(No Model.) 3 Sheets—Sheet 1.

# J. LITTLE.

## AUTOMATIC CAN FILLING MACHINE.

No. 420,910. Patented Feb. 4, 1890.

Fig. 1.

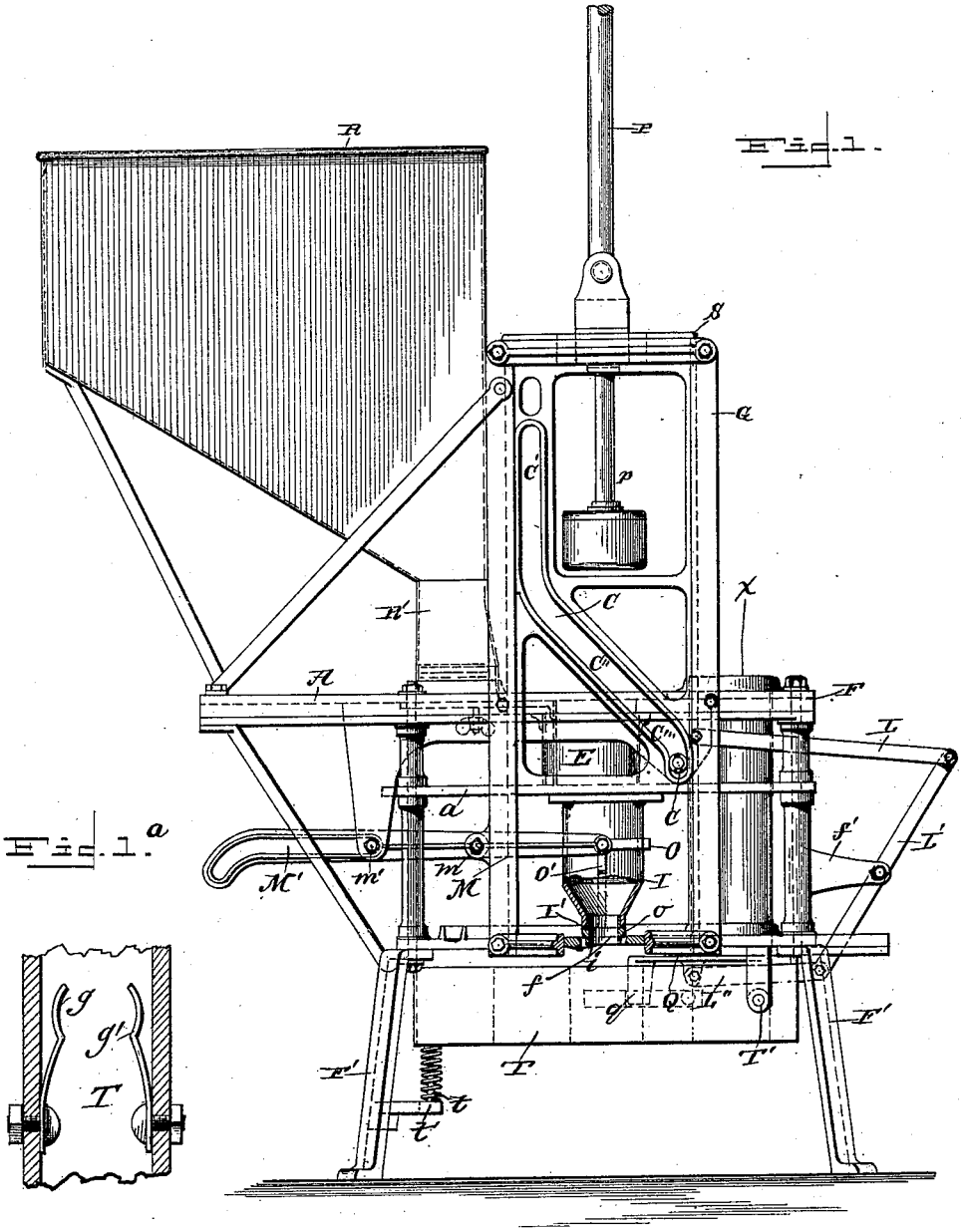


Fig. 1a.




