(No Model.)

3 Sheets—Sheet 1.

G. D. LANING.

CAN FEEDING APPARATUS.

No. 418,621. Patented Dec. 31, 1889.

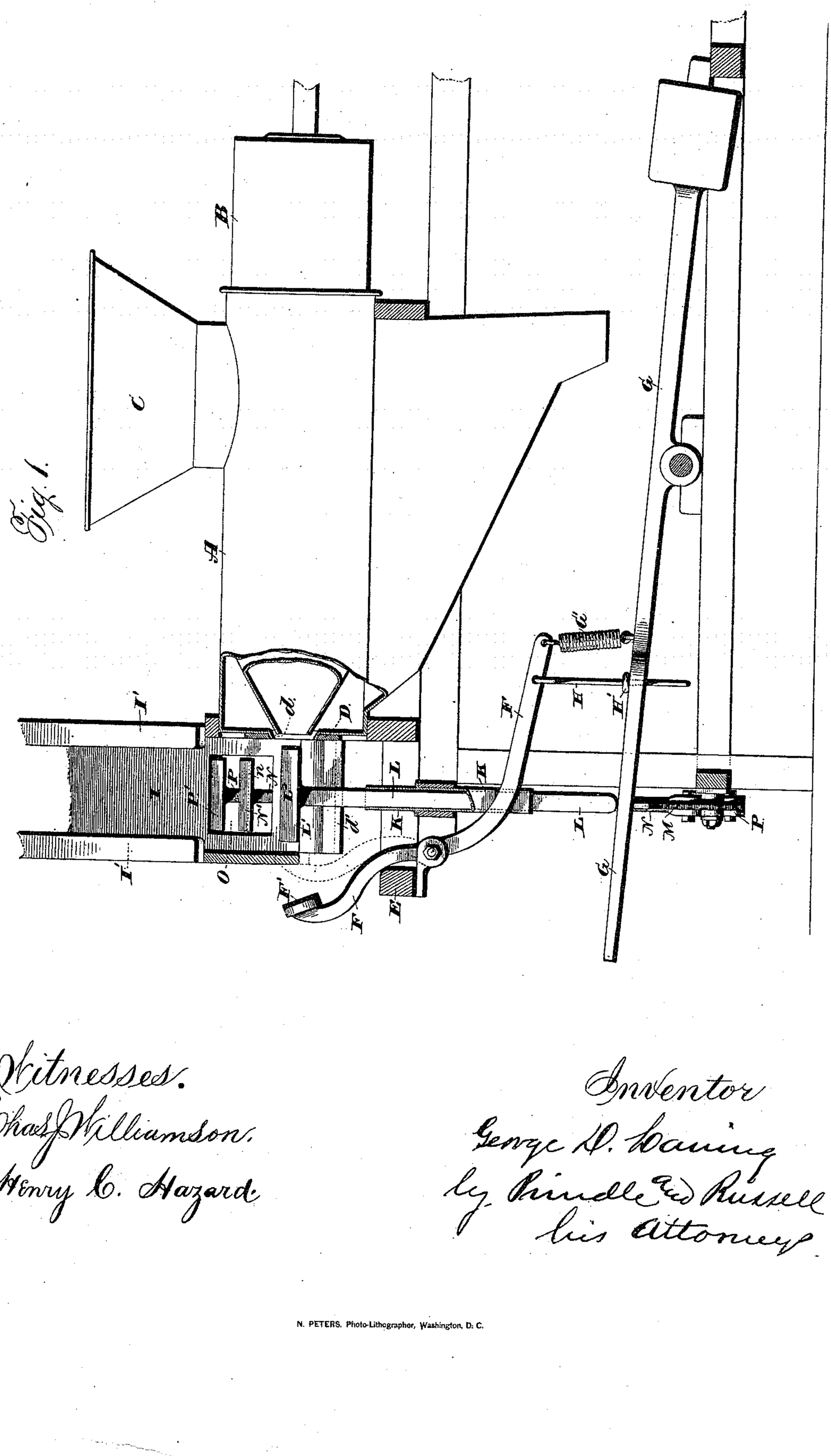


Fig. 1.

