(No Model.) 3 Sheets—Sheet 1.

G. L. MERRELL.

CAN FILLING MACHINE.

No. 472,583. Patented Apr. 12, 1892.

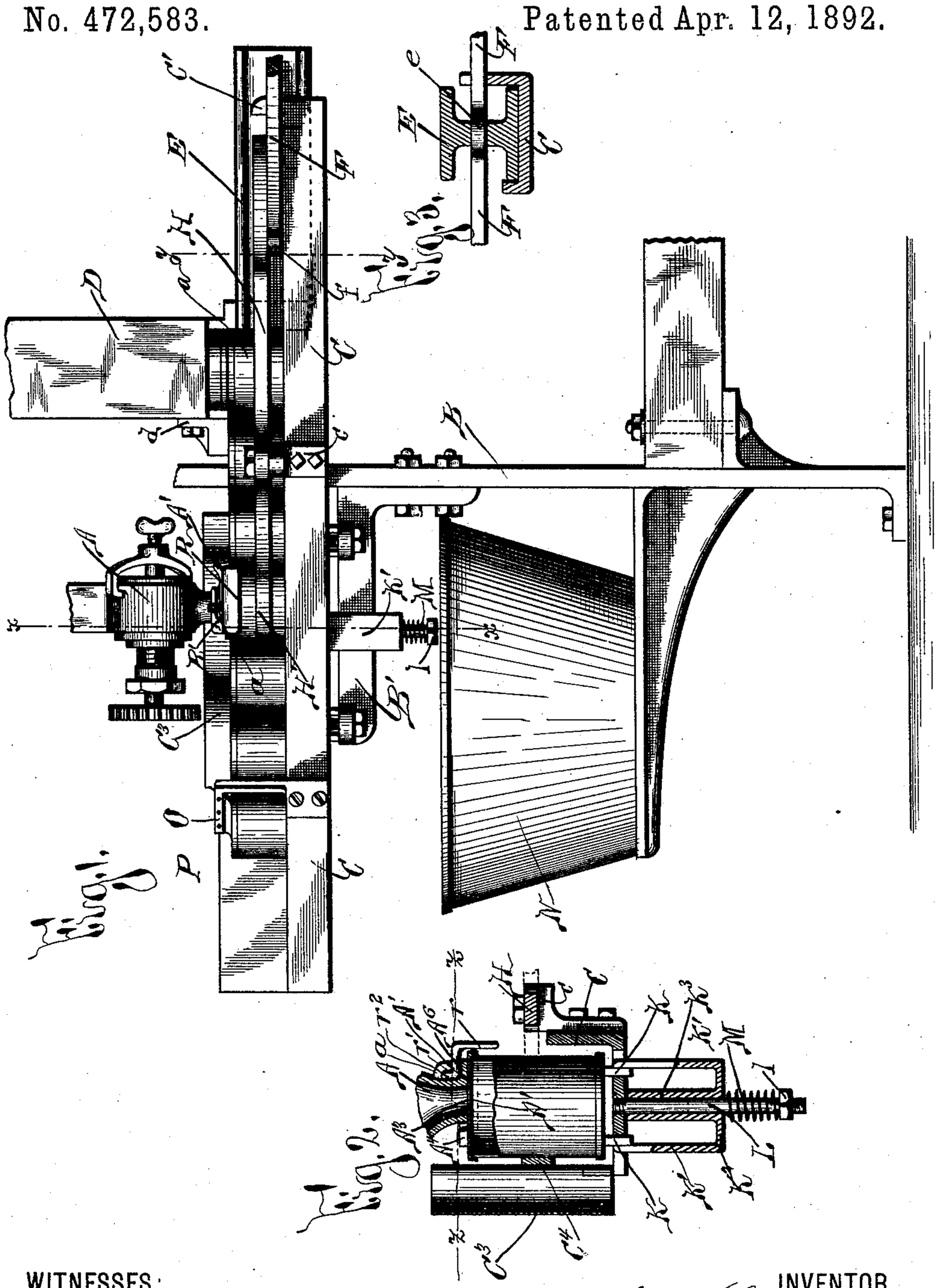

Fig. 1.

Fig. 2.

WITNESSES:

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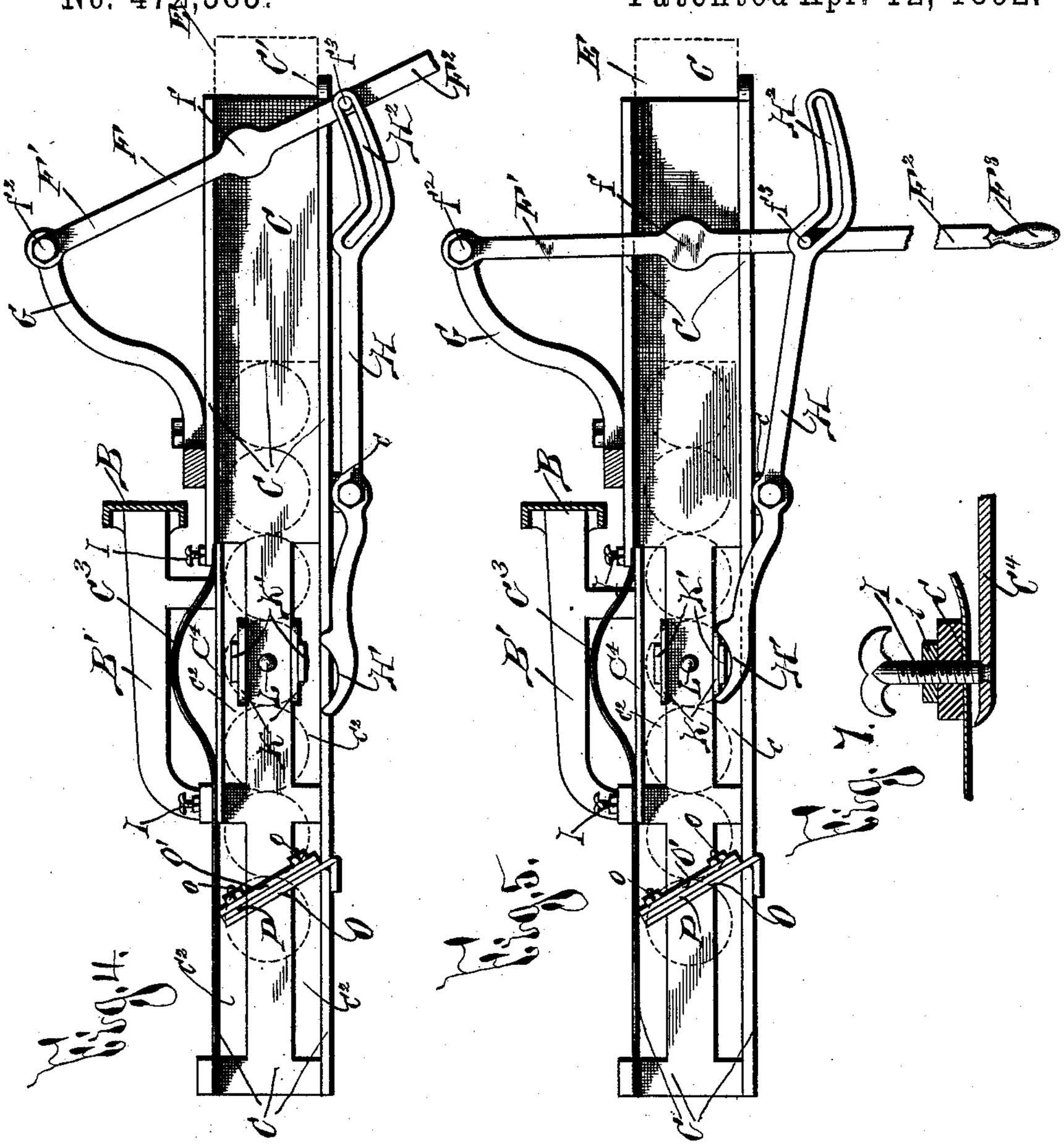
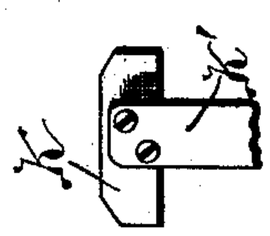
(No Model.) 3 Sheets—Sheet 2.

G. L. MERRELL.

CAN FILLING MACHINE.

No. 472,583. Patented Apr. 12, 1892.





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(No Model.) 3 Sheets—Sheet 3.

G. L. MERRELL.

CAN FILLING MACHINE.

No. 472,583. Patented Apr. 12, 1892.

Fig. 9.