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(No Model.) 3 Sheets—Sheet 2.

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## AUTOMATIC CAN FILLING MACHINE.

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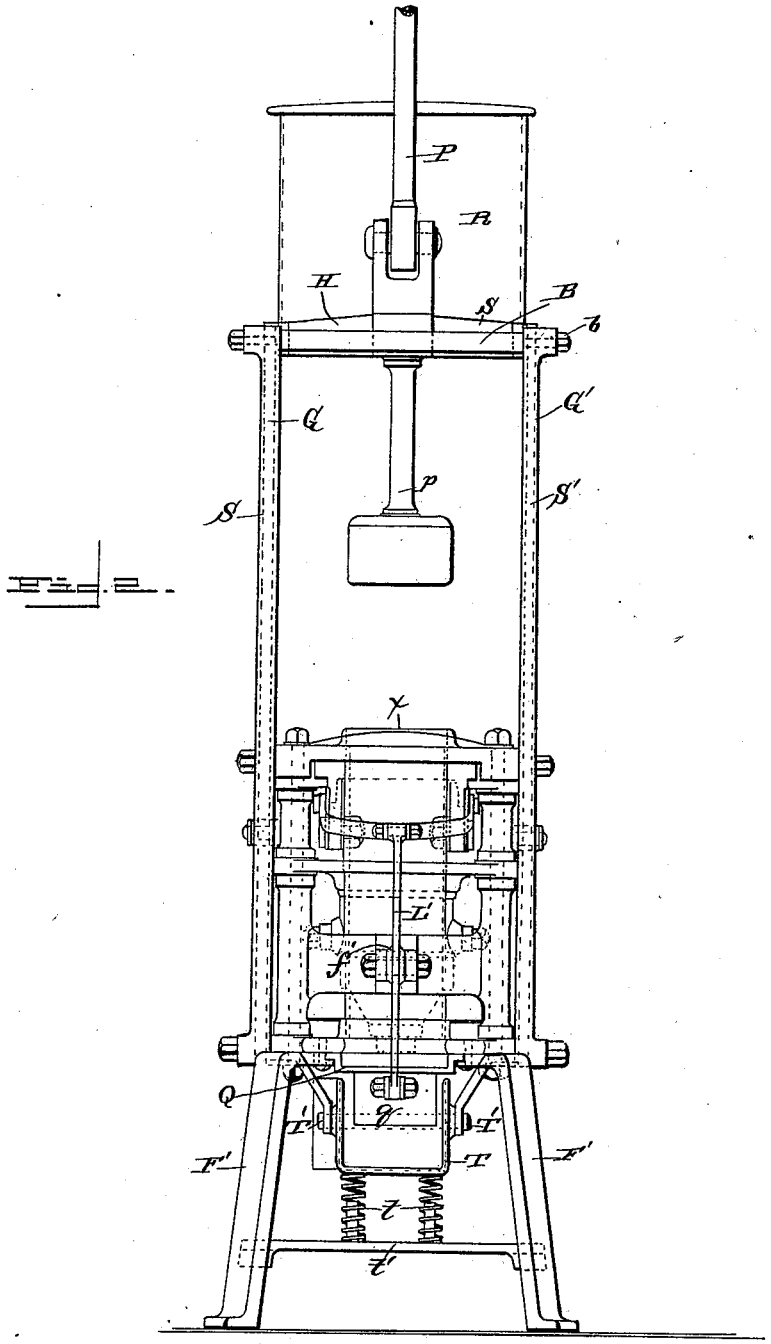


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(No Model.) 3 Sheets—Sheet 3.

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## AUTOMATIC CAN FILLING MACHINE.

No. 420,910 Patented Feb. 4, 1890.

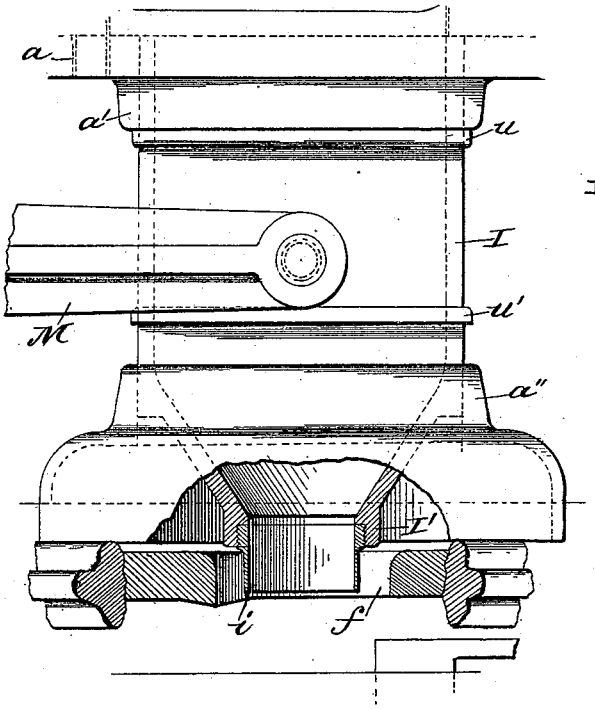


Fig. 3.

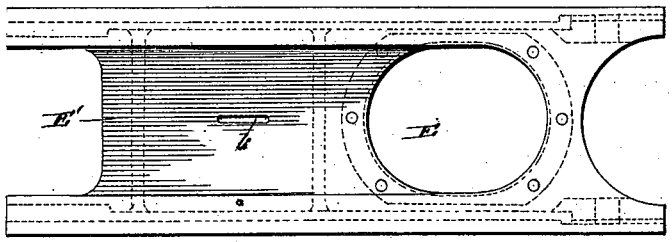


Fig. 4.

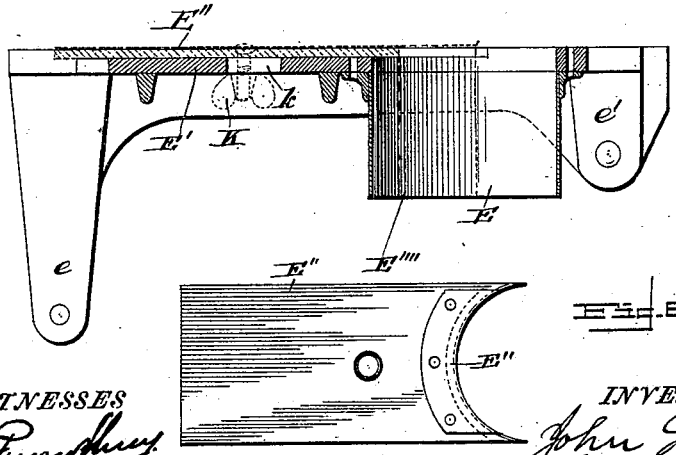


Fig. 5.

Fig. 6.

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# UNITED STATES PATENT OFFICE.

JOHN LITTLE, OF XENIA, OHIO, ASSIGNOR TO THE XENIA CANNING COMPANY, OF SAME PLACE.

## AUTOMATIC CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,910, dated February 4, 1890.

Application filed September 28, 1889. Serial No. 325,357. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LITTLE, a citizen of the United States, residing at Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Automatic Can-Filling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in an improved machine for filling cans automatically.

In the drawings, Figure 1 is a side view of my improved machine. Fig. 1ª is a sectional detail view of a portion of the can-holding trough and the can-holding springs therein. Fig. 2 is an end elevation of the same. Fig. 3 is a detail showing a modified form of the telescoping funnel. Fig. 4 is a plan view of the reciprocating conveyer. Fig. 5 is a vertical section of the same, the adjustable plate and its set-screw being shown in dotted lines; and Fig. 6 is a plan view of the adjustable plate.

In fruit-canning and certain similar industries it becomes desirable to fill a large number of small cans each with a certain specified amount of pulp, fruit, or semi-liquid substance—such, for instance, as tomatoes. To accomplish this with rapidity, either by hand or by power, I have designed the hereinafter-to-be-described machine.

Referring to the drawings, F is the framework of the machine, resting on the legs or other suitable supports F′.

R is a reservoir of considerable capacity, into which a quantity of the substance with which the cans are to be filled may be introduced.