Witnesses.
Chas. J. Williamson.
Henry C. Hazard.

Inventor
George D. Laning
by Pindle & Russell
his Attorneys

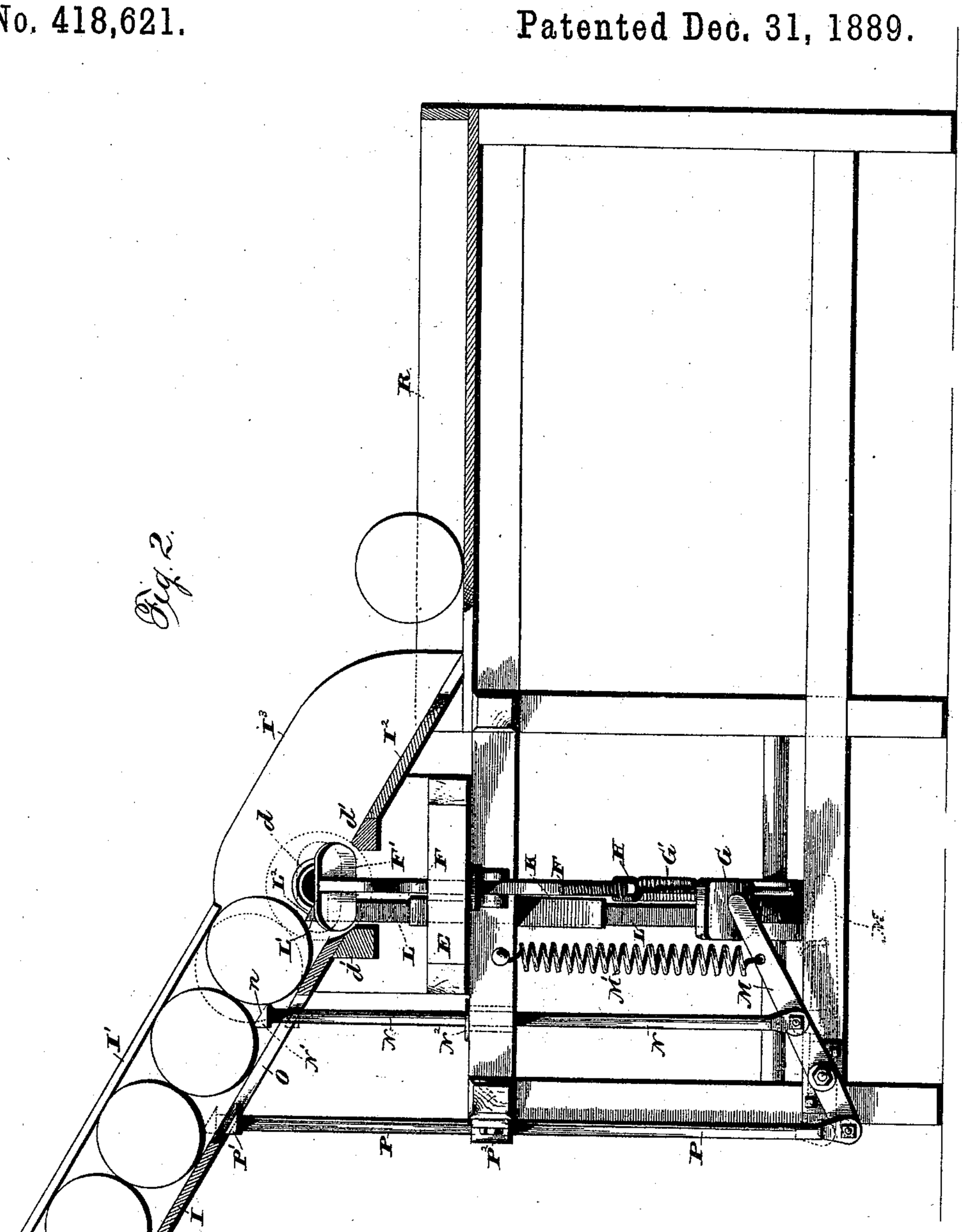
(No Model.) 3 Sheets—Sheet 2.