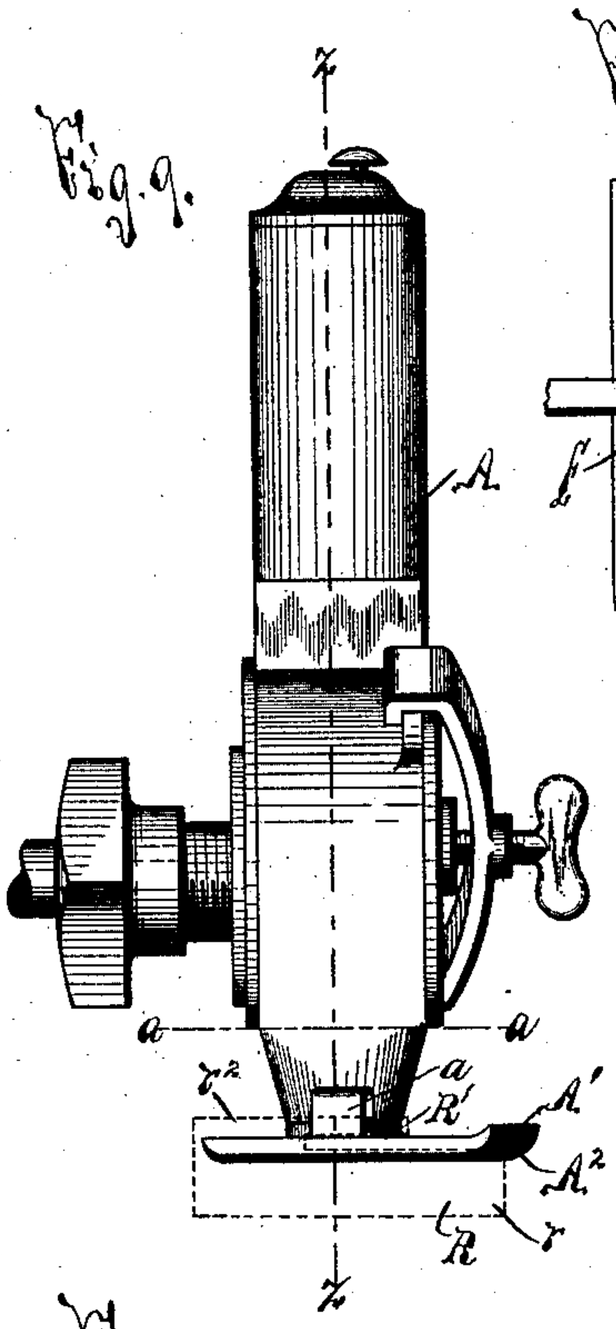


Fig. 8.

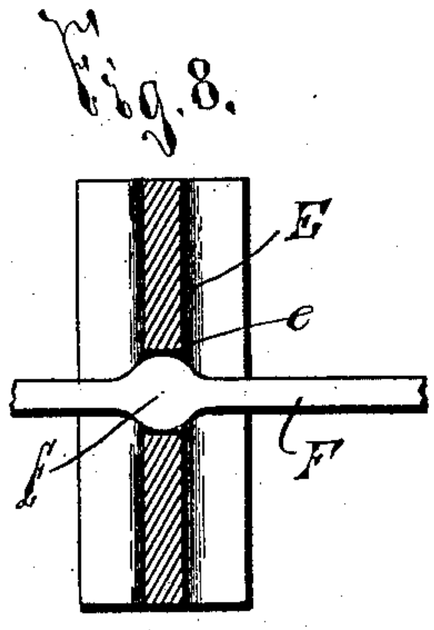


Fig. 10.

