valve-rod will descend far enough for valve 18 to close the upper one of the two ports 22 while the lower one of said ports is in open communication with the air-chamber, and valve 19 will close the upper one of ports 23, and the lower one of said ports will still be open to the outside air. When the carrier makes its next movement, the stop 33 will be tripped from the arm 32, so that valve-rod 20 will complete its descent and admit pressure to raise the piston and elevator again, as already described. Mechanism is provided whereby when the elevator has descended far enough under the downward pressure of the worm for the package to be filled to a certain height the movement of the worm-feed will cease, and this preferably occurs when the piston 16 has descended far enough to be below the ports 22, so that the air-pressure will drive the piston the rest of the way down.

The mechanism for starting and stopping the worm-feed is as follows: Worm-shaft 74 is connected by bevel-gears 75 76 with shaft 77, on which is a clutch 78, adapted to engage with driving-pulley 79. Said clutch 78 is operated by a bell-crank lever 80, one arm of which is connected by a link 82 with rod 53. When rod 53 is raised, as already described, by the rising of the elevator plunger and platen, the clutch 78 will be moved into engagement with the driving-pulley to start the feed. When the elevator-platen has descended far enough for the flange 54 to engage with collar 57 on rod 53 and cause rod 53 to move down, the clutch will be disengaged and the feed will stop.

The mechanism for causing the recoil of the carrier-ring 5 at the end of each forward movement is shown in Fig. 7 and will now be described.

Attached above pinion 91 on shaft 90 is a dog 95, which in the path of its movement engages a pin 96, projecting from the side of slide-rod 97, just before the disengagement of the clutch and just before the end of the movement of the carrier-ring. Slide-rod 97 is mounted in a support 98, in which it moves, and is backed by a spring 99, tending to push rod 97 out, the outward movement being limited by check-nuts 100. When the detent 94 engages the tail 101 of the clutch-dog 102 and disengages the clutch 92, the dog 95 is already in engagement with pin 96 on rod 97 and has pushed rod 97 in against the spring 99, so that when the clutch is released, as described, the spring 99, through rod 97 and pin 96, pushes dog 95 back the distance that slide-rod 97 was pushed in, turning shaft 90 slightly, and with it the pinion 91 and the carrier-ring 5, thereby causing the recoil of the ring. Upon the detent 94 being disengaged from the tail 101 of clutch-dog 102, thus causing the shaft 90 to be actuated through the driving mechanism, the shaft 90 is caused to revolve forward and the dog 95 pushes slide-rod 97 against its spring until the pin 96 rides off the end of dog 95, when

the rod 97 will be again thrown out, so that pin 96 will be in position to again engage dog 95 at the end of the revolution of pinion 91.

The mechanism for starting the carrier-ring to remove the loaded package and bring a fresh package to the elevator after the elevator has come down onto its seat again will now be described.

The sliding pin 11, which has been previously described, when it moves forward is adapted to release the detent from the clutch on the shaft which drives the carrier-ring 5, and thereby permit the carrier-ring to move during one rotation of the said driving-shaft when the clutch is again disengaged, as already described. Mechanism is provided which will push the said sliding pin to release said detent, and thereby actuate the carrier only when the preliminary feed and the scale-feed are both closed, if two feeds are employed. Carried on the side of reciprocating frame 10 is a bar 65, which when the said reciprocating frame moves forward to close the scale-feed will be carried nearly into engagement with an arm 66, which is connected with said sliding pin 11. A rock-shaft 67, supported in bearings fixed to the frame and adapted to slide in its bearings, has an arm 68, preferably wedge-shaped, which if the frame 10 is in its forward position and shaft 67 be rocked will enter between arm 66 and bar 65, engaging with them in such manner that the arm 66 and its pin 11 will be pushed forward and trip the detent from the clutch. If the wedge-arm 68 is rocked up before the reciprocating frame 10 moves forward, the engagement of the bar 65 with the arm 68 when the frame 10 does move forward will push the wedge-arm 68 against arm 66, as permitted by the sliding action of the rock-shaft 67, and will thus actuate the sliding pin 11, so that in order to actuate the carrier-ring there must be a movement of the reciprocating frame and of the rock-shaft. A spring 84 tends to hold the rock-shaft 67 in a position where the wedge 68 will be out of the path of the bar 65. The mechanism for actuating the rock-shaft is controlled by the downward movement of the elevator, so that the rock-shaft 67 cannot turn until the elevator has made its descent, and will now be described.

Pivoted at one end to a crank 69, which is fast to rock-shaft 67, is a rod 70, which at its other end is pivoted to one arm of bell-crank lever 71. Said bell-crank lever 71 is pivoted to the frame by a stud 72. The other arm 73 of said bell-crank lever extends forward into the path of descent of rod 53. When said rod 53 comes near the end of its downward stroke, it will engage the upper side of said arm 73 and turn the said bell-crank on its pivot, thereby rocking shaft 67 in a direction to turn the wedge-arm 68 into position for engaging arm 66, as previously described, the movement being sufficient to cause the carrier-ring-actuating mechanism to be set in operation just as the elevator reaches its seat. The

rock-shaft and wedge-arm carried thereby and means for actuating the same by cooperation with a package-elevator form the subject of claims in another application, filed March 26, 1902, Serial No. 100,059, and are therefore not shown in full detail in the present drawings.

While the valves have been spoken of as driven by air-pressure, any other fluid-pressure which may be employed, either gas or liquid, is regarded as coming within the scope of the invention.

The operation of the machine will now be described, beginning just as the carrier-ring begins to move after the scale has been tipped by the weight of the loaded package under the scale-hopper and after the elevator-platen has returned to its seat bearing a package which has received its preliminary supply from the worm-feed. At this time valve-rod 20 is just above the position shown in Fig. 5 and is in a position where the lower one of the ports 22 is open between cylinders 15 and 17 and the lower one of ports 23 is open to the outside air. The carrier-ring 5 moves through an arc equal to the distance between the package-engaging fingers 4. The pinion 9 makes one revolution during this movement of the carrier-ring, and in so doing the push-fingers 8 are actuated by connecting mechanism to move from the position shown in Fig. 1 crosswise of the belt 7 and back again. In moving forward across the belt they push an empty package from the belt onto the table 81, then while the push-fingers 8 are retreating one of the fingers 4 will engage the package and slide it along from the table 81 onto the platen 6, the adjustment of the fingers 4 being such that the package will be deposited on the platen just at the end of the forward movement of the carrier-ring. After the carrier-ring has completed its forward movement it recoils, as described, and the block 39, engaging with the dog 37, turns the upper arm of lever 34 backward and disengages the stop projection 33 on the lower arm of said lever from the arm 32, whereupon springs 41 and 61 turn rock-shaft 25 in a direction to turn up arm 32 and to cause valve-rod 20 to descend. This brings pistons 19, 18, and 21 into the positions shown in Fig. 5 and admits pressure from the air-chamber 83 to the cylinder 15 on the under side of piston 16, and thereby causes the plunger 13 and platen 6 to rise to the position shown in Figs. 3 and 6, with the hopper extension 42 inside of the package. Rod 53 will be carried up by the engagement of flange 54 on the platen 6 with the collar 58 on rod 53, thereby engaging the clutch 78 with pulley 79 and causing the feed-screw 46 to revolve. Dog 51 on bell-crank 49 will engage with notch 59 in rod 53 and retain the clutch in engagement with the pulley until the platen 6 has descended far enough for the material to be packed into the receptacle to the required depth. The downward pressure on the platen

6 as the material is fed into the package will depress the plunger 13 against the upward pressure of the compressed air on the under side of piston 16. When the plunger 13 has descended far enough for the flange 54 to engage with collar 57 on rod 53, said rod 53 will begin to descend, thereby during the first part of its descent turning down that arm of bell-crank 49 which carries the dog 51 and through link 48 and rock-shaft 25 turns up arm 26 and link 27 and raises the piston-rod 20. This opens the ports 23 to the outside air, so as to relieve the pressure on the under side of piston 16, and opens the ports 22 to the upper side of piston 16 and closes the port 31, so that the pressure on the upper side of the piston 16 will cause the plunger 13 and platen 6 and rod 53 to complete their descent. The descent of rod 53 disengages the clutch from the pulley 79 and stops the worm-feed. The turning of rock-shaft 25 to raise the piston-rod 20 during the first part of the descent of rod 53 above described also turns down below the stop 33 the arm 32, which has been turned up after the stop 33 has been disengaged from arm 32 by means of block 39, as already described, the stop 33 now being snapped back by spring 63 into position to engage arm 32 when it rises. During the continued descent of rod 53 the dog 51 becomes disengaged from notch 59 in said rod, and being allowed to turn back on its pivot, spring 61 acting on arm 62 of bell-crank 26 and spring 41 acting on arm 32, will turn rock-shaft 25 in the reverse direction, causing piston-rod 20 to descend a short distance until arm 32 comes up against stop 33. The piston-rod 20 has not yet descended far enough to shift the valves to elevate the platen. The completion of the downward movement of rod 53 carries down arm 73 of bell-crank lever 71 and draws forward rod 70, thereby through crank 69 (see Figs. 1 and 2) turning rock-shaft 67 in a direction to turn wedge-arm 68 into position for engaging arm 66 if the reciprocating frame 10 has moved forward or whenever it does move forward, if it has not already done so, thereby actuating the mechanism for starting the carrier-ring 5, as already described. As soon as the carrier-ring 5 starts the block 39 will ride off the dog 37, and a new package will be brought to the elevator-platen, the partially-filled package will be carried one step farther forward toward the scale, and the package on the scale will be removed.

What I claim is—

1. In a packaging-machine, a movable holder for the packages while being filled, fluid-actuated mechanism which elevates the said holder into position for being filled, mechanism which controls the application of the fluid-pressure to elevate the holder, feed mechanism which is started by the rising of the holder, the holder being depressed by the feeding of the material into the package, and mechanisms actuated by the holder while

descending to cut off the feed at a predetermined point in the descent and to shift the application of the fluid-pressure, substantially as described.

2. In a packaging-machine, a movable package-carrier, a movable holder for the package while being filled, mechanism actuated by fluid-pressure to elevate the holder before the feed starts, mechanism set in operation by the moving package-carrier to apply the fluid-pressure to elevate the holder, mechanism which while the package is being filled presses down the goods in the package and causes the descent of the package and holder, and mechanism which applies a yielding fluid-pressure to the under side of the holder and package at the same time that the downward pressure is exerted upon the upper surface of the goods, substantially as described.

3. In a packaging-machine, a movable package-holder, a movable carrier which brings the package to the said holder, a source of fluid-pressure, mechanism actuated by the moving carrier which controls the fluid-pressure to elevate the said holder and package, and feed mechanism, substantially as described.

4. In a packaging-machine, a movable package-holder, a movable carrier which brings the package to the said holder, a source of fluid-pressure, a feed-nozzle, mechanism actuated by the moving carrier which controls the fluid-pressure to elevate said holder and bring the package into engagement with the nozzle, and mechanism which while the package is being filled presses down the goods in the package and causes the descent of the package and holder, substantially as described.

5. In a packaging-machine, a movable package-holder, a movable carrier which brings the package to said holder, a source of fluid-pressure, a feed-nozzle, mechanism actuated by the moving carrier which controls the fluid-pressure to elevate said holder and bring the package into engagement with the nozzle, mechanism which then starts the feed and applies pressure to the goods in the package while being filled, thereby depressing the package and holder while the fluid continues to exert a yielding upward pressure on the under side of the holder and package, substantially as described.

6. In a packaging-machine, a movable package-holder, a movable carrier which brings the package to said holder, a source of fluid-pressure, a feed-nozzle, mechanism actuated by the moving carrier which controls fluid-pressure to elevate the said holder and bring the package into engagement with the nozzle, mechanism which starts the feed and applies pressure to the goods in the package while being filled, thereby depressing the package and holder while the fluid-pressure continues to exert a yielding upward pressure on the under side of the holder and package, mechanism which after the holder has

partially completed its descent and the downward pressure on the goods in the package is released reverses the application of the fluid-pressure so that the fluid-pressure then depresses the holder, substantially as described.

7. In a packaging-machine, a movable package-holder for the package while being filled, a plunger on which said holder is mounted, a piston carried by said plunger and a cylinder therefor, a source of fluid-pressure, a valve-cylinder having an opening to said source of pressure and to the outside air, ports leading from said valve-cylinder to said piston-cylinder both above and below the piston, a valve-rod carrying valves which control the admission of said fluid-pressure to said piston-cylinder and which control the vents from said piston-cylinder, a movable package-carrier and mechanism actuated thereby to move said valves so as to cause the fluid-pressure to elevate the package-holder after a package is brought to the holder, mechanism which presses the goods into the package while being filled and depresses the holder and plunger a portion of the downward movement and mechanism actuated by such downward movement of the holder to move said valves and change the fluid-pressure from the under side of said piston to the upper side thereof, substantially as described.

8. In a packaging-machine, a movable package-holder for the packages while being filled, a plunger on which said holder is mounted, a piston carried by said plunger and a cylinder therefor, a source of fluid-pressure, a movable package-carrier which brings a package to the said holder, mechanism actuated by the moving carrier to admit fluid-pressure to raise the said holder to the feed mechanism, mechanism which presses the goods into the package while filling and thereby depresses the holder and plunger against the upward force of the fluid-pressure, and mechanism actuated by the said package-holder when it has partially completed its descent to reverse the application of the fluid-pressure so as to force the holder downward, substantially as described.

9. In a packaging-machine, feed mechanism, a movable package-holder for the packages while being filled, a source of fluid-pressure, a movable package-carrier which brings the packages to the said holder, mechanism actuated by said carrier when it deposits a package on said holder to cause the fluid-pressure to elevate said holder to the feed mechanism, mechanism which presses the goods into the package while filling, and thereby depresses the holder against the upward pressure of the fluid, mechanism actuated by the said holder after it has partially completed its descent to reverse the application of the fluid-pressure, so as to force the holder to its seat, substantially as described.

10. In a packaging-machine, a movable package-holder for the packages while being filled, a source of fluid-pressure, a movable

package-carrier which brings the packages to the said holder, mechanism actuated by said carrier when it deposits a package on said holder to cause the fluid-pressure to elevate
5 said holder, mechanism which presses the goods into the package while filling and thereby depresses the holder, mechanism actuated by said holder after it has partially completed its descent to reverse the application of the
10 fluid-pressure so as to force the holder to its seat, and mechanism which is actuated by the descent of the said holder to start the package-carrier, substantially as described.

11. In a packaging-machine, a movable
15 holder for the packages while being filled, fluid-actuated mechanism which elevates the holder into the position for being filled, a movable carrier which brings the package to the movable holder before the holder rises, valves
20 which control the application of the fluid-

pressure, mechanism actuated by said movable carrier to move the valves to apply pressure to elevate the holder, and mechanism actuated by the holder when partially descended to shift the valves so that the pressure will be applied to depress the holder, substantially as described.

12. In a packaging-machine, a rotary package-carrier, mechanism for giving to the carrier a forward movement, mechanism for
30 stopping the carrier in its forward movement and mechanism for causing the carrier to recoil slightly at the end of each forward movement, substantially as described.

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

WILLIAM H. DOBLE.

Witnesses:

WILLIAM A. COPELAND,
ROBERT WALLACE.