X is a vertical conduit or chute, into which the empty cans are fed, and through which a line of cans standing one upon the other descends into the horizontal spring-supported trough T. A plate or slide Q closes the bottom of the chute X, except when it is withdrawn to permit a can to fall into the trough T. On the forward end of this plate Q is a downwardly-projecting lip *q*, which, as the plate Q is thrust back and forth through the agency of the mechanism hereinafter to be described, acts as a horizontally-reciprocating pusher to feed the empty can forward under the mouth of the funnel I. The funnel I is attached to the horizontal plate *a* beneath a corresponding opening in said partition. This funnel has its lower portion I′ reduced to a smaller diameter, in which a nozzle *i* is fitted. This nozzle is of slightly less diameter than the opening in the can, which is placed exactly beneath the funnel by the apparatus previously described.

The substance in the reservoir R is fed down by its own weight through the chute R′, which should be of about the same diameter as the conveyer, or in an equivalent manner, to an opening in the upper horizontal table A. The conveyer E, which is prismatic in form, open at top and bottom, and preferably of an elliptical cross-section, reciprocates back and forth horizontally, being guided between the table A and plate *a*. When the conveyer E is at the extremity of its motion to the left, (looking at the machine upon the side shown in Fig. 1,) it is immediately beneath the opening in the table A communicating with the reservoir R, and is consequently filled with a certain specified amount of the substance in said reservoir. When the conveyer E has reached the extremity of its motion to the right it is immediately over the funnel I, and there being an opening in the plate *a* at that point the load carried by the conveyer is discharged into said funnel.

In order to prevent the unrestricted flow of the mixture or substance from the reservoir when the conveyer E is withdrawn from under the opening communicating with the reservoir, I employ a slide to close said opening, said slide being caused to move simultaneously with the conveyer E to close the opening in the table A the moment the conveyer E is withdrawn from under the same. This slide might be operated in any one of a number of ways; but the preferred construction, as shown in the drawings, consists in extending the upper portion of the conveyer E in a long lip or extension E′, which will of course move with the conveyer and keep the discharge-opening from the reservoir

closed at all times when the conveyer is not beneath it. In order to make the conveyer adjustable, so that different amounts of the substance may be fed at each operation of the machine to correspond to any slight changes in the capacities of the cans employed, or variation in the substance, I have designed the construction illustrated in detail in Figs. 4, 5, and 6 and shown assembled in Fig. 1. The adjustable plate E″ fits over the extension or lip E′, and can be adjusted thereon by means of the set-screw K, passing through the slot *k* in said lip E′. Upon the inner end of this adjustable plate and projecting downwardly from the same is a semi-cylindrical shield E″″, which by being advanced by the adjustment of the plate E″ reduces the capacity of the conveyer E and consequently the amount of the substance or mixture which will be carried over and discharged into the funnel I at each operation of the machine. The curved knife E‴ mounted on or formed on the inner end of the adjustable plate E″ serves to cut in two any lump of pulp or other matter which may be half in and half out of the conveyer at the moment of its reciprocation toward the right.

In order to insure the delivery of that portion of the mixture deposited in the funnel I to the can beneath the same without spilling or spattering, I make the said funnel I so that it will telescope or be capable of shortening and elongation at the proper times. This may be accomplished by permitting the entire lower portion of the funnel to slide up and down within the guide-rings *a′ a″*, as shown in Fig. 3, the motion of said funnel being limited by the shoulders *u w′*, as shown. A preferable way, however, is that shown in Fig. 1, where the main portion of the funnel I is permanently fastened to the plate *a* and only the nozzle *i* is permitted to slide up and down in the funnel, and thereby project itself through the opening *f* in the frame-work F into the open mouth of the can beneath it. In this latter construction the nozzle *i* is supported by the ring O which surrounds and slides upon the funnel I, and has projections O′, which extend down to the ring *o* upon the nozzle *i*. This ring *o* serves the combined purposes of furnishing a point of attachment and limiting the upward motion of the nozzle *i* by coming in contact with the lower end I′ of the funnel I and of overlapping the edges of the opening in the can when the nozzle is projected down into said can, thereby preventing the spattering upward of the mixture as it is driven into the can. It also permits of the escape, through the passage annular in shape between its sides and the mouth of the can of the air driven down by the plunger *p*.

The telescoping portion of the funnel I is, as shown both in Figs. 1 and 3, supported on a cam-lever M, which is pivoted to the lugs *m* on the frame of the machine. This cam-lever has a curved cam-groove M′, with which a projection *m′* upon the lugs *e* of the conveyer plate or lip E′ engage. Upon the other end of the conveyer plate or lip E′ are the lugs *e′*, to which is pivoted the link L, which, by means of the lever L′, pivoted to the frame of the machine at *f′*, and the link L″, conveys motion to the plate Q and the pusher *q*.

In the vertical guides G G′, which are connected by the bolts B and nuts *b*, move suitable cam-slides S′ S′, which are connected by the cross-head H, upon which a vertically-acting plunger *p* is mounted, and to which motion is conveyed by a suitable pitman P. In the cam-slides S S′ are the camways C, which have the vertical portions C′, the oblique portion C″, and the lower vertical portion C‴. With these camways there engage projections *c* upon the conveyer plate or lip E′.

The horizontal trough T is pivoted at one end at T′, and at the other end is supported by the springs *t* resting on the legs *t′*, attached to the legs of the frame.

The operation of my machine is as follows: The reservoir R being filled with any suitable mixture or substance and the chute X filled with empty cans, motion is given to the cam-slides S S′, either by hand or by power, through the pitman P. When the said cam-slides are forced down, the passage of the projection *c* along the oblique portion C″ of the camways will force the conveyer E to the left and move the plate Q and pusher *q* to the right. The result of this is to permit the conveyer to be filled with a specified portion of the mixture or substance in the reservoir R, and to allow a can to drop from the chute X into the trough T in front of the horizontally-acting pusher *q*. The upward motion of the cam-slides simultaneously thrusts the empty can along the trough T until it stops directly beneath the funnel I and carries the conveyer E to the right until it is over the said funnel I. During this operation the extension or lip E′ of the conveyer closes the discharge-orifice from the reservoir, and the arrival of the conveyer over the opening in the plate *a* permits its contents to drop into the funnel I. Upon the next descent of the cam-slides, the cam-lever M, being operated by the movement of the engaging-pin *m′* to the left, elongates the telescoping funnel I and forces the nozzle *i* down into the opening of the can which has been left beneath it. The further downward travel of the cam-slide while the roller *c* is running in the vertical portion C′ of the cam-groove causes the vertically-acting plunger *p* to enter the funnel I, and, acting like a piston, to drive the portion of substance there remaining down into the can. At the same time the withdrawal of the plate Q to the right has permitted another can to drop from the chute X in front of the pusher *q*. Upon the upward motion of the cam-slides S S′ the telescoping funnel I is withdrawn from the filled can, which is shoved aside by the forward motion of the empty can in front of the pusher *q*, and a

second charge of the substance is dropped into the funnel I from the conveyer E at the moment the empty can is placed beneath it. In this manner the cans are rapidly filled, each with the specified amount of the mixture or substance, which can be easily regulated by adjusting the capacity of the conveyer E in the manner described. I have found that where the opening in the can is, say, two inches in diameter I can safely make the nozzle *i* of about an inch and three-quarters diameter and still rely upon the said nozzle entering the mouth of the can; but if for any reason the can should not be correctly placed, so that the nozzle of the telescoping funnel would not enter it, but strike the sides, the yielding of the springs *t* would permit the trough T to sag slightly, and neither the machine nor the can would be broken, but the can would be more or less imperfectly filled and then shoved aside for the next can, which would probably be correctly centered, and the operation of the machine would thus continue uninterrupted. The loaded cans are pushed by the machine through the trough upon a suitable receptacle, whence they are sealed or subjected to the next step in the process of canning, whatever that may be.

Another advantageous point in the working of my machine is that, as the plunger *p* fits nearly air-tight in the funnel I, it acts as a piston and compresses the air found there at the moment of its entry. This layer of compressed air acts as a cushion to drive the material downward and the plunger does not touch the same. This driving action of the cushion is gradual and elastic, and no one of the particles of the substance of the material driven down is struck or broken.

Springs *g g'*, (see Fig. 1ª,) which are attached to the sides of the trough T and have curved ends, grip each can as it is fed along and hold it centered under the funnel I.

Throughout this specification I have used the term "prismatic" as applied to the adjustable conveyer E to designate the general character of the shape thereof. The term is used in the sense of the broadest geometric definition of a prism, which is a body generated by the movement of any closed plane figure along a straight line and always parallel to itself.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a can-filling machine, the combination of the reservoir for holding the mixture, the funnel for introducing the mixture into the can, the reciprocating cam-slide, the reciprocating conveyer operated thereby, and means for regulating the capacity of the conveyer, whereby at each operation of the machine the conveyer conveys a predetermined portion of the mixture from the reservoir to the funnel, substantially as described.

2. In a can-filling machine, the combination of the reciprocating conveyer, the lip or projecting slide attached thereto, and the adjustable plate which has a semi-cylindrical shield projecting downwardly into the conveyer, whereby the capacity of the same may be varied, substantially as described.

3. In a can-filling machine, the combination of the reciprocating conveyer, the lip or projecting slide attached thereto, and the adjustable plate which has a semi-cylindrical shield projecting downwardly into the conveyer, whereby the capacity of the same may be varied, together with the curved knife-edge mounted or formed upon the inner end of said adjustable plate, substantially as described.

4. In a can-filling machine, the combination of the vertical chute in which the cans are placed, the horizontal spring-supported trough in which they are dropped, the telescoping funnel, and the horizontally-reciprocating pusher which feeds a can forward in the trough at every operation of the machine, substantially as described.

5. In a can-filling machine, the combination of the funnel, the trough below the funnel containing cans, the reciprocating conveyer which discharges a specified amount of the mixture into said funnel, and the horizontally-acting pusher which moves the cans forward in the trough, together with connecting mechanism by which the movements of the pusher and conveyer are rendered simultaneous, so that the conveyer does not discharge its load into the funnel until an empty can has been placed under the same, substantially as described.

6. In a can-filling machine, the combination of the funnel, the trough below the funnel, containing cans, the reciprocating conveyer which discharges a specified amount of the mixture into said funnel, and the horizontally-acting pusher which moves the cans forward in the trough, together with connecting mechanisms by which the movements of the pusher and conveyer are rendered simultaneous, so that the conveyer does not discharge its load into the funnel until an empty can has been placed under the same, the vertically-acting plunger which descends into the funnel, and the cam-slide which moves with the vertically-acting plunger and withdraws the conveyer before the descent of said plunger, substantially as described.

7. In a can-filling machine, the combinatioa of the telescoping funnel, the cam-lever which operates the same, the vertically-acting plunger which descends into said funnel, and connecting mechanism transmitting motion from the plunger to the cam-lever, whereby an elongation of the telescoping funnel is produced prior to and during the insertion of the plunger into the funnel, substantially as described.

8. In a can-filling machine, the combination of the telescoping funnel, the cam-lever which operates the same, the vertically-acting plunger which descends into said funnel,

and connecting mechanism transmitting motion from the plunger to the cam-lever, whereby an elongation of the telescoping funnel is produced prior to and during the insertion of the plunger into the funnel, together with the horizontal spring-supported trough beneath the funnel, and the automatically-operated pusher which feeds an empty can along said trough and under the funnel prior to its elongation, substantially as described.

9. In a can-filling machine, the combination of the reciprocating conveyer which has a projection attached thereto and reciprocating therewith, the telescoping funnel which has a movable extension-nozzle, and the cam-lever by which said nozzle is supported and projected downward at each operation of the machine, the other end of said cam-lever engaging with the before-mentioned projection, substantially as described.

10. In a can-filling machine, the combination of the reciprocating conveyer which has a projection attached thereto and reciprocating therewith, the telescoping funnel which has a movable extension-nozzle, the ring surrounding said nozzle, and the cam-lever by which said nozzle is supported and projected downward at each operation of the machine, the other end of said cam-lever engaging with the before-mentioned projection, substantially as described.

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

JOHN LITTLE.

Witnesses:
CHAS. L. SPENCER,
A. F. HAGAN.