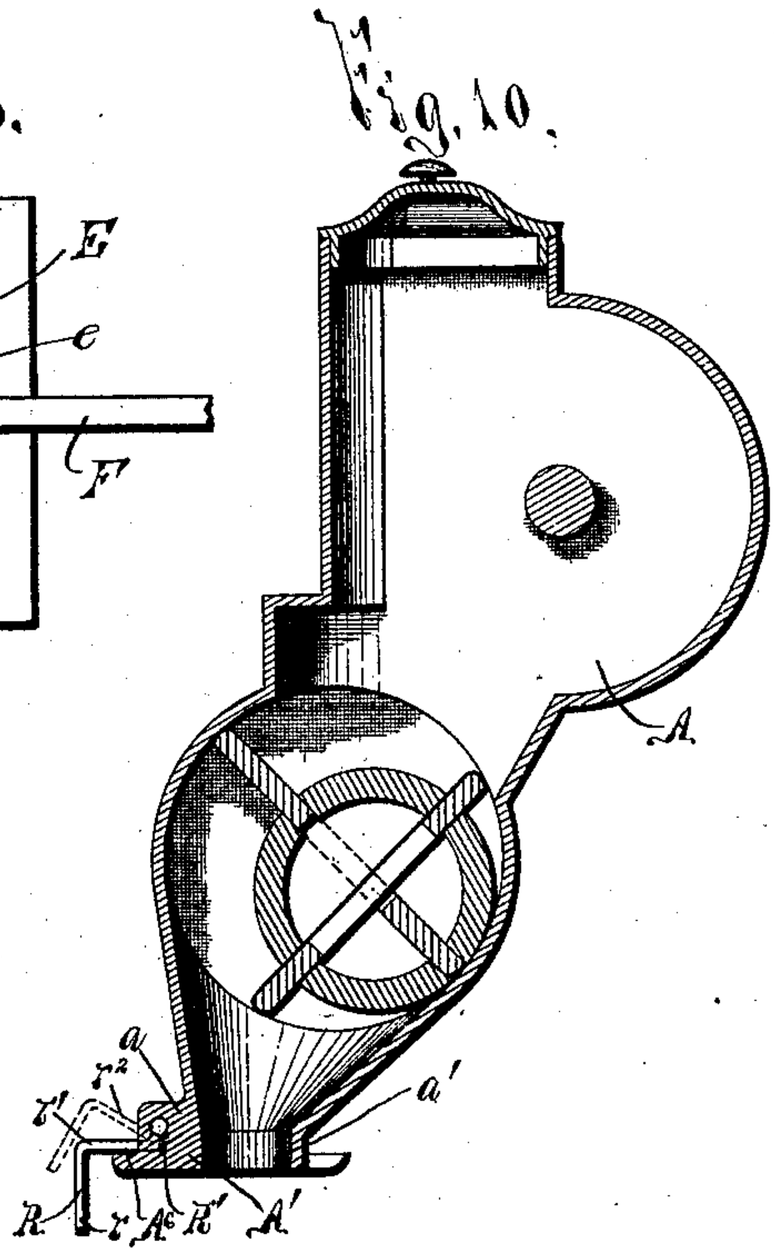


Fig. 11.

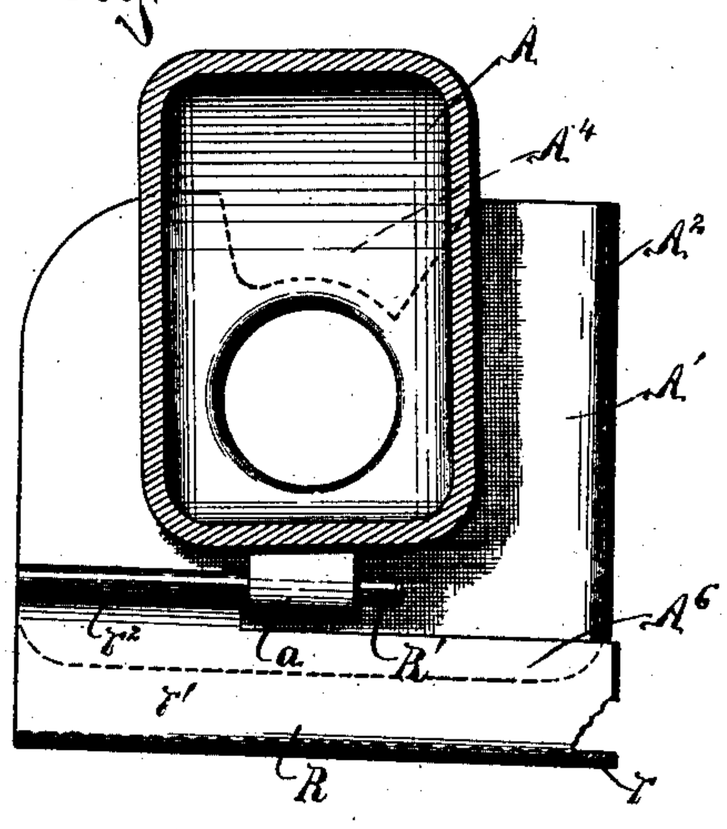
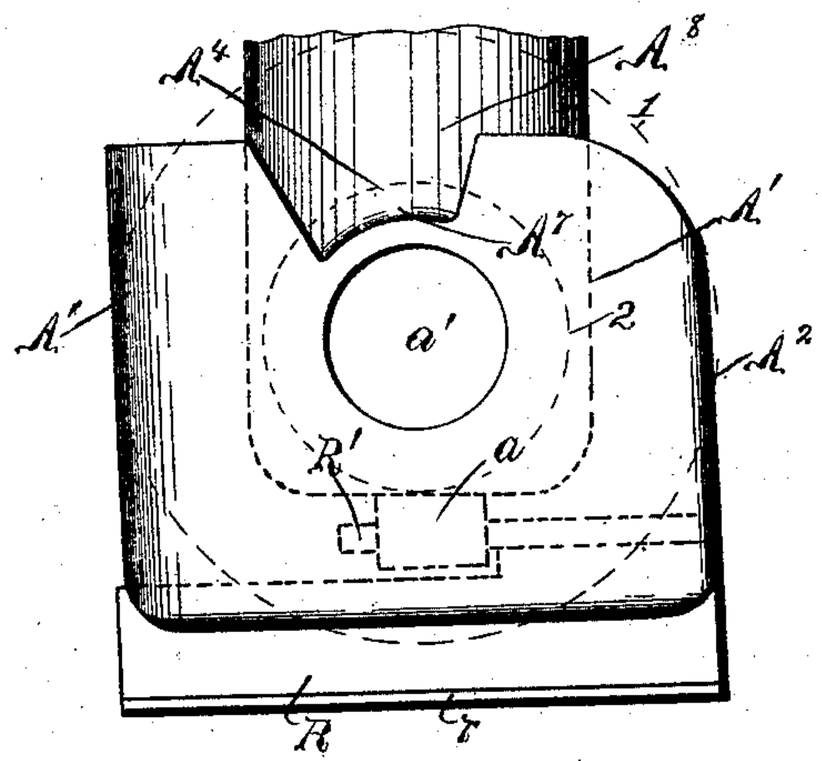


Fig. 12.



Witnesses
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W. E. Chase

Inventor
Grin Lewis Merrell
By his Attorney
George W. Kelly.

UNITED STATES PATENT OFFICE.

GAIUS LEWIS MERRELL, OF SYRACUSE, NEW YORK.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,583, dated April 12, 1892.

Application filed February 27, 1889. Serial No. 301,309. (No model.)

To all whom it may concern:

Be it known that I, GAIUS LEWIS MERRELL, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Can-Filling Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved can-filling machine, and has for its object the production of a simple and effective means for feeding the cans from a suitable conveyer to a filling device and for holding the can so that a minimum amount of material is allowed to escape during the operation of filling the can; and to this end my invention consists, essentially, in a feeding passage or conveyer mounted above guides for the cans, a filler for filling the cans, a plunger in the discharge of the feeding-passage for feeding the cans to the filler, and means for securely holding the can to be filled after the plunger has forced the same beneath the discharge of the filler, and a yielding support beneath the filler for bringing the cans into contact with the filler in order to prevent the escape of the canning material.

It furthermore consists in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In specifying my invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is an elevation of my improved device with the can-conveyer and the detached discharge end of the can-filler in operative position, illustrating the relative construction and arrangement of the parts of my feeding device. Fig. 2 is an enlarged vertical section taken on line *x x*, Fig. 1, illustrating the means for bringing the can into close contact with the can-filler. Fig. 3 is a vertical section taken on line *y y*, Fig. 1, illustrating the manner of connecting the plunger and lever for operating the same. Fig. 4 is an enlarged plan view of the detached can-guide, illustrating the detail construction and arrangement of the same, the yielding support for the can to be filled, and the means for securely holding the can during the operation of the filler, said holding device being shown in its open position. Fig. 5 is a like top plan view of the parts shown in Fig. 4, illustrating the holding device in its closed position for securely clamping the can in the can-guide when in position beneath the filler. Fig. 6 is a detached elevation of one of the rails of the yielding support beneath the can and the detached upper end of the strap connected to operate said rail. Fig. 7 is a detached detail illustrating the method of adjusting the can-guide to cans of different diameter. Fig. 8 is a detail view illustrating a horizontal section of the detached can-feeding plunger and a detached portion of the plunger-actuating lever. Fig. 9 is an elevation of a portion of the can-filler, illustrating particularly the contact-plate at the exit of said filler, against which plate the cans are forced by the yielding support therefor. Fig. 10 is a vertical sectional view taken on line *z z*, Fig. 9, showing said filler, contact-plate, and a splash-plate hinged to the filler. Fig. 11 is a horizontal sectional view taken on line *a a*, Fig. 9, further illustrating said contact-plate and splash-plate; and Fig. 12 is an inverted plan view of the parts illustrated in Fig. 10 for further illustrating their construction and operation.

My improved can-feeding device is in the present instance shown as connected or provided upon a can-filling machine, and to illustrate the operation of the same I have shown the filler A and a portion of one of the supporting-standards B of the can-filler, the remaining parts of which machine in a description of my present invention it is unnecessary to further illustrate and describe.

C represents the can-guide, preferably mounted upon a standard B′, secured or provided upon the supporting-bracket B. Above the guideway C and discharging thereinto is the feed passage or conveyer D, mounted on a suitable bracket *d*, also preferably supported by the standard B.

Operated in the can-guideway C and beneath the discharge end of the feed passage or conveyer D is the plunger E, of any desirable form and construction and movable toward and away from said conveyer by means of the lever F, connected thereto, and preferably by a rounded hub or projection *f*, mounted in a slot *e* in said plunger, as shown

in Fig. 3. One extremity F′ of the lever F is pivoted at f^2 to a bracket G, supported, as desired, upon either the can-guide C or the supporting-standard B, and the opposite extremity F^2 is provided with a handle F^3 to allow of its easy operation and the consequent moving of the plunger toward and from the conveyer D.

The conveyer D, which may be of any suitable length, is supplied with cans to be filled with the canned material, and the cans are fed downward by force of gravity with the base of the lowest can resting upon the top face of the plunger E. The plunger is then withdrawn from beneath the conveyer by the lever F until said lever strikes the stop C′, whereupon said can drops down into the position of the can, (lettered *a*.) The lever is then operated forward, feeding a new can to the filler A, which is mounted above the can-guideway C at a short distance from the conveyer D. Upon this movement of the plunger a fresh can drops down upon the top face thereof, and when the lever F is again operated said can is fed along as the one just described, making the operation of the machine continuous upon working the lever F.

Pivoted to a bracket *c*, secured to the can-guide, is the lever H, having its forward end H′ preferably coinciding with the contour of the can, and by means of said lever the can to be filled is closely pressed against the opposite wall of the guideway C. The opposite extremity of the lever H is provided with the slot H^2, in which works a pin f^3, provided upon the lever F. The rearward and greater portion of the slot H^2 is preferably concentric with the pivot f^2 of the lever F, and the forward and less portion of said slot is deflected inward toward the plane of said pivot f^2 for the purpose of causing the forward end of the lever H to rock inward at the end of the movement of the lever F, and thus firmly impinge the can to be filled

If by the operation of the plunger the can should receive sufficient impetus to be carried slightly beyond the desired position beneath the filler, it is obvious that the peculiar construction of the forward extremity of the lever H will cause the can to center with the curved face of said end H, and thus force the can backward, so that its periphery shall be brought into close contact with the abutting face of said lever, and it will be seen that the forward movement of the plunger will be limited by the forward extremity of the slot H^2 contacting with the pin f^3.

To successfully fill cans with canned material, it is necessary that the face thereof into which the material is inserted shall be brought into close contact with the discharge end of the filler. To effect this desirable result, I provide the filler A at its exit with the enlarged and substantially flat plate A′, which is preferably formed integral with the frame of said filler, as illustrated in Figs. 2, 9, 10, 11, and 12, and is provided with an exit-opening *a′*, that is also the exit-opening of the filler. The exit-opening *a′* is of considerably less area than the plate A, and when said opening is registered with the inlet-opening of the can about to be filled the top of the can is brought into close contact with the plate A′, thus preventing any material being forced between the can and plate.

As best shown in Fig. 7, the plate A′ is formed with its forward extremity A^2 curved upward to allow the cans to readily feed beneath the same, and is provided with the cut-out A^4, which extends vertically entirely through the plate and rearwardly from a point above the central inlet-opening of the can, being of almost the same width at its forward extremity as the diameter of the opening *a′*.

At Fig. 12 I have shown by the dotted line 1 the outer edge of the can to be filled, and by dotted line 2 the inlet-opening of the can, and it will be noticed that the opening *a′* in the plate A′ is of less diameter than the inlet-opening of the can, and that the forward extremity A^7 of the opening A^4, which is substantially concentric with the opening *a′*, is formed with a shorter radius than the inlet-opening of the can, being thus extended directly above the inlet-opening of the can, as aforesaid, and that the opposite extremity A^8 of said cut-out A^4 extends beyond the inlet-opening of the can, thus permitting the air to escape rapidly from a large opening.

Oppositely arranged with the can-filler, or, in other words, directly beneath the same, I provide the support K, preferably consisting of a pair of rails adapted to bear against the bottom of the can and having an up-and-down movement in the slots or cut-outs c^2, provided in the bottom or base of the can-guide and oppositely arranged with or beneath the filler A. Secured to the support K are the straps K′, connected together at their lower ends by the tie-piece K^2, having the upwardly-extending hub K^3, mounted on the spindle-rod or depending support L, secured in the bottom of the can-guide. Interposed between the tie-piece K^2 and a nut *l*, secured near the lower extremity of the rod L, is the spring M, which constantly forces upward said support K until the top face of the sleeve K^3 is brought against the bottom of the can-guide.

By reference to Fig. 2 it will be seen that the rails of the support K when in their normal position are slightly raised above the bottom of the can-guide C, and to allow the cans to be readily fed upon and from the rails the extremities thereof are slightly beveled or curved. As preferably adjusted, the distance between the support K and the plate A′ of the filler is less than the length of cans to be filled, and when by the plunger E the cans are fed over the rails the same are slightly depressed against the action of the spring M.

It is well known that the cans frequently vary in height, and this construction of the yielding support K brings the can into close

contact with the discharge end of the filler, even if the same is slightly above or below the common height, and by means of the nut *l* the tension of the spring may be increased or decreased, causing the rails of the said support to press the can with the desired force against the bottom plate A′ of the filler A.

In filling cans more or less of the material is forced out of the can with the escaping air, spattering or scattering upon the adjacent surfaces of the machine. It will be observed that this escape of the material is almost entirely obviated by reason of the rails or support K pressing the cans closely against the bottom plate A′ of the filler A. However, as there will still be a liability of a slight escape of the material from the can I form the swell or shield C^3, which forms an enlargement in the can-guideway at the rear of the can and just back of the discharge-opening A^3 in the bottom plate A′ of the filler, which shield is curved backwardly from the can-guide and extends upwardly beyond the top of the cans. To further prevent the canned material escaping from the cans from spattering upon my feeding device and adjacent objects, I provide the stop or splash plate R, (see Figs. 1, 2, 9, 10, 11, and 12,) preferably consisting of the downwardly-extending vertically-disposed shield *r*, the horizontal shoulder *r′*, and the vertically-extending portion r^2, which latter portion is provided with a pin or projection R′, pivotally mounted in a projection extending outwardly from the filler A. This pin R′ allows the splash-plate R to be swung upward out of operative position for any desired purpose, as shown in dotted lines at Fig. 9, and when in operative position, as shown in Figs. 10 and 11, the shoulder or horizontally-disposed portion *r′* rests upon the shoulder A^6 of the filler and prevents the lower end of said plate R from swinging too far inward, as would otherwise be the case, since with the exception of said shoulder r^2 the only support of said plate is its pivotal pin R′. It will thus be understood that when desired to remove the stop-plate R it is only necessary to move the same lengthwise, and thus withdraw its pivotal pin R′ from the projection *a* of the filler A. The material forced out of the can with the escaping air falls through openings or cut-outs c^2 in the can-guide, and beneath the can-guide is the large pan or other receptacle N, supported, preferably, upon a suitable bracket provided upon the standard B, which pan serves to collect the material dropping through the openings c^2 and prevents the waste thereof.

By reference to Figs. 4 and 5 it will be seen that the can is impinged by the extremity H′ of the lever H against a cross-bar C^4 in front of the swell or shield C^3. This bar C^4 is supported, preferably, on the interior of the can-guide at the points where the swell C^3 begins and ends and is adjustable toward the end H′ of the lever H. The bar C^4 thus prevents the cans being forced into the swell and forms a portion of the opposite wall of the can-guide, which by means of its adjustment toward said lever H adjusts the guide for cans of various sizes, since the said bar may be adjusted toward and away from said lever H, so that whatever the size of the can the same will be tightly impinged against said bar. Moreover, this adjustment allows all wear upon said lever H to be easily taken up and greatly increases the durability and effectiveness of the machine.

The adjustment of the bar C^4 is preferably secured by means of screws I engaging a threaded socket in the can-guide or the supporting-bracket therefor and having their inner extremities secured to the bar and preferably riveted thereto, as shown in Fig. 7. By turning the screw I in one direction the bar is drawn toward the end H′, and by reversing the motion of the screw the bar is retracted from said end of the lever H, and a stop-nut *i* is preferably used to insure the retention of said screw I in the position to which it is adjusted.

Supported upon the can-guide and extending upwardly therefrom to a point above the can-top is the bracket O. Interposed between said bracket O and a plate O′, secured thereto by bolts *o*, is the wiper P, preferably of rubber and adapted to wipe from the top of the can whatever material may have been forced thereon in filling the can. In the present instance there is no means shown to receive the cans after they are discharged from the feeder; but it will be understood that a table or even a carrier might be used for the purpose of receiving the cans, as after being filled they are discharged for the purpose of soldering and ready for the cap to be soldered thereto.

I am aware that in can-filling machines the lower extremity of the filler has been formed in some cases with a shoulder provided with small perforations for the escape of the air; but such perforations do not adequately permit escape of the air, and it will be understood that I do not herein wish to claim such construction.

The operation of my invention will be readily perceived from the foregoing, and it will be understood that instead of operating the lever F by hand to actuate the plunger E the same might be operated by a connection to the machinery for operating the can-filler and that other changes might be made in the detail, construction, and arrangement of the parts without departing from the spirit of my invention.

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

1. The combination of a can-filler, means, substantially as described, for feeding the cans to the filler, a support for the cans when being filled, and a spring connected to said sup-

port for allowing the same to yield when the cans are fed into operative position in relation to the filler, substantially as specified.

2. The combination of a can-filler, a guideway through which the cans are fed to said filler, a support opposite to the can-filler and movable within said guideway, and a plunger for feeding the cans through the guideway to the filler, substantially as described.

3. The combination of a can-filler, a guideway through which the cans are fed to the filler, said guide being provided with an opening or cut-out, a support movable in said opening, and a spring for forcing said support toward the filler and yielding to allow the cans to feed to the desired position in relation to the filler, and a plunger for feeding the cans through said guideway, substantially as set forth.

4. The combination of a can-filler, a guideway through which the cans are fed, provided with an opening opposite to the can-filler, a can-support guided through said opening and having an inclined forward extremity, a spring for allowing said support to yield to enable the can to feed to the can-filler, and means, substantially as described, for feeding said cans to the said guideway, substantially as and for the purpose described.

5. The combination of a can-filler, a can-guide beneath said filler and having openings opposite to the filler, means, substantially as described, for feeding the cans through said guideway, a can-support guided through said opening in the can-guide, a depending support arranged beneath the can-guide, a sleeve provided on said can-support and guided on said depending support, and a spring for operating the can-support, substantially as and for the purpose set forth.

6. The combination of a can-filler, a can-guide beneath said filler and having openings opposite said filler, means, substantially as described, for feeding the cans through the can-guide, the support L, depending from the base of the guideway, the movable supports K, provided with a sleeve K^2, the spring M, mounted on the support L beneath the sleeve K^2, and a nut *l* for compressing the spring, substantially as specified.

7. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through said guide, an enlargement in the guideway, arranged beneath the filler, and a guide-rail for preventing the cans from feeding into said enlargement, substantially as and for the purpose described.

8. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through said guide, an enlargement in the guideway, arranged beneath the filler, a guide-rail for preventing the cans from feeding into said enlargement, and adjusting-screws for varying the distance of said guide-rail from the opposite portion of said guideway, substantially as and for the purpose set forth.

9. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through the can-guide, and the vertically-arranged plate R, removably secured to said filler, substantially as and for the purpose described.

10. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through the can-guide, and the vertically-arranged plate R, hinged to said can-filler for allowing the same to be swung into and out of operative position, substantially as and for the purpose described.

11. The combination of a can-filler, a guideway for the cans, means, substantially as described, for feeding the cans, a lever H, having its end H′ provided with a concaved face for engaging the cans, and a connection between said feeding means and lever H, whereby the latter is operatively timed, substantially as and for the purpose described.

12. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, the lever F for operating the plunger, the lever H, having a concaved engaging face for retaining the can to be filled, and a connection between said levers H and F, substantially as and for the purpose set forth.

13. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, an oscillating lever F, having the rounded portion *f* for engaging the plunger, the pivoted lever H, having a concaved face for engaging the can, and a pin provided on one of said levers and engaging a slot in the other, substantially as and for the purpose specified.

14. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, a lever F for operating the plunger, the swinging lever H, having a concaved face for engaging the cans and provided with a slot or cut-out having one extremity substantially concentric with the pivot of the lever F and the other extremity cam-shaped, and a projection on said lever F for engaging said slot or cut-out of the lever H, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 21st day of February, 1889.

GAIUS LEWIS MERRELL.

Witnesses:

CLARK H. NORTON,

A. E. PARSONS.