G. D. LANING.

CAN FEEDING APPARATUS.

No. 418,621. Patented Dec. 31, 1889.

Fig. 2.



Witnesses
Chas. J. Williamson.
Henry C. Hazard

Inventor
George D. Laning
by Pindle & Russell
his attorneys

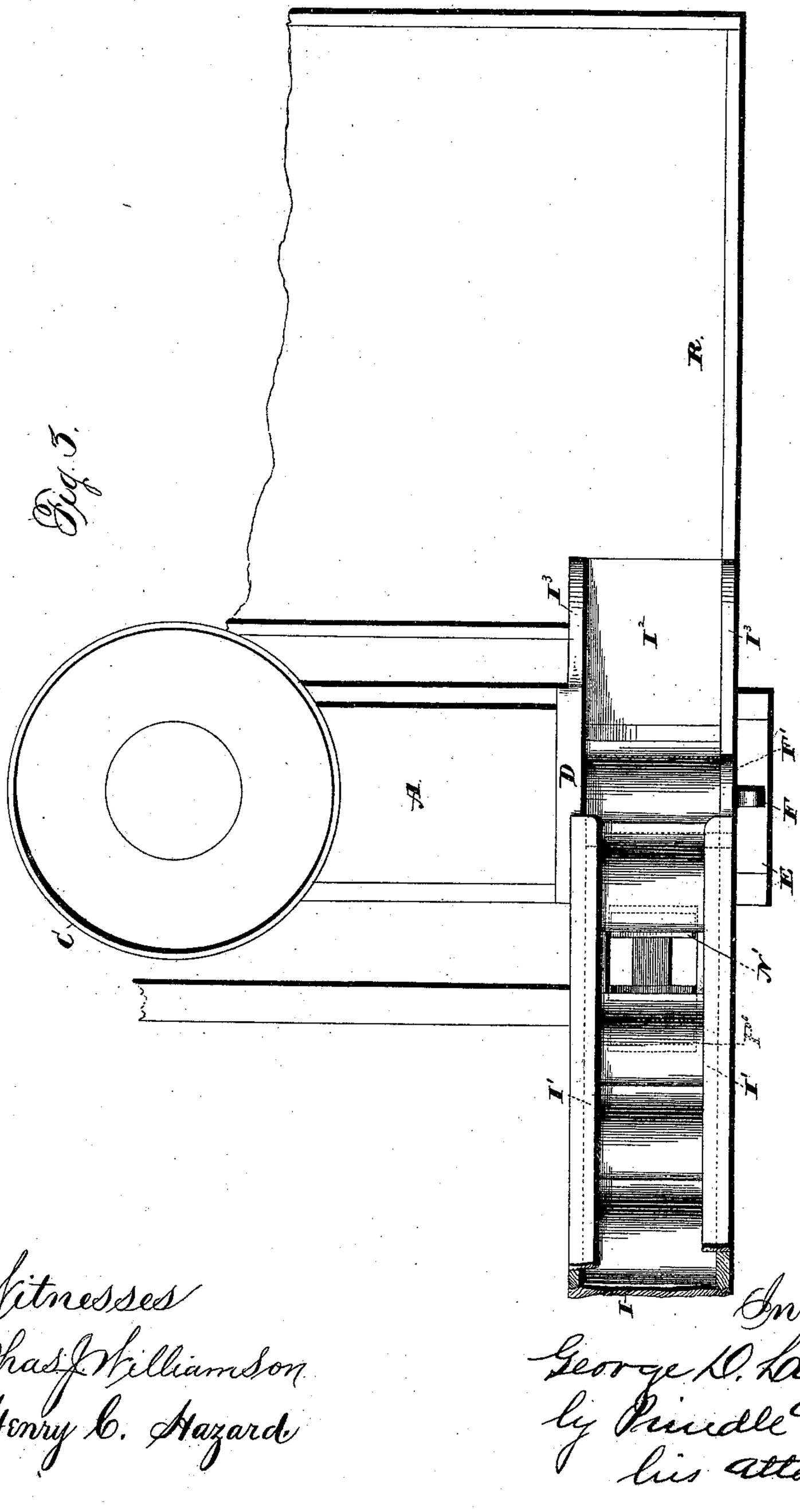
(No Model.) 3 Sheets—Sheet 3.

G. D. LANING.

CAN FEEDING APPARATUS.

No. 418,621. Patented Dec. 31, 1889.

Fig. 5.



Witnesses
Chas. J. Williamson
Henry C. Hazard

Inventor
George D. Laning
by Pindle & Russell
his attorneys

UNITED STATES PATENT OFFICE.

GEORGE D. LANING, OF BRIDGETON, NEW JERSEY.

CAN-FEEDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 418,621, dated December 31, 1889.

Application filed July 3, 1889. Serial No. 316,402. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. LANING, of Bridgeton, in the county of Cumberland, and in the State of New Jersey, have invented certain new and useful Improvements in Can-Feeding Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows, partly in side elevation and partly in section, a can-filler provided with my can-feeding mechanism; Fig. 2, a view of the feeder in front elevation, with the feed-chute and receiving-table shown in section; and Fig. 3, a plan view of the feeder with the parts in position as when a can is being filled.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide feeding mechanism for feeding cans to can-filling machines; and to this end my invention consists in the mechanism and in the construction, arrangement, and combination of the parts thereof, as hereinafter specified.

With can-filling machines as heretofore made and operated it has been customary to feed the cans to the filler by hand, an operator or attendant placing a can in position to be held by the machine during the filling operation and then removing the filled can and replacing it with an empty one. In order to do away with this feeding and removing of the cans by hand and to provide means for feeding the cans continuously from a source of supply as needed by the machine, I have invented the mechanism to be described hereinafter, which, as will appear, can be operated either by a treadle actuated by the one running the filling-machine or by a cam or other connection with such machine.

By the operation of a single piece, either by foot or by power, my feeding mechanism will be caused to feed the cans, one at a time, into place for filling. The feeding action can be continued as long as the supply of cans holds out, all that is necessary to secure such continuance of action being the repeated actuation of one piece.

In the drawings, A designates the cylinder, B the piston, and C the hopper, of the filling-machine. These, as shown, are substantially the same as those used in the well-known Stevens form of filler now in use, and need not be further described herein, as, so far as my invention is concerned, I do not limit myself to any particular kind of filling mechanism.

While my feeder is especially intended for use with a horizontally-acting filler, as shown, it can also be employed, without departure from my invention, with other filling devices. In front of the conical nozzle of the filler-cylinder A is the usual plate D, against which the open end of a can while being filled is to be clamped. Such plate has the usual opening *d* for the passage of the can-filling material issuing from the cylinder-nozzle, and can be provided with the well-known juice-draining openings or perforations around opening *d*, as in the Stevens machine. Attached to and extending out from such plate below opening *d* are the two horizontal parallel arms *d' d'*, upon which a can rests when in position for filling, and which may be made adjustable, if desired, to suit the machine for different sizes of cans.

Pivoted to a suitable frame-work E E is a vertically-swinging lever F, having its upper end provided with a plate or head, adapted to engage the bottom or closed outer end of a can resting on arms *d' d'*, so as to force and clamp the can closely in place with its open end against the plate D, around opening *d* therein. The lower end of such lever, being extended at an angle to the upper can-clamping portion, is connected with a treadle-lever G by means of a spring G', attached at opposite ends to the two levers. A rod H, connected with the clamping-lever near spring G, extends down through and plays in an opening in the treadle-lever. On such rod is a shoulder or fixed collar H', adapted to be engaged by the treadle-lever as the latter rises, so that the clamping-lever will be positively swung to take its upper end away from its clamping position.

With the construction described as the treadle-lever moves in one direction the clamping-lever is thrown out of position to clamp a can, and as it moves in the other direction it will, through the connecting-spring G, swing the clamping-lever into operative

position and hold it there, causing it to exert a strong though yielding pressure upon a can to be or being filled.

As indicated hereinbefore, it has been customary to place the empty cans upon and remove the filled ones from the holder by hand. Instead of this I provide feeding devices, operated at each motion of the lever F, to remove a can from and place another in position to be filled. For this purpose I have an inclined trough or chute I, having its mouth or lower end situated just above and to one side of the pair of bearing-arms d' d' for supporting a can while being filled. Such trough extends in a direction substantially at right angles to the axis of a can resting on said supporting-arms, and is of such inclination that any cans placed in it will tend to roll down it easily and freely. Its width is substantially the same as or but slightly greater than the length of a can, so that any cans passing down within it will be guided by the trough sides and cannot have any tendency to get into position with their axes at an angle to such sides, so that the can ends will bind or have too much friction upon the latter.

In order to keep the cans down in place in the trough as they roll down the same, I provide the upper edges of the trough sides with inwardly-extending lips I' I', which can be formed of strips fastened to such sides or flanges or ribs formed thereon, as desired.

Guided in a tubular piece K, attached to the feeding-mechanism-supporting frame below the can receiving and supporting arms, is the vertically-moving bar L, having on its upper end the cross bar or head L', extending in a direction parallel to the axis of a can rolling down the chute or resting upon arms d' d'. Such cross bar or head moves up and down past the mouth or discharge end of the chute as the bar L is raised and lowered. Its upper side is provided with the inclined face L^2, extending downward from the side toward the chute end, the angle of such incline being, as shown, substantially that of the chute-bottom, though I do not limit myself to such construction. As the cross-bar L' is raised above the plane of the chute-bottom, as shown in Fig. 2, it is adapted to act as a stop to block the path of the cans rolling down the chute by engaging the lowest one of the cans. As it descends from this position it lets the previously-engaged can roll past it onto the arms d d in position to be clamped and filled. In order to prevent the other cans from rolling down so as to knock or force the released can out of its proper position on supporting-arms d' d', it is necessary to provide some check or stop to hold them back as the bar L, with head L', is depressed. Such checking device I show in my drawings and will now describe. The lower end of bar L rests upon the lever G, and the bar and its cross-head are made heavy enough to make sure of their descent as the lever is depressed. With this construction the bar and head will rise and fall with the lever.

Swinging in a plane at right angles to the swing of lever G is another lever M, having one end held in engagement with lever G by spring M', which, in drawing its lever M upward, also aids in returning lever G to its normal position after it has been depressed. Connected with the arm of lever M, which engages the lever G, is the lower end of the rod N, carrying on its upper end a cross-bar N', shaped like that on bar L—that is, having an inclined face n extending in the direction of the inclination of the chute-bottom. A slot or opening O, cut down the center of the chute-bottom near its lower end, allows the head or cross-bar N' to be raised above and be brought below the chute-bottom as the lever-arm to which rod N is attached is raised or lowered. As such lever-arm rises and falls with the lever G, which lifts and lets fall the bar L, it follows that the two cross bars or heads L' and N' will be raised up into and brought below the path of the cans down the chute at the same time. The cross bars or heads are at such a distance from each other that when the one L' is engaging and stopping the lowest can in the chute the other N' is in position to similarly engage the second can in the series.

By my arrangement of feed-stop mechanism described and shown I am enabled to make sure that at no time will the weight of the whole series of cans in the chute be brought to bear upon the lowest can and through it upon the end stop. With the stops in position, as shown in Fig. 2, the second stop-bar N' engages the second can, and so holds it and the series of cans back of and above it, so that they do not press upon and force the lowest can against the stop-bar L'. When the stop-bars L' and N' descend and the bar P' ascends, only one can (the second one) rolls down with the first or lowest one, so that the latter can is not liable to be forced or carried too far, but rolls down gently into the place where it is to be filled.

With my feed-stop mechanism I am enabled to use a light spring-held stop for the lowest can, instead of one positively held and strong enough to stand the shock of the whole series of cans rolling down the chute against it as each can is allowed to take its position for filling.

The rod N, being pivotally connected with lever M, has no tendency to rotate, and so can be made round, as shown, and guided in a similarly-shaped tubular bearing N^2.

In order to keep the rod L from turning so as to get its head L' out of position at right angles to the travel of the cans down the chute, I prefer to make the bar angular in cross-section and have the interior of its tubular guide of corresponding shape. I do not, however, limit myself to such arrangement, as the bars N and L can be guided and

held from rotation in any other desired way without departure from my invention.

Pivotally connected with the arm of lever M opposite to that with which rod N is connected is the rod P, having on its upper end a cross bar or head P′, shaped just like that on the other rod and so situated as to engage, when the rod and head are raised, the third can in the series and block it from rolling down. As the two rods N and P are connected with the opposite arms of the same lever M, they rise and descend alternately through the opening O in the chute-bottom as the lever is swung in opposite directions on its pivot. The rod P can be like rod N, and be guided in the same way by a tubular bearing P^2 on the feeding-mechanism frame, or can be of different shape and differently guided, as desired, without departure from my invention.

With the upper sides of the cross bars or heads N′ and P′ provided with the inclined faces of the same inclination as the chute-bottom it is not necessary that they should descend below such bottom in order to take them out of the path of the cans down the chute. They can, if desired, be given just movement enough to take them down, so that their inclined faces will be flush with but not below the upper face of the chute-bottom. Extending downward from the arm *d′* opposite to that nearest the lower end of the chute I is a second inclined chute I^2, with high sides I^3, adapted to guide a filled can as it is discharged from the supporting-arms *d′ d′* down to and upon the usual inspection-table R, where the cans are inspected to see if they are properly filled before they are passed on to be capped.

The operation of my can-feeding mechanism is as follows: With a quantity of cans placed in the chute, which can be of any desired length or can-holding capacity, and with the stop-heads L′ and N′ raised and engaging the lowest and next to the lowest can, respectively, the stop-head P′ is down out of the path of the third can, and the clamping or can-holding lever F is swung back, so as to take its can-engaging head or plate F′ out of the path of the end of a can rolling down upon arms *d′ d′*. If now the lever G be swung down, the bar L will descend to remove its head L′ from the path of the lowest can, allowing such can to roll down into place upon the receiving and supporting arms *d′ d′*. At the same time by the swinging of the lever M, engaged as described by lever G, the head N′ is depressed to allow the second can to roll down into the place just vacated by the lowest one, and the other head P′ is raised to engage the third can and hold it and all the rest above it back. As the lowest can rolls into place on the arms *d′ d′*, the clamping-lever F is, by the spring-connection between it and the lever G, swung to engage the can end, so as to hold the can firmly though with yielding pressure against the plate D, with its open mouth over opening *d* in such plate. As soon as the can is filled the lever G is raised again, causing, through its engagement with the collar or shoulder H′ on rod H, the lever F to be swung back to disengage its clamping-head from the can. The rising of lever G causes the bar L and head L′ thereon to rise up under the filled can, so that the incline on such head engages the can on the side toward the chute I and away from discharge-chute I^2. As the head L′ rises it will then both lift the filled can from its bed upon arms *d′ d′* and will roll it over into the chute I^2, down which it descends to the inspection-table. The can next to the one just filled and discharged now rests against and is securely held from rolling down by the head L′. As the lever G rises to lift such head, as just above described, the movement of lever M, due to the action of its spring M′, depresses the rod P and stop-head P′ and raises rod N and head N′. The cans previously held back by head P′ then roll down until checked by the engagement of the lowest one of them with the head N′. The parts are now in position as at first, and so that at a second movement of lever G a can will be released and fed down into place for filling at once.

The feeding operation described can be kept up continuously as long as cans are supplied to the chute without any care or handling of the cans by an attendant after they have been placed in the chute.

The lever G, or any other equivalent operating device for the parts of my feed mechanism, can easily be connected in any desired way with a moving part or parts of the can-filling machine, so that after each can-filling motion of the plunger my mechanism will be automatically set in operation to discharge the filled can and feed another into place for filling.

As shown in the drawings, the operating-lever G has its end weighted, so that when it has been moved to operate the feed devices it will return to its original position again; but I do not intend to limit myself to such a construction or arrangement.

A spring can be used instead of the weight, or the lever can be moved in either or both directions by any desired positive means.

If desired, I contemplate using instead of the inclined trough down which the cans are caused to roll by the action of gravity a horizontal trough through which the cans may be present or forced in any suitable way, whether by a spring, weight, or other device.

Having thus described my invention, what I claim is—

1. In a can-feeding mechanism for use with can-filling machines, in combination with the trough along which the cans are passed on their way to the filler, a pair of simultaneously-acting stops adapted, respectively, to engage the end can and the one next to it, a stop adapted to engage the third can in the

trough, and means for causing the simultaneously-acting pair of stops and the third stop to operate alternately, substantially as and for the purpose described.

2. In combination with the trough along which the cans are passed, a stop at the end of such trough, a lever to raise and let fall such stop, the two alternately-acting stops at different distances from the trough end, a lever engaged by the first lever, suitable connections between the alternately-acting stops and the opposite arms of the second lever, and the spring actuating the latter, substantially as and for the purpose shown.

3. In combination with the trough, the stop at the end thereof, consisting of a head on a rising and falling bar, a lever upon which such bar rests, a second lever, a spring holding such lever up against the first lever, and the two alternately-acting stops at different points in the trough, consisting of heads on rods connected with opposite ends of the second lever, substantially as and for the purpose set forth.

4. In combination with the can-receiving support of a can-filling machine, the inclined can-containing trough, a movable can-stop at the end of the latter, adapted to engage the lowest can in the trough and to eject a can from the can-support of the filling-machine, substantially as and for the purpose specified.

5. In combination with the can-receiving support or holder of a can-filling machine, an inclined can-containing trough leading down to such support and a movable can-stop at the end of the trough having the inclined face to engage a can resting on the can-support of the filler as the stop is moved into position to engage and stop the end or lowest can in the trough, substantially as and for the purpose shown.

6. In combination with the can-receiving support of a can-filling machine, the inclined can-containing trough leading down to such support, the two simultaneously-acting lower movable stops adapted, respectively, to engage and stop a can at the lower end of the trough and a can next to such lowest can, a third can-engaging stop situated at a point in the trough above such lower stops, and means for moving the lower stops together and carrying them and the upper stop alternately into and out of operative position, substantially as and for the purpose described.

7. In combination with the can-receiving support and the can clamping or holding lever of a can-filling machine, a lever connected with the clamping-lever so as to actuate the same, an inclined can-containing trough leading down to the can-receiving support of the filler, feed-stop mechanism to allow the passage of the cans one at a time from the trough, and connections between such stop mechanism and the lever for actuating the can-clamping lever, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of June, A. D. 1889.

GEORGE D. LANING.

Witnesses:
HENRY J. CROUSE,
GEORGE W. HALL.