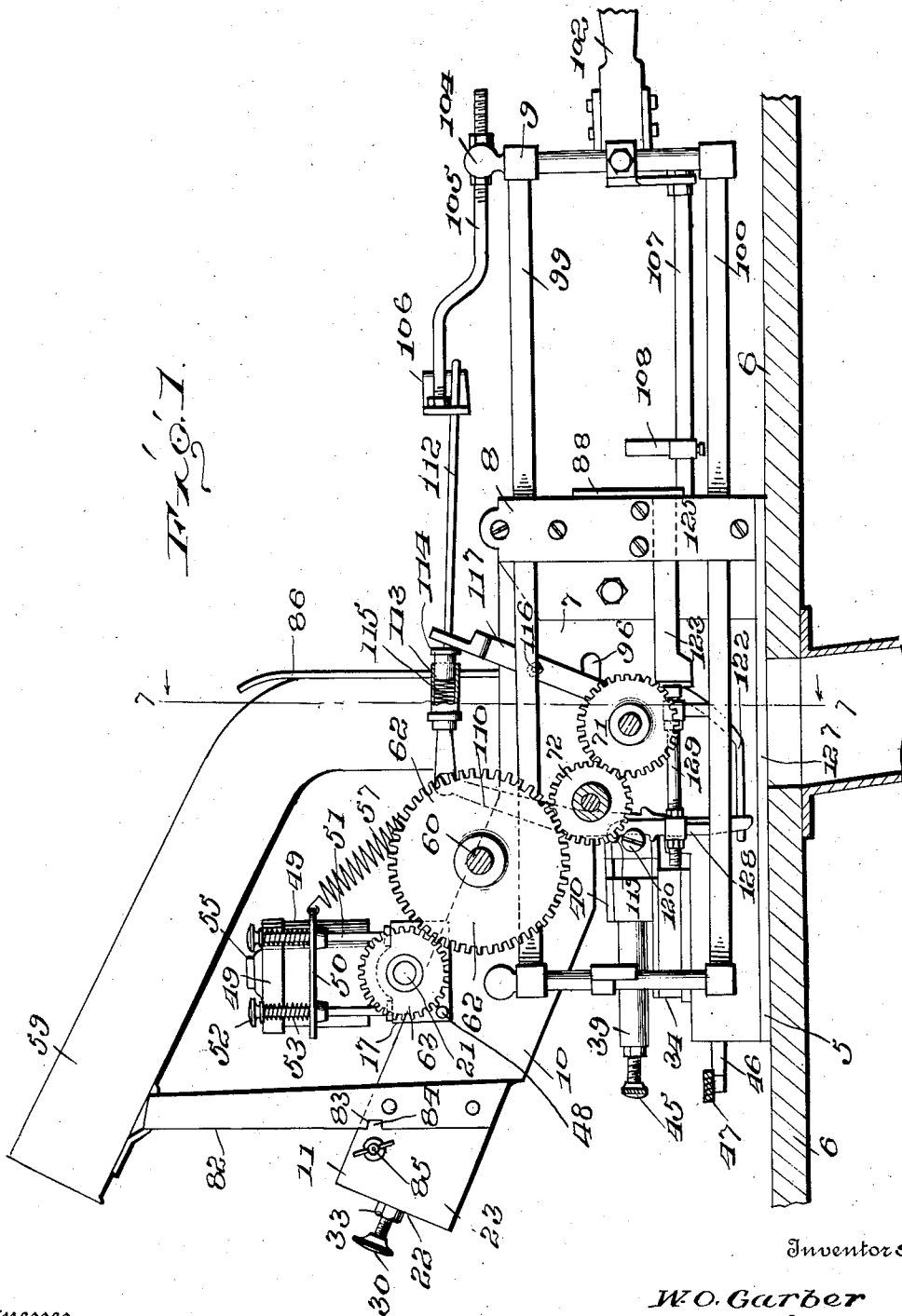


APPLICATION FILED MAR. 7, 1911.

8 SHEETS—SHEET 1.

Exo. 7.



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Witnesses
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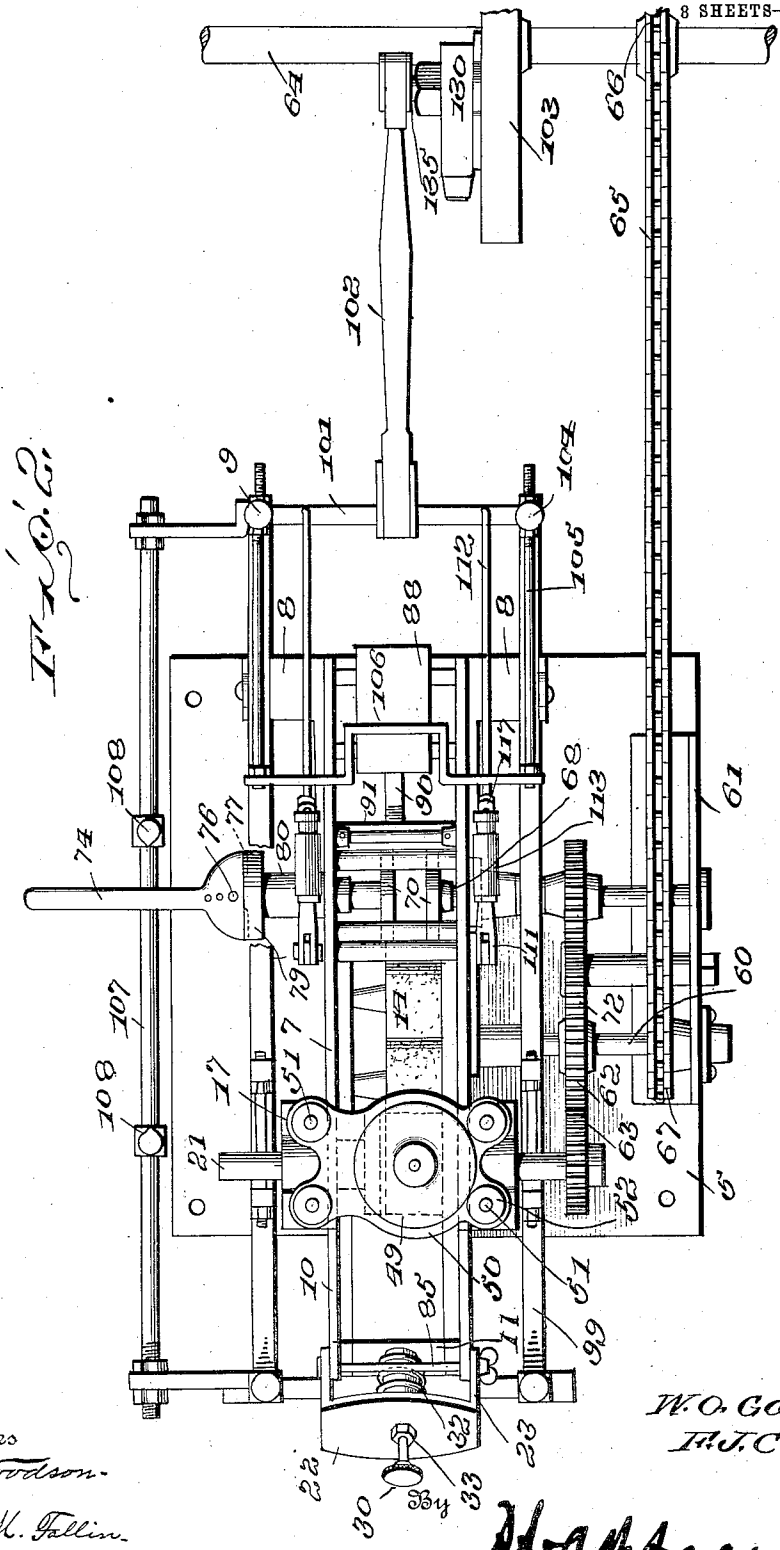
H. H. H. H. Attorneys.

W. O. GARBER & F. J. CLINE.
 BOX PRINTING MACHINE.
 APPLICATION FILED MAR. 7, 1911.

1,033,390.

Patented July 23, 1912.

8 SHEETS—SHEET 2.



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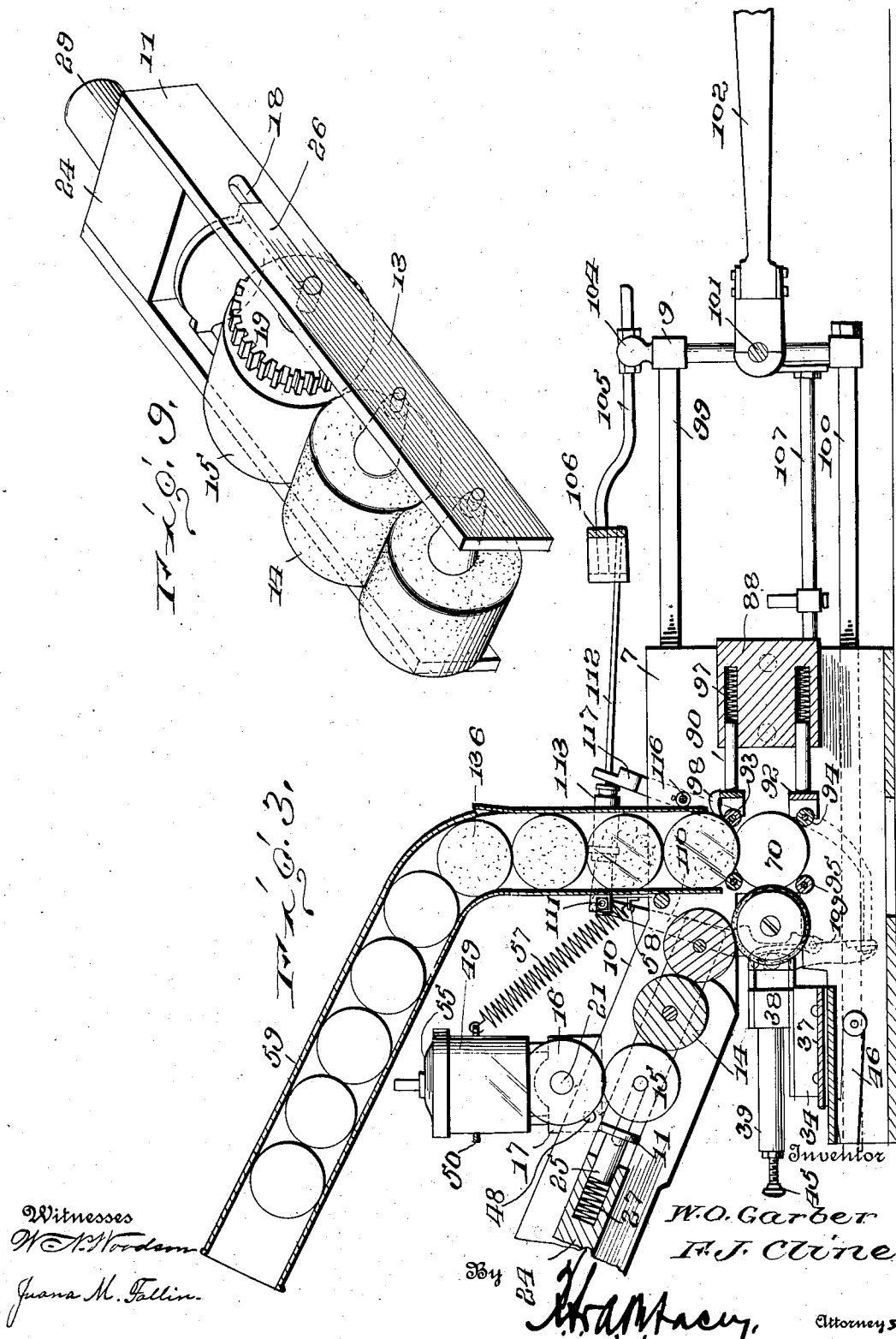
BOX PRINTING MACHINE.

APPLICATION FILED MAR. 7, 1911.

1,033,390.

Patented July 23, 1912.

8 SHEETS—SHEET 3.



W. O. GARBER & F. J. CLINE.

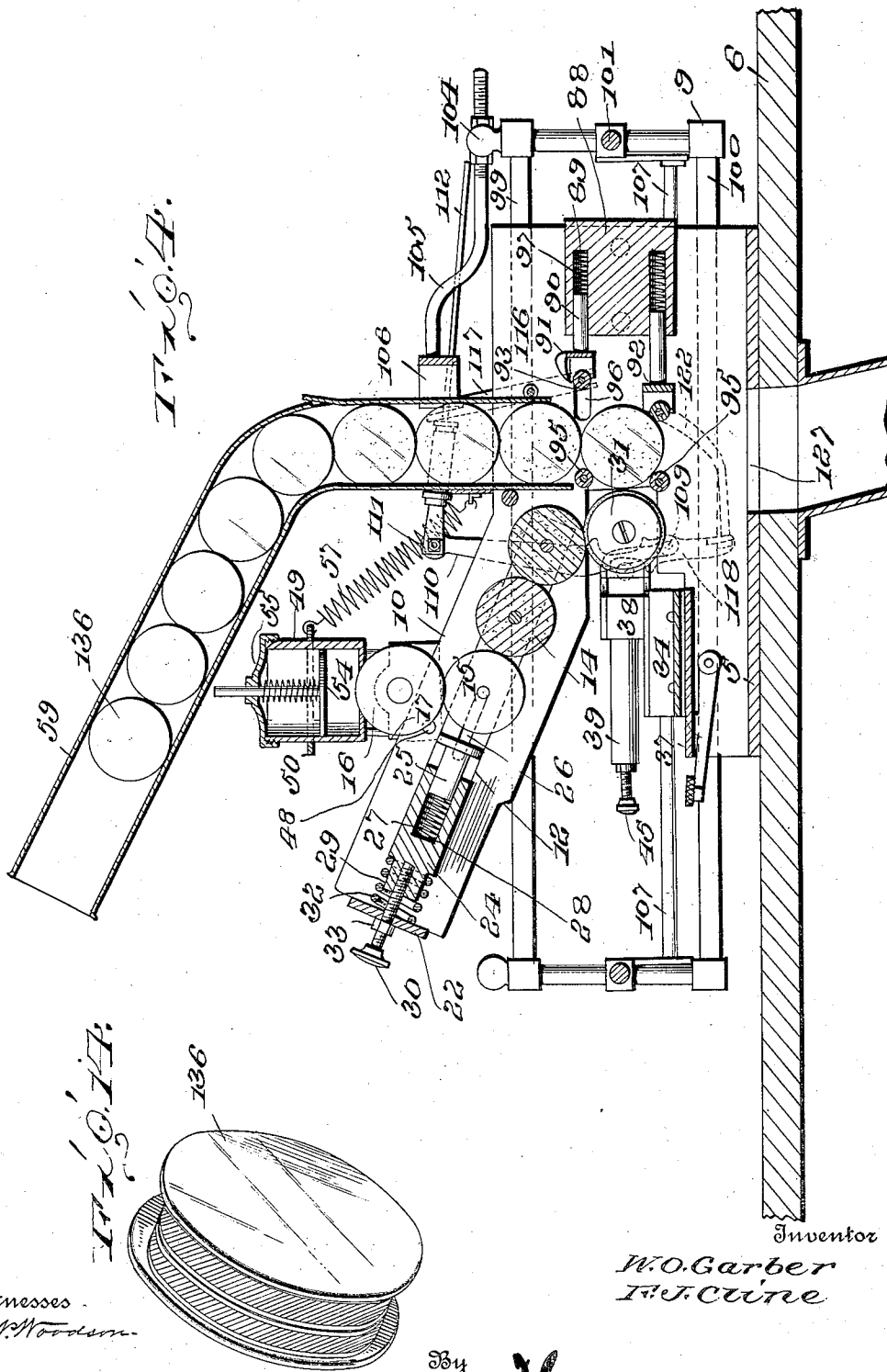
BOX PRINTING MACHINE.

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1,033,390.

Patented July 23, 1912.

8 SHEETS-SHEET 4.



Witnesses
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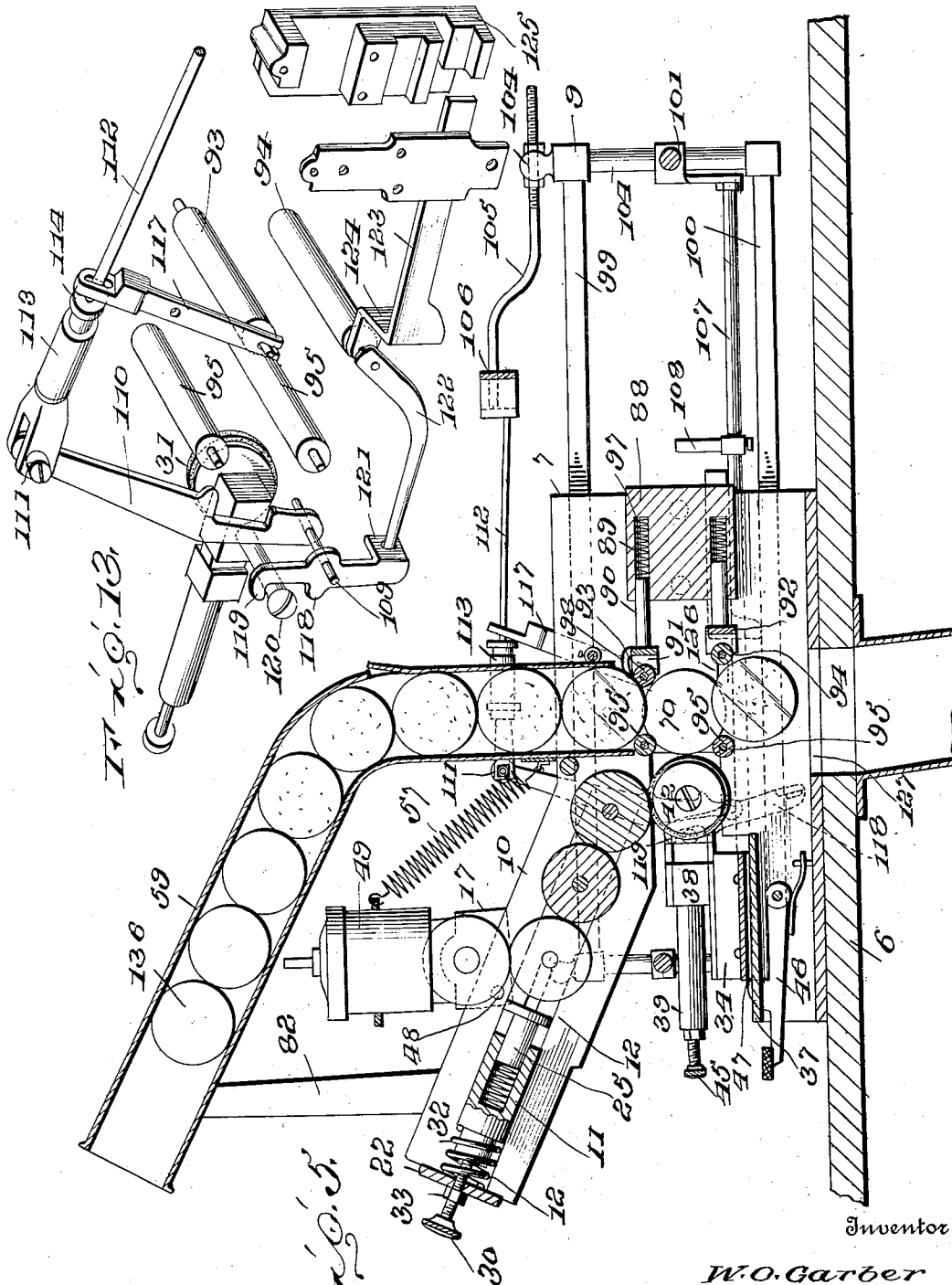
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W. O. GARBER & F. J. CLINE.
 BOX PRINTING MACHINE.
 APPLICATION FILED MAR. 7, 1911.

1,033,390.

Patented July 23, 1912.

8 SHEETS—SHEET 5.



Witnesses
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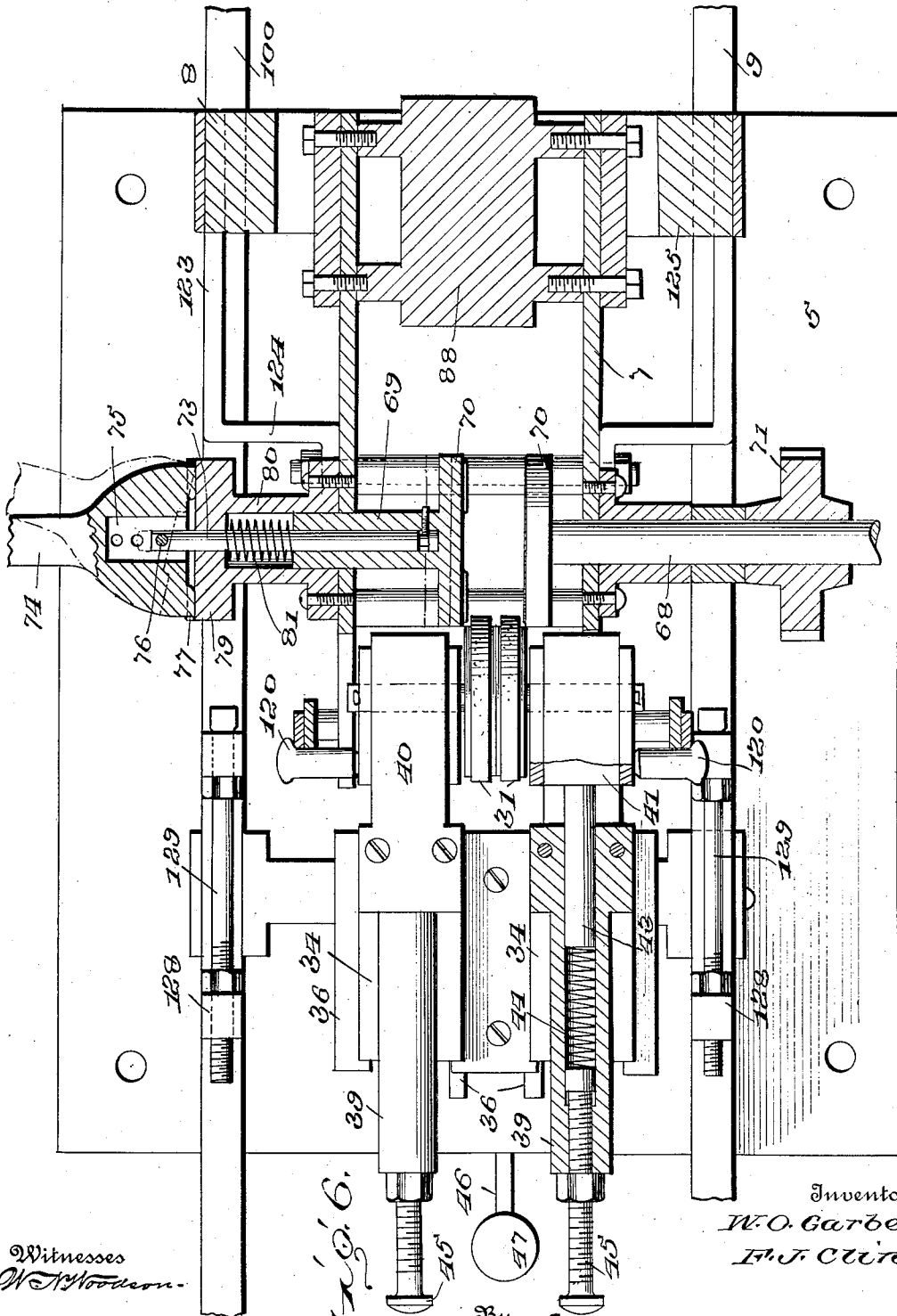
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W. O. GARBER & F. J. CLINE.
 BOX PRINTING MACHINE.
 APPLICATION FILED MAR. 7, 1911.

1,033,390.

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8 SHEETS—SHEET 6.



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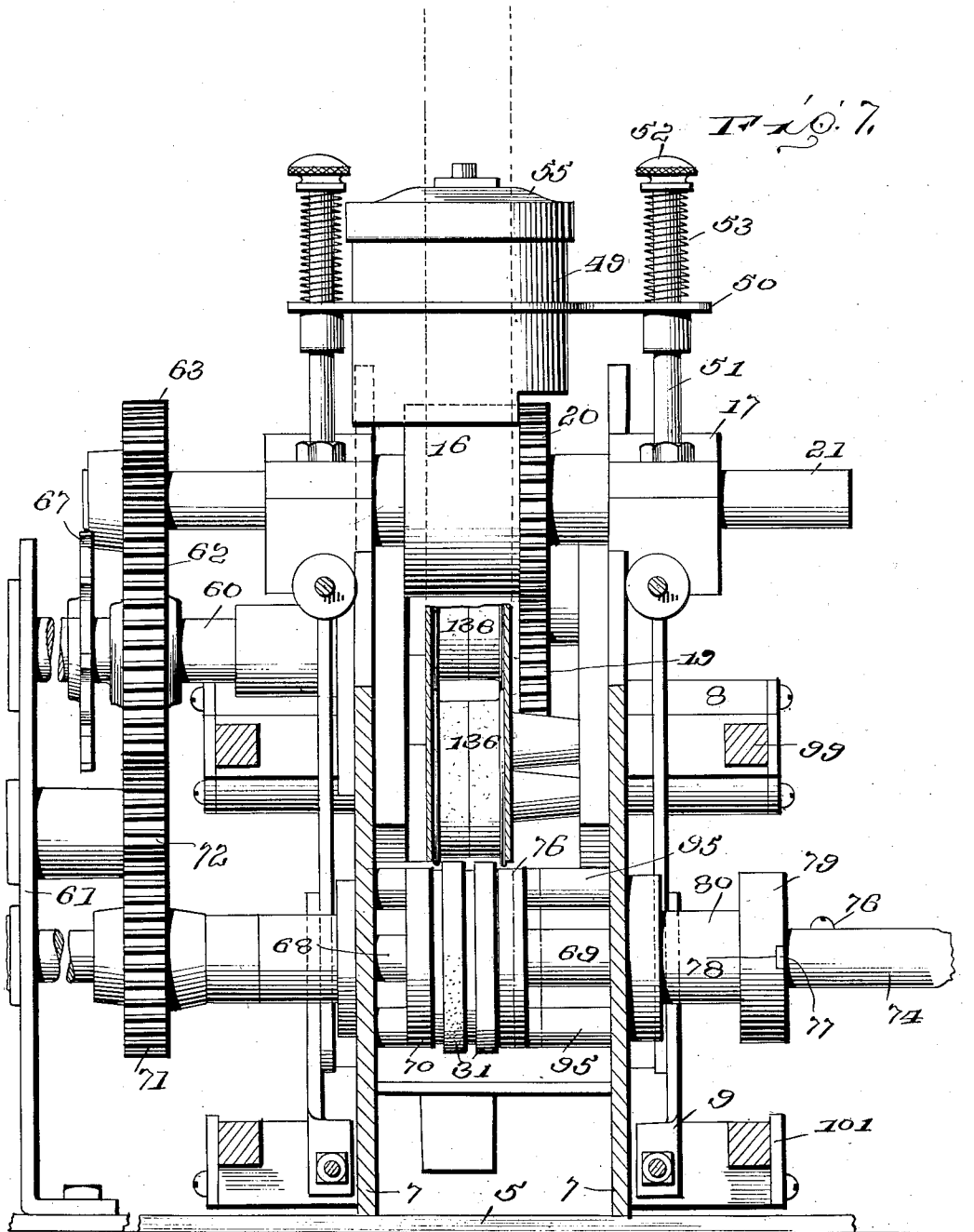
BOX PRINTING MACHINE.

APPLICATION FILED MAR. 7, 1911.

1,033,390.

Patented July 23, 1912.

8 SHEETS-SHEET 7.



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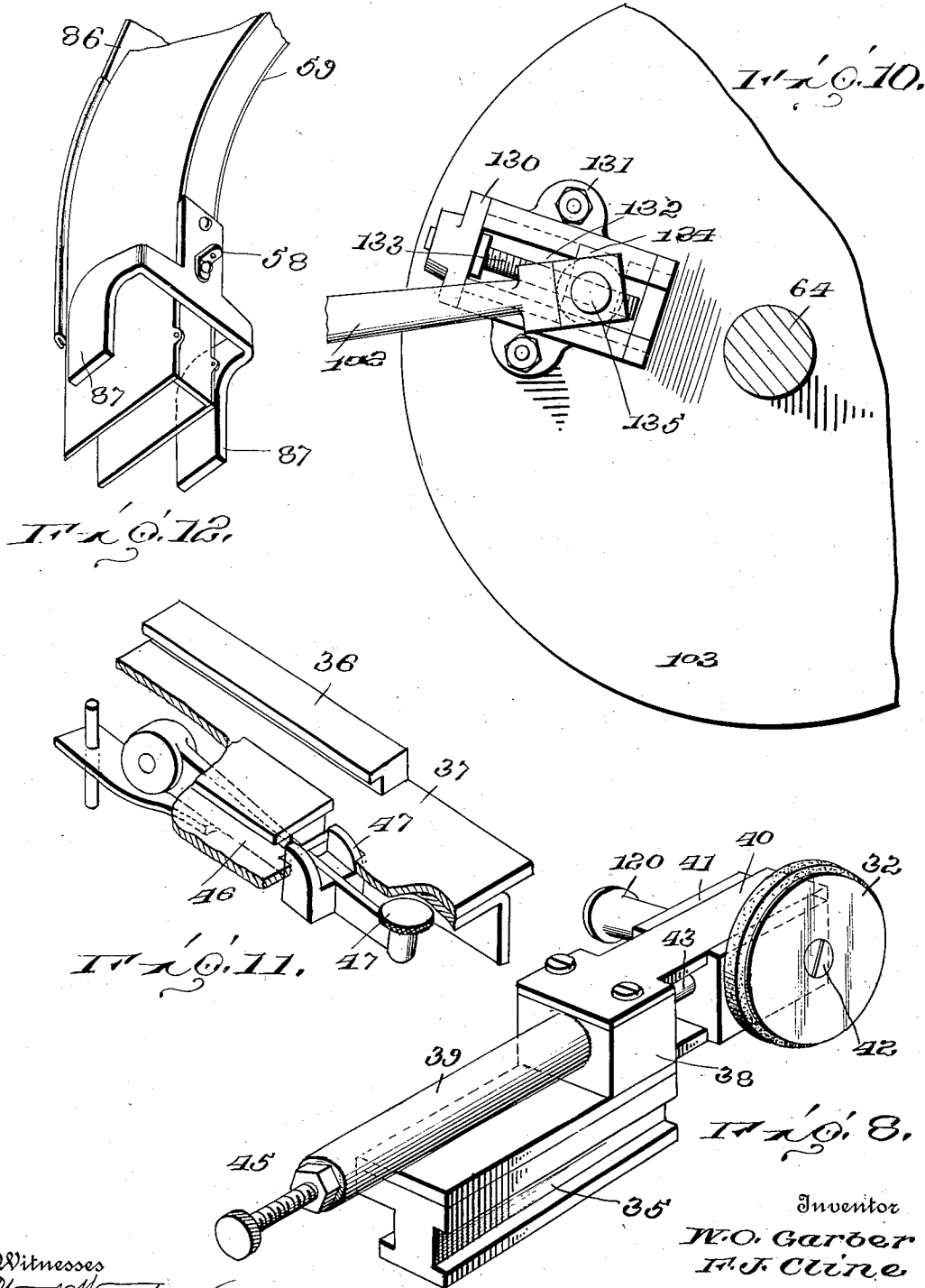
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W. O. GARBER & F. J. CLINE.
 BOX PRINTING MACHINE.
 APPLICATION FILED MAR. 7, 1911.

1,033,390.

Patented July 23, 1912.

8 SHEETS—SHEET 8.



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UNITED STATES PATENT OFFICE.

WILLIAM O. GARBER AND FRANK J. CLINE, OF RICHMOND, VIRGINIA.

BOX-PRINTING MACHINE.

1,033,390.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed March 7, 1911. Serial No. 612,833.

To all whom it may concern:

Be it known that we, WILLIAM O. GARBER and FRANK J. CLINE, citizens of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Box-Printing Machines, of which the following is a specification.

This invention relates to machines for striping or otherwise marking or ornamenting paper boxes and similar containing vessels.

The object of the invention is to provide a machine of durable and compact construction, by means of which a finishing band or stripe may be printed or otherwise impressed directly on the exterior wall of a pill box or other cylindrical receptacle, in lieu of printing the finishing bands separately and subsequently pasting said bands, by hand, around the receptacles to give the latter the desired finish or trimming.

A further object is to provide a printing machine in which the boxes or receptacles are presented one at a time to the printing rollers, where they are clamped between the heads of a gripping device or chuck and rotated to effect the printing thereof and then dropped into a receiving trough or otherwise directed to a suitable point of discharge.

A further object is to provide a machine including a stationary frame upon which are supported the inking rollers, printing rollers and box gripping device, and a movable frame mounted for reciprocation on the stationary frame for moving the printing rollers into and out of contact with a box and for controlling the delivery of the boxes to and the discharge of said boxes from the gripping device.

A further object is to provide a printing machine, the parts of which are so arranged that when the reciprocating frame is moved in one direction, the upper box controlling slide or pin and printing rollers will be simultaneously retracted and the heads of the gripping device separated to receive a box, and when said frame is moved in the opposite direction, the printing of said box will be effected and the printing rollers and lower box retaining pin simultaneously retracted and the heads of the gripping device separated to permit the discharge of the finished box.

A still further object is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a box printing machine embodying our invention; Fig. 2 is a top plan view of the same; Fig. 3 is a longitudinal sectional view, showing the parts in normal position, that is to say, with the boxes arranged in the feed chute and in position to be delivered to the gripping device; Fig. 4 is a similar view, showing the reciprocating frame at the limit of its forward movement, and the chute cut off device and printing rollers retracted to permit the delivery of a box to the gripping device; Fig. 5 is a longitudinal sectional view, showing the reciprocating frame at the limit of its rearward movement, with the printing rollers and heads of the gripping device retracted, and with the lower retaining pin moved to inoperative position to permit the discharge of a finished box; Fig. 6 is a horizontal sectional view, showing in dotted lines the movable head of the gripping device in retracted position to permit the insertion of a box, and in full lines in position to grip said box; Fig. 7 is a vertical sectional view taken on the line 7-7 of Fig. 1 and looking in the direction of the arrow; Fig. 8 is a detail perspective view of one of the printing roll carriers detached; Fig. 9 is a perspective view of the inking roll carrier detached; Fig. 10 is a side elevation, showing the manner of attaching the actuating pitman to the fly wheel of a motor; Fig. 11 is a detail perspective view of the locking device for the inking roll carrier; Fig. 12 is a detail perspective view of the lower end of the box chute; Fig. 13 is a detail perspective view of one of the pivoted dogs, actuating levers and their associated parts, detached; Fig. 14 is a perspective view of one of the boxes having an ornamental stripe or band printed thereon.

Corresponding and like parts are referred

to in the following description and indicated in all the views of the drawings by the same reference characters.

The machine comprises a supporting frame including a base plate 5 for attachment to a table or other suitable support 6 and provided with spaced upstanding side walls 7 having arms 8 extending laterally therefrom and in which is mounted for reciprocation an actuating frame 9. The forward ends of the side walls 7 are cut-away and extended upwardly to form spaced inclined plates 10 constituting a receiver for an inking roll carrier, indicated at 11.

Inking roll carrier.—The carrier 11 is slidably mounted on suitable guiding strips 12 secured to the inner faces of the plates 10 and comprises spaced longitudinal bars 13 between which are mounted for rotation a plurality of rollers 14, one of which constitutes an inking roller and the others feed rollers. The rollers 14 are preferably covered with rubber or other yieldable material, while the roller 15 is provided with a metal surface for contact with a similar feed roller 16 mounted on an oscillating frame 17. The feed roller 15 is provided with oppositely disposed trunnions, which latter are seated in slots 18 formed in the side bars 13, said roller being provided with a gear wheel 19 which meshes with the teeth of a corresponding gear wheel 20 secured to the shaft 21 of the upper feed roller 16 so that motion may be transmitted from the feed roller 16 to the feed roller 15 and thence to the yieldable feed rollers 14.

Arranged at the end of the carrier 11, is a plate 22 having oppositely disposed side members 23, which latter overlap the side plates 10 and are detachably secured thereto by bolts or similar fastening devices. Slidably mounted in a head block 24, arranged at the rear of the feed roller 15, is a plunger 25 having a terminal head provided with angularly disposed arms 26, which latter are seated in the slots 18 and are provided with terminal bearings for engagement with the trunnions of said feed roller 15, there being a coil spring 27 interposed between the end of the plunger 25 and adjacent wall of a receiving socket 28 for the purpose of normally and yieldably retaining the feed roller 15 in frictional engagement with the adjacent feed roller 14. The outer end of the head block 24 is provided with a reduced terminal 29 in which is threaded an adjusting screw 30, so that by rotating the screw 30, the roll carrier may be adjusted longitudinally of the receiver, for the purpose of regulating the pressure exerted by the terminal inking roller on the printing rollers 31 and thus cause the latter to make either a light or dark impression on a box, as the case may be.

A coil spring 32 is preferably interposed

between the head block 24 and end plate 22 and a clamping nut 33 is also preferably threaded on the adjusting screw 30 for the purpose of holding the roll carrier in adjusting position against the tension of the spring 32.

Printing roll carriers.—The rollers 31, two of which are shown in the present case, are each provided with a yieldable surface for printing or impressing on a box an ornamental finishing stripe or band, although said rollers may be used for printing a name or suitable advertising matter on the box, if desired. Each printing roller 31 is mounted on a carrier 34, the body of which is provided with oppositely disposed guiding grooves 35 adapted to enter corresponding guiding flanges 36 secured to an auxiliary plate 37 spaced from the bed plate, as shown. Secured to the upper surface of each carrier 34, is a stationary block 38 having a hollow rod 39 extending laterally from one side thereof and provided at its other side with spaced plates 40, between which is slidably mounted a movable block 41. Extending transversely through each block 41, is a pin 42 on which is mounted the adjacent printing roller 31, said pin being retained in position by a cotter pin or similar fastening device so as to permit the roller 31 to be removed and replaced by a roller of a different pattern or design, when necessary. Projecting laterally from the movable block 41 of each carrier, is a plunger 43 which extends within the tubular member or rod 39 for contact with a coil spring 44 so as to normally and yieldably hold the printing rollers 31 in contact with the work, while at the same time allowing the printing rollers to be retracted to permit the discharge of a finished box, as will be more fully explained hereinafter.

Threaded in each tubular member or rod 39, is a pin 45 by means of which the tension of the adjacent coil spring 44 may be regulated at will, said pin being held in adjusted position by a suitable clamping nut, as shown. Pivotaly mounted beneath the plate 37, is a locking lever 46 provided with spaced upstanding catches 47, which latter project through suitable slots formed in the plate 37 at the adjacent flanges 36 for engagement with the printing roll carriers, thereby to prevent longitudinal movement of said carriers during the printing operation. The outer or free end of the locking lever 46, preferably extends longitudinally beyond the adjacent end of the plate 37 and is provided with a finger piece 47, by depressing which the carriers 34 may be withdrawn from the machine when it is desired to change the printing rollers 31 or effect any necessary repairs to said carriers.

Ink feeding device.—The frame 17 of the ink feeding device is mounted for oscillation

on suitable studs 48 extending laterally from the side plates of the inking roll carrier, said frame serving to receive and support an ink reservoir 49. The shaft 21 is journaled in suitable bearings in the frame 17 and has rigidly secured thereto the upper feed roller 16, there being an opening formed in the bottom of the reservoir 49 to receive the edge of said feed roller. The reservoir 49 is provided with a laterally extending flange 50 having spaced openings formed therein for the reception of threaded rods 51, which rods project vertically from the oscillating frame 17 and are provided with terminal adjusting nuts 52. Interposed between the nuts 52 and the flange 50, are coil springs 53 which serve to normally and yieldably hold the ink reservoir in contact with the upper feed roller 16. Arranged within the reservoir 49, is a perforated plunger 54 having a stem which projects through an opening in the cover 55 of the ink reservoir, there being a coil spring 56 interposed between the cover 55 and plunger 54 for automatically feeding the ink to the feed roller 16.

By having the frame 17 pivotally mounted on the plates 10, said frame is free to tilt laterally so as to permit the ready removal of the inking roll carrier, when desired. Secured to the flange 50, is one end of a coil spring 57, the opposite end of which is secured to an eye 58 extending laterally from a feeding device, preferably in the form of a chute 59, said spring serving to normally hold the teeth of the gear wheel 20 in mesh with the teeth of the gear wheel 19 and also permitting the oscillating frame, together with the ink reservoir 49, to yield laterally to permit the removal of the inking roll carrier.

Secured to one of the plates 10, is a bracket, in which is journaled one end of a shaft 60, the other end of which is journaled in an auxiliary plate 61 secured to the base plate 5. Keyed on the shaft 60, is a master gear 62 which meshes with a gear wheel 63 secured to the end of the shaft 21 so that when the shaft 60 is rotated, motion will be transmitted through the medium of the gear wheel 63 to the gear 20 and thence through the medium of the gears 20 and 19 to the feed rollers for the purpose of supplying ink to the inking roller. Motion is transmitted from the driving shaft 64 of a motor of any suitable construction to the printing machine, through the medium of a sprocket chain 65, one end of which passes over a sprocket wheel 66 on the motor shaft 64, while the other end thereof passes over a sprocket wheel 67 on the driven shaft 60.

Box gripping device.—Arranged in front of the printing rollers 31, is a box gripping device comprising co-acting rods 68 and 69 having their inner ends provided with grip-

ping members or heads 70 adapted to receive between them the boxes from the feed chute 59. The outer end of the rod 68 extends through the side walls of the main supporting frame and is provided with a gear wheel 71 which meshes with an intermediate gear 72 secured to a stub shaft journaled in the plate 61, said intermediate gear in turn meshing with the master gear 62 so that when the driven shaft 60 is rotated, motion will be transmitted through the medium of the intermediate gearing to the rod 68 and adjacent head 70 to rotate the box, as will be more fully explained hereinafter. The rod 69 of the box gripping device is provided with a longitudinal bore in which is seated an auxiliary rod 73, to the outer end of which is pivotally connected a trip lever 74. The trip lever 74 is formed with an interior socket 75 having one or more openings piercing the same to permit the passage of a pivot pin 76 so that by adjusting the rod 73 longitudinally within the bore of the rod 69, the heads 70 may be spaced apart to accommodate boxes of different thicknesses. The inner end of the trip lever 74 is provided with oppositely disposed lugs 77 adapted to enter correspondingly shaped slots or kerfs 78 formed in a stationary disk 79 arranged on one side of the machine. The disk 79 is provided with a tubular extension 80 having a flange for attachment to the adjacent side wall of the main supporting frame, there being a coil spring 81 arranged within the tubular member 80 and bearing against the adjacent end of the rod 69 so as to return the head 70 of said rod to normal position after said head has been retracted by the trip lever 74 to release a box.

The clamping heads 70 of the gripping device are preferably arranged immediately below the lower end of the feed chute 59 and the boxes in said chute are preferably fed one at a time between said heads to the printing rollers 31. The chute 59 is inclined downwardly, while the forward end thereof is open and provided with depending arms 82 having notches 83 formed therein and adapted to receive correspondingly shaped lugs 84 extending from the end plate 22 of the inking roll carrier so that by inserting the lugs 84 in the notches 83 and tightening the bolt 85, both the inking roll carrier and chute will be held in position on the main supporting frame.

The rear vertical portion of the chute 59 is preferably provided with a removable slide 86 so that access may readily be had to the interior of the chute to facilitate the delivery of the boxes to the gripping device should said boxes have a tendency to stick or adhere to the walls of the chute. Secured to the lower end of the chute 59, are laterally extending arms 87 which bear against the

inner faces of the side walls of the frame and are rigidly secured thereto so as to prevent accidental displacement of the discharge end of the chute and thus insure proper delivery of the boxes from said chute to the gripping device.

Arranged between the side walls of the main supporting frame at the rear end thereof, is a block 88 having spaced openings 89 formed therein and in which are mounted pins or plungers 90. Secured to the inner ends of the plungers 90, are yokes 91 and 92, one of which forms a cut-off for controlling the delivery of boxes from the chute 59 to the gripping device, and the other a means for preventing the discharge of the boxes from the gripping device until after the printing rollers 31 have been operated to impress a finishing band or stripe on said boxes.

Mounted in the side walls of the main supporting frame, are upper and lower rollers 93 and 94, said rollers being carried by the adjacent yokes 91 and 92 and adapted to co-act with relatively stationary rollers 95 arranged in spaced relation to the first mentioned rollers. The rollers 93 and 94 are slidably mounted in suitable slots 96 so that when the plungers 90 are retracted against the tension of the coil springs 97, the rollers 93 and 94 will move with said plungers. Secured to or formed integral with the upper yoke 91, is a lip 98 which extends over the adjacent roller 93 and in the path of the boxes in the chute 59 so as to normally prevent said boxes from dropping downwardly between the heads of the gripping device. Thus it will be seen that the roller 93 and lip 98, together with the adjacent roller 95, co-act to control the delivery of boxes to the gripping device, while the roller 94 and opposite roller 95 co-act to prevent the discharge of the boxes until after they have been acted upon by the printing rollers.

Actuating frame.—The actuating frame 9 is preferably rectangular in shape and comprises upper and lower side bars 99 and 100 connected by transverse bars 101, to the rear one of which is connected a pitman 102, the latter being in turn connected with the fly wheel 103 of the motor shaft 64, as best shown in Fig. 2 of the drawings. The rear end posts 104 of the actuating frame, are provided with threaded sockets for the reception of correspondingly threaded rods 105, to the inner ends of which is secured a transverse yoke or bracket 106.

Extending laterally from one side of the frame 9, is an actuating rod 107 having spaced upstanding fingers 108 secured thereto, and adapted to alternately engage and trip the lever 74, as said frame is moved backward and forward. Pivottally mounted on suitable trunnions 109, extending laterally from

the opposite side walls of the main supporting frame, are levers 110, to the upper ends of which are pivottally connected at 111, rearwardly extending rods 112, the lower ends of said levers being operatively connected with the printing rollers 31. Slidably mounted on the rods 112, are cushioning devices, preferably in the form of cylinders 113 having caps 114 extending within the same and bearing against coil springs 115.

Extending transversely through the side walls of the main supporting frame, is a stationary shaft 116, on the opposite ends of which are pivottally mounted the intermediate portions of levers 117. The lower ends of the levers 117 are connected with the adjacent ends of the roller 93, while the upper ends of said levers are slotted to permit the passage of the rods 112; said rods also extending through slots formed in the bracket or yoke 106. Thus it will be seen that on the initial forward movement of the actuating frame 9, the bracket or yoke 106 will engage the levers 117 and retract the roller 93 so as to permit a single box to be released from the chute 59, said bracket or yoke simultaneously tilting the levers 110 and retracting the printing rollers 31, a further movement of the actuating frame causing one of the stop pins 108 to engage and tilt the trip lever 74 so as to separate the heads of the box gripping device and permit the box released from the chute to fall between said heads.

Pivottally mounted on the trunnions 109, are actuating dogs 118 having their upper ends provided with hooked terminals 119 adapted to bear against pins or lugs 120 extending laterally from the movable blocks 41. The lower ends of the dogs 118 are provided with slotted plates 121 adapted to receive the adjacent ends of curved levers 122. The levers 122 are pivottally mounted on the ends of the lower roller 94, to which roller are also connected rearwardly extending bars 123 having their intermediate portions offset, as indicated at 124. The rear ends of the bars 123 are slidably mounted in suitable guides 125 arranged on opposite sides of the main supporting frame, there being slots 126 formed in the side walls of said main supporting frame at the lower roller 94 to permit said bars and roller to be moved out of the path of the boxes and thus permit said boxes to be discharged through an opening 127 formed in the base of the machine and supporting table 6 when said boxes are released from the gripping device.

Secured to the lower side bars 100 of the actuating frame 9, are upstanding lugs 128 having threaded openings formed therein for the reception of a correspondingly threaded impact rod 129, the latter being adapted to engage the offset portions 124 of

the side bars 123 on the rearward stroke of the actuating frame so as to disengage the lower roller 94 and simultaneously retract the printing roller 31.

5 It will here be noted that on the rearward movement of the actuating frame, the longitudinal movement imparted to the curved levers 122 will tilt the lower or slotted end of the dog 118 and thus cause the hooked end thereof to bear against the pin 10 of the adjacent printing roller so as to move said printing roller out of contact with the work. As a means for changing the position of the pitman 102 with relation 15 to the fly wheel 103 and thus vary the length of stroke of the actuating frame 9, there is provided a plate 130 having oppositely disposed lugs 131 for attachment to the wheel 103 and provided with a guiding recess 132, in which is arranged a threaded pin 133, the 20 latter being extended through a correspondingly threaded opening formed in a sliding block 134. Extending laterally from the block 134, is a crank pin 135, on which is 25 pivotally mounted the adjacent end of the pitman 102 so that by rotating the head of the pin 133, the block 134 may be adjusted longitudinally within the guiding recess 132, as will be readily understood.

30 The operation of the device is as follows: The feed chute or magazine 59, is first charged with pill boxes or other containing vessels, indicated at 136, after which the motor is started, thus transmitting motion 35 from said motor through the medium of the sprocket chain 65 and intermediate gearing to the feed and inking rollers and also to the member 68 of the box gripping device, to continuously rotate the same. On the 40 forward movement of the actuating frame 9, the yoke or bracket 106 will engage the upper ends of the levers 117 so as to retract the roller 93, and through the medium of the cushioning device 114, simultaneously 45 tilt the levers 110 thereby to cause said levers to bear against the pins 120 and retract the printing rollers, a further forward movement of the frame causing one of the stop pins 108 to tilt the trip lever 74, thus to 50 separate the heads 70 of the gripping device and allow one of the boxes from the chute to drop between the heads 70 of said gripping device. On the initial return or rearward movement of the actuating frame, the 55 spring 81 will cause the heads 70 to grip the box, while the springs 41 will move the printing rollers in contact with said box, which latter is rotated by the before mentioned gearing, so as to cause the rollers 31 60 to print or otherwise impress an ornamental stripe or band around the box. As the actuating frame 9 continues to move in a rearward direction, the impact rod 129 will engage the offset portion 124 of the bars 123 65 and the hooked end of the dog 118 will en-

gage the pins 120 of the printing rollers 31 so as to retract said printing rollers and the lower roller 94 and thus permit the finished or printed box to fall through the discharge opening 127 when the clamping heads of the 70 box gripping device are released, this release of the clamping heads being subsequently effected by engagement of the other pin 108 with the trip lever 74 as the actuating frame nears the end of its rearward 75 stroke. Thus it will be seen that as the actuating frame is reciprocated on the main frame, the boxes from the feeding device or chute will be automatically presented to the printing rollers where they will be rotated 80 by the gripping device to effect the printing thereof, and subsequently allowed to fall through the opening in the bottom of the table and thence directed into a receptacle or other suitable point of discharge.

85 It will here be noted that the cushioning devices 113 serve to receive and absorb the jar incident to the impact of the yoke or bracket 106 with the levers 117, thus preventing damage to the machine. It will 90 also be noted that by moving the rod 73 within the socket of the trip lever 74, the head of the longitudinally movable rod 69 may be adjusted with respect to the head of the rotating rod 68 to accommodate boxes 95 of different thicknesses. The impact rods 129 and rearwardly extending rods 105, are preferably threaded so that the yoke or bracket 106 and head of the impact rod 129, 100 may be adjusted longitudinally of the machine according to the size or character of the box being operated upon.

While the machine is principally designed for automatically printing or otherwise impressing an ornamental stripe or band on 105 pill boxes and similar cylindrical containing vessels, it will of course be understood that the machine may be used with equally good results for printing advertising matter thereon and that any desired color of ink 110 may be employed in the trimming of the boxes.

Having thus described the invention, what is claimed as new is:

1. In a machine of the class described, co- 115 acting box gripping members, one of which is mounted for rotation and the other for longitudinal movement with respect thereto, means for holding the longitudinally movable gripping member in different positions 120 of longitudinal adjustment, means for feeding boxes one at a time between the gripping members, means for printing a circumferential ornamental band on the exterior walls 125 of the boxes while supported between said gripping members, means for retracting the printing mechanism during the delivery of the boxes to and the discharge of said boxes from the gripping members, and means for 130 automatically releasing the longitudinally

movable gripping member to permit discharge of said boxes.

2. In a machine of the class described, co-acting box gripping members having clamping heads, one of which is mounted for rotation and the other for longitudinal movement, means for securing the longitudinally movable clamping head in different positions of longitudinal adjustment with respect to the rotary head, means for feeding boxes one at a time between the clamping heads, a printing roller, means for rotating the clamping heads to effect the printing of the boxes while supported between said heads, means for releasing the longitudinally movable head to permit the discharge of said boxes, and means for retracting the printing roller during the delivery of the boxes to and the discharge of said boxes from the gripping members.

3. In a machine of the class described, co-acting box gripping members, one of which is mounted for rotation and the other movable longitudinally with respect thereto and yieldably supported in coöperative relation therewith, means for feeding boxes one at a time between the gripping members, a printing roller, means for rotating both gripping members to effect the printing of the boxes while held between said gripping members, and means for retracting the printing roller during the delivery of the boxes to and the discharge of said boxes from the gripping members.

4. In a machine of the class described, rotary box gripping members, one of which is adjustable longitudinally with respect to the other, means for securing the longitudinally movable box gripping member in different positions of longitudinal adjustment with respect to the other box gripping member, means for feeding boxes one at a time between the gripping members, a printing roller, an inking roller co-acting with the printing roller, a reservoir for feeding ink to the inking roller, means for rotating the gripping members to effect the printing of the boxes while supported between said members, means for releasing the longitudinally movable gripping member to permit the discharge of said boxes after the printing operation, and means for retracting the printing roller during the delivery of the boxes to and the discharge of said boxes from the gripping members.

5. In a machine of the class described, a box gripping device, means for feeding boxes one at a time to the gripping device, a printing roller, means for rotating said gripping device to effect the printing of the boxes carried thereby, means for preventing the delivery of the boxes to the gripping device during the printing operation, means for releasing the gripping device to permit the discharge of the printed boxes, and

means for retracting the printing roller during the delivery of the boxes to and the discharge of said boxes from the gripping device.

6. In a machine of the class described, a box gripping device, means for feeding boxes one at a time to the gripping device, a printing roller arranged near said gripping device, means for rotating the gripping device to effect the printing of said boxes, means for rotating the printing roller, and means for retracting said printing roller as the boxes from the feeding devices are delivered to and discharged from the gripping device.

7. In a machine of the class described, a box gripping device, means for feeding boxes one at a time to said gripping device, a continuously rotatable printing roller, means for moving the printing roller into engagement with the boxes after the latter have been delivered to the gripping device to effect the printing of said boxes, means for releasing said gripping device to permit the discharge of the printed boxes, and means for retracting the printing roller as the boxes are delivered to and discharged from the gripping device.

8. In a machine of the class described, a box feeding device, a gripping device arranged beneath the feeding device and adapted to receive the boxes from said feeding device one at a time, a printing roller, means for successively moving the printing roller in contact with the boxes after the latter have been delivered to said gripping device, means for rotating the gripping device to effect the printing of said boxes, means for checking the delivery of boxes to the gripping device during the printing operation, and means for releasing said gripping device to permit the discharge of the printed boxes.

9. In a machine of the class described, a box feeding device, a gripping device disposed beneath the feeding device and including spaced clamping heads, one of which is mounted for rotation and the other, for longitudinal movement, means for delivering the boxes one at a time between the heads of the gripping device, a printing roller movable into engagement with the boxes after delivery to the gripping device, means for rotating the gripping device to permit the printing of said boxes, and means for automatically separating the heads of said gripping device to permit the discharge of the printed boxes.

10. In a machine of the class described, a box gripping device, means for feeding boxes one at a time to the gripping device, a continuously rotatable printing roller, an inking roller contacting with the printing roller, means for supplying ink to the inking roller, means for rotating the gripping

device, means for moving the printing roller into and out of contact with the boxes to effect the printing thereof, means for preventing the delivery of boxes to said gripping device when the printing roller is in operative position, and means for releasing the gripping device to permit the discharge of the printed boxes.

11. In a machine of the class described, a box gripping device, a printing roller arranged near the gripping device, a guide, a removable carrier, an inking roller mounted for rotation on said carrier, means for yieldably supporting the inking roller in contact with the printing roller, means for delivering the boxes one at a time to the gripping device, means for moving the printing roller in engagement with the boxes after delivery to said gripping device, means for rotating the gripping device to effect the printing of the boxes, means for releasing the gripping device to permit the discharge of the printed boxes, and means for retracting the printing roller during the discharge of said boxes from the gripping device.

12. In a machine of the class described, a supporting frame, a box gripping device mounted on the frame, means for feeding the boxes to the gripping device, a printing roller, upper and lower cut-off devices extending in the path of the boxes, a movable frame mounted for reciprocation on the supporting frame, and mechanism for retracting the upper cut-off device and printing roller and subsequently releasing the gripping device when the reciprocating frame is moved in one direction and for retracting the printing roller and lower cut-off device and subsequently releasing the gripping device when the frame is moved in another direction.

13. In a machine of the class described, a supporting frame, a box gripping device, means for feeding boxes to the gripping device, a printing roller arranged near said gripping device, means for rotating the gripping device, means for supplying ink to the printing roller, a movable frame mounted for reciprocation on the supporting frame, upper and lower cut-off devices disposed in the path of the boxes, mechanism for simultaneously retracting the printing roller and upper cut-off device and subsequently releasing the gripping device when the reciprocating frame is moved in one direction, and mechanism for retracting the printing roller and lower cut-off device and subsequently releasing the gripping device when the frame is moved in another direction.

14. In a machine of the class described, a box gripping device, means for feeding boxes to the gripping device, a yieldably supported printing roller, means for rotating

the gripping device, upper and lower cut-off devices disposed in the path of the boxes a lever connected with the upper cut-off device, a second lever connected with the printing roller, a reciprocating frame, means carried by the reciprocating frame for tilting said levers to simultaneously retract the upper cut-off device and printing roller and subsequently release the gripping device when the frame is moved in one direction, arms connected with the lower cut-off device, a dog connected with the printing roller, and independent means carried by the reciprocating frame and adapted to engage the arms and simultaneously retract the printing roller and lower cut-off device and subsequently release the gripping device when said frame is moved in another direction.

15. In a machine of the class described, a supporting frame, a box gripping device mounted on the frame, means for feeding boxes to the gripping device, means for rotating said gripping device, a continuously rotatable printing roller arranged near the gripping device, means for supplying ink to the printing roller, upper and lower cut-off devices, a lever connected with the upper cut-off device, a second lever connected with the printing roller, a rod connecting said levers, a cushioning device carried by said rod, a movable frame mounted for reciprocation on the supporting frame, means carried by the reciprocating frame for simultaneously tilting the levers to retract the upper cut-off device and printing roller and simultaneously release the gripping device when the reciprocating frame is moved in one direction, a dog operatively connected with the printing roller, bars connected with the lower cut-off device, and independent means carried by the frame and adapted to engage the bars for retracting the printing roller and lower cut-off device and subsequently release the gripping device when said frame is moved in another direction.

16. In a machine of the class described, a box gripping device, means for feeding boxes to said gripping device, means for rotating the gripping device, a printing roller, means for supplying ink to the printing roller, upper and lower cut-off devices disposed in the path of the boxes, a lever connected with upper cut-off device, a second lever connected with the printing roller, a rod connecting the upper ends of said levers, a cushioning device interposed between the levers and mounted on the rod, a reciprocating frame, a yoke carried by the reciprocating frame and adapted to engage the lever of the upper cut-off device for simultaneously retracting the printing roller and said upper cut-off device when the reciprocating frame is moved in one direction, a bar connected with the lower cut-off device, a dog

connected with the printing roller, a connection between the bar and dog, means carried by the movable frame and adapted to engage said bar for simultaneously retracting the printing roller and lower cut-off device when said frame is moved in another direction, a trip lever forming a part of the gripping device, and independent means carried by the frame and adapted to engage the trip lever to release the box gripping device on the forward and rearward movements of the reciprocating frame.

17. In a machine of the class described, a supporting frame, a box gripping device mounted on the frame and provided with a trip lever, means for feeding boxes to the gripping device, a carrier, a printing roller yieldably supported on the carrier and provided with a laterally extending pin, means for supplying ink to the printing roller, upper and lower cut-off devices disposed in the path of the boxes, a lever connected with the upper cut-off device, a second lever pivotally mounted on the frame and bearing against the pin of the printing roller, a rod connecting the upper ends of said levers, a cushioning device carried by the rod and interposed between the levers, a reciprocating frame, a yoke carried by the frame and adapted to engage and tilt said levers for simultaneously retracting the upper cut-off device and printing roller when the frame is moved in one direction, a pivoted dog bearing against the pin of the printing roller, a bar connected with the lower cut-off device, a lever forming a connection between the bar and lower end of the pivoted dog, separate means carried by the frame and adapted to engage the bar and retract the printing roller and lower cut-off device when the frame is moved in the opposite direction, and fingers carried by the movable frame and arranged in the path of the trip lever of said gripping device.

18. In a machine of the class described, a supporting frame, a box gripping device mounted on the frame and including spaced rods having terminal clamping heads, an auxiliary rod extending within one of the rods of the gripping device, a trip lever adjustably connected with the outer end of the auxiliary rod, a spring surrounding the auxiliary rod, means for rotating the clamping rods, means for feeding boxes between said clamping heads, a printing roller, means for supplying ink to the printing roller, upper and lower cut-off devices disposed in the path of the boxes, a lever connected with the upper cut-off device, a second lever connected with the printing roller, a reciprocating frame adapted when moved in one direction to tilt said levers, and simultaneously retract the printing roller and upper cut-off device, a dog connected with the printing roller, a bar connected with the

lower cut-off device, means carried by the reciprocating frame and adapted to engage the bar for simultaneously retracting the lower cut-off device and printing roller when the frame is moved in another direction, a rod carried by the reciprocating frame, and spaced fingers carried by the rod and arranged in the path of the trip lever of the gripping device.

19. In a machine of the class described, a supporting frame, co-acting gripping members mounted on the frame and adapted to support between them a box, means for feeding boxes between the gripping members, means for rotating one of said gripping members, a rotatable printing roller, means for supplying ink to the printing roller, a movable frame, means connected with one end of the movable frame for reciprocating the latter, and mechanism actuated by the movable frame for releasing the other gripping member from engagement with the adjacent box, thereby to permit the discharge of said box.

20. In a machine of the class described, a supporting frame, a box gripping device, means for feeding boxes one at a time to the gripping device, a carrier mounted on the supporting frame, an inking roller mounted on the carrier, a feed roller co-acting with the inking roller, a frame mounted for oscillation above said carrier, a second feed roller mounted on the oscillating frame and co-acting with the first mentioned feed roller, a reservoir for supplying ink to said feed rollers, a printing roller disposed in contact with the inking roller, means for operating the gripping device to successively engage and release the boxes, and means for moving the printing roller into engagement with the boxes as they are supported in the gripping device to effect the printing of said boxes.

21. In a machine of the class described, a supporting frame, a carrier mounted on the frame and including an end plate having lugs, an inking roller mounted on the carrier, a feed roller also mounted on said carrier, an oscillating frame disposed above the carrier, a second feed roller carried by the oscillating frame and co-acting with the first mentioned feed roller, a reservoir for supplying ink to said feed rollers, a box gripping device, a printing roller, means for yieldably supporting the inking roller in engagement with the printing roller, a chute disposed above the gripping device for feeding boxes thereto, arms depending from the chute and provided with notches adapted to receive the lugs of the carrier, and means for actuating the gripping device.

22. In a machine of the class described, a supporting frame, a box gripping device, means for feeding boxes one at a time to the gripping device, a carrier slidably mounted

on the frame, a head block yieldably supported on the carrier, a printing roller mounted for rotation on the head block, means for rotating the printing roller, means for moving said printing roller into and out of contact with the boxes, and means for actuating the gripping device.

23. In a machine of the class described, co-acting gripping members, one of which is mounted for rotation and the other movable longitudinally with respect thereto, means for securing the last mentioned gripping member in different positions of longitudinal adjustment, means for feeding boxes one at a time between the gripping members, means for applying printed matter directly to the exterior walls of the boxes while the latter are supported between the gripping members, means for releasing the longitudinally movable gripping member to permit the discharge of the adjacent box, and means for retracting the printing device during the delivery of the boxes to and the discharge of said boxes from the gripping members.

24. In a machine of the class described, co-acting gripping members, one of which is movable longitudinally with respect to the other, means for feeding boxes one at a time between the gripping members, means for rotating said gripping members, means for securing the longitudinally movable member in different positions of longitudinal adjustment, means for yieldably supporting the last mentioned gripping member in engagement with a box, means for applying printed matter to the exterior wall of the box when the latter is supported between the gripping members, means for releasing the yieldably supported gripping member from engagement with said box to permit the discharge of the latter, and means for retracting the printing device during the delivery of the boxes to and the discharge of said boxes from the gripping members.

25. In a machine of the class described, co-acting gripping members, one of which is adjustable longitudinally with respect to the other, means for securing the longitudinally movable member in different positions of adjustment, means for feeding boxes one at a time between said gripping members, means for rotating one of the gripping members, means for applying printed matter on the exterior walls of the boxes while supported between the gripping members, means for releasing the longitudinally movable gripping member to permit the discharge of the printed boxes, and means for retracting the printing device during the delivery of the boxes to and the discharge of said boxes from the gripping members.

26. In a machine of the class described, co-acting gripping members, one of which is mounted for rotation and the other adjustable longitudinally with respect to the first

mentioned member, means for securing the longitudinally movable gripping member in different positions of adjustment, means for feeding boxes one at a time between said members, means for applying printed matter to the exterior walls of the boxes while the latter are supported between the gripping members, means for yieldably supporting the longitudinally adjustable gripping member in engagement with said boxes as they are successively fed between said gripping members, means for releasing the longitudinally movable gripping member after the printing of each box has been effected, and means for retracting the printing device during the delivery of the boxes to and the discharge of said boxes from the gripping members.

27. In a machine of the class described, a supporting frame, a gripping member mounted for rotation on the supporting frame, a second gripping member co-acting with the first mentioned gripping member, a rod loosely mounted in the second gripping member, a trip lever having a socket formed therein, the walls of which are perforated, a pin extending through the perforations and engaging the adjacent end of the rod, means for feeding boxes one at a time between the gripping members, means for applying printed matter to the exterior walls of the boxes while the latter are supported between said gripping members, and means for tilting the trip lever to permit the discharge of said boxes after the printing thereof has been effected.

28. In a machine of the class described, a supporting frame, co-acting gripping members mounted for rotation on the frame, means for feeding boxes one at a time between said gripping members, a carrier mounted on said frame, an inking roller mounted on the carrier, a printing roller co-acting with the inking roller, an oscillating frame arranged above the carrier and provided with a feed roller for delivering ink to the inking roller, an ink reservoir carried by the oscillating frame, means for rotating the printing roller to effect the printing of the boxes while supported between the gripping members, and means for releasing one of the gripping members to permit the discharge of the printed boxes.

29. In a machine of the class described, a supporting frame, co-acting gripping members mounted for rotation on the frame, means for feeding boxes between said gripping members, a feed roller, a printing roller, an ink reservoir mounted for oscillation above the feed roller and provided with a corresponding feed roller, means for yieldably supporting the feed roller of the ink reservoir in contact with the adjacent feed roller, an inking roller, a printing roller co-acting with the inking roller, means for rotating said printing roller to effect the print-

ing of the boxes while the latter are held between the gripping members, means for retracting the printing roller, and means for releasing one of said gripping members to permit the discharge of the printed boxes.

5 30. In a machine of the class described, co-acting gripping members, means for feeding articles between the gripping members, means for making an impression on the
10 walls of the articles while supported between the gripping members, means for rotating said gripping members, means for releasing one of the gripping members to permit the

discharge of said articles, and means for retracting the impression mechanism during the delivery of the articles to and the discharge of said articles from the gripping members. 15

In testimony whereof, we affix our signatures in presence of two witnesses.

WILLIAM O. GARBER. [L. S.]
FRANK J. CLINE.

Witnesses:

J. B. ROUNTREE,
W. B. MANUEL.