

C. M. KNOWLES.

CAN-FILLER.

No. 173,969.

Patented Feb. 22, 1876.

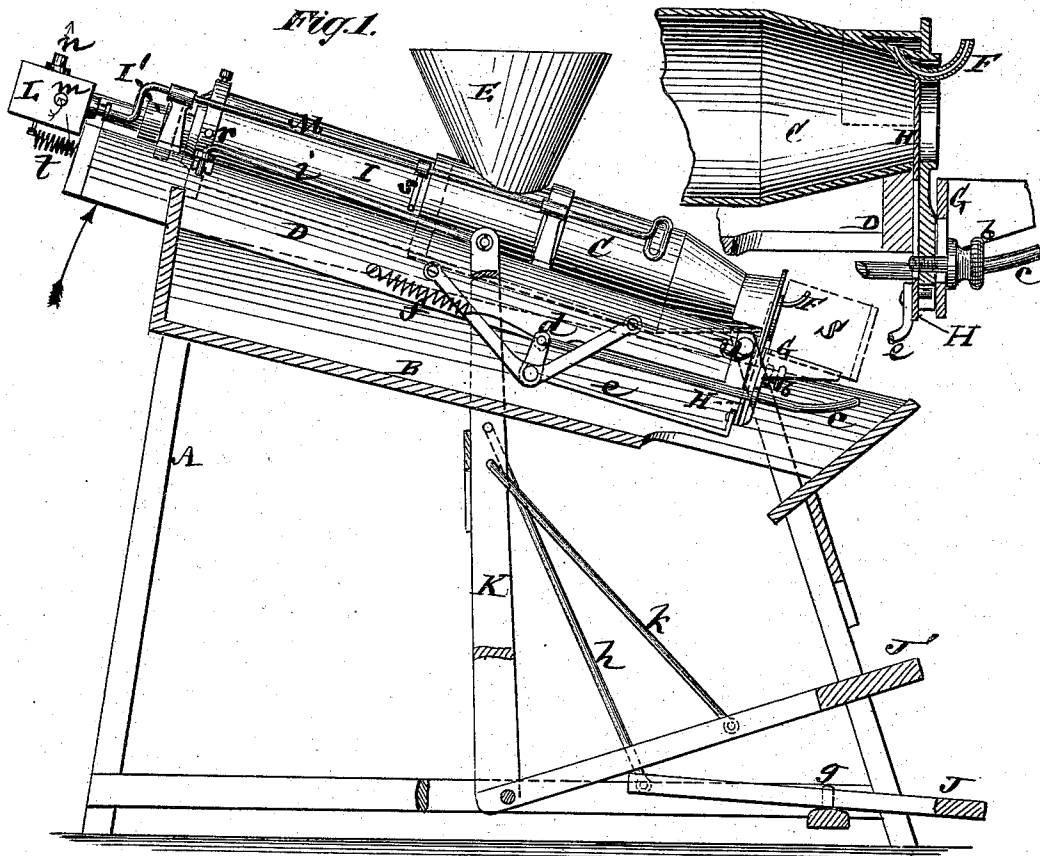
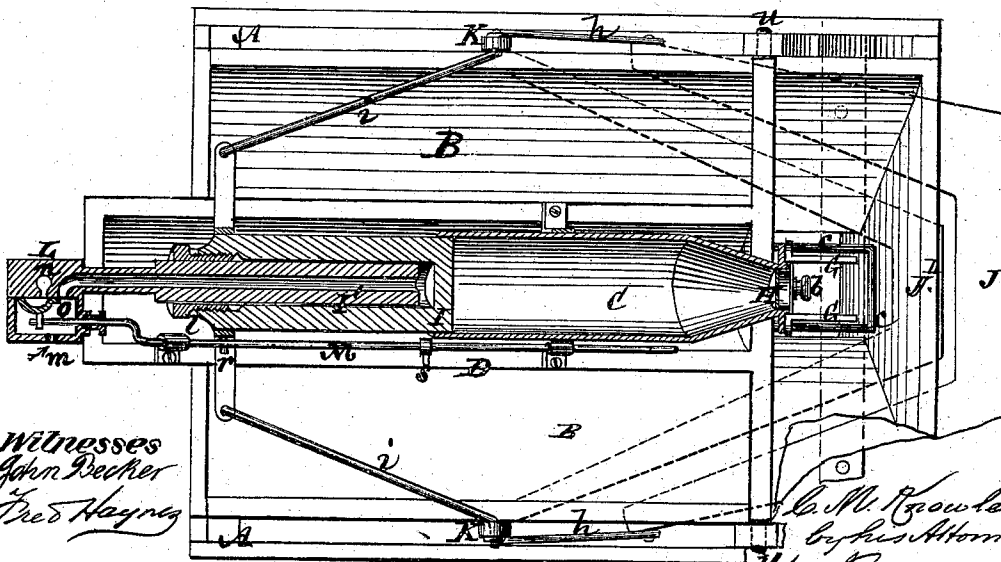


Fig. 2.



Witnesses
John Decker
Fred Haynes

C. M. Knowles
by his Attorneys
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UNITED STATES PATENT OFFICE.

CHARLES M. KNOWLES, OF NEW LONDON, CONNECTICUT, ASSIGNOR TO
HIMSELF AND WILLIAM B. SMITH, OF SAME PLACE.

IMPROVEMENT IN CAN-FILLERS.

Specification forming part of Letters Patent No. 173,969, dated February 22, 1876; application filed
August 12, 1875.

To all whom it may concern:

Be it known that I, CHARLES M. KNOWLES, of the city and county of New London, in the State of Connecticut, have invented certain new and useful Improvements in Can-Fillers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to machines for filling cans with tomatoes or other vegetables, and with meats.

The invention consists in certain novel constructions and combinations of parts, whereby not only the work may be rapidly and effectively done, but facilities are afforded for filling the cans either by steam or manual power, or both, and without injury to or scattering of the substances being canned.

To these and other ends the invention includes, among other details or features, a steam filling cylinder and plunger having an automatic action; a yielding valve-box, which prevents an excessive pressure of the filling-piston; a compound treadle, which may be used to assist the pressing action of the filling-plunger, and which returns the latter to its normal position; an air-duct to provide for escape of air from the can when compressing the substance within it; a novel device for holding and adjusting the can, and a cut-off for operation in connection with the can-holder, and serving to make a clean cut, to separate the pressed substance in the can from that in the filling-cylinder without bruising or injuring the substance being canned.

Figure 1 represents a partly sectional side elevation of a can-filling machine constructed in accordance with my invention; Fig. 2, a partly sectional plan of the same; and Fig. 3, a sectional elevation, upon a larger scale, of the forward or filling end of the machine.

A is the frame of the machine. This frame not only carries the working parts, but a trough, B, which is set in an inclined position, and serves to carry off any escaping substance or liquid during the action of the machine. C is the filling cylinder or tube, arranged within the lower end of an upper inclined trough, D,

and suitably contracted and shaped at its bottom end to provide for the filling of the can S, which has its open end or filling-opening in its one end borne up against the discharge-orifice in the bottom end of the filling-tube. E is a hopper in communication with the upper portion of the filling-cylinder C, for charging the latter with material to be canned.

Projecting from the lower or delivery end of the filling-cylinder C is a bent or inclined air-duct, F, the outer end of which passes within the can, while its inner end is in communication with a space outside of the filling-cylinder, to provide for escape of air from the can when forcing the substance within the can. G is the can-holder, which is adjustable up or down in front of the lower end of the filling-cylinder C, and is held, when so adjusted, by a set-screw, b, to provide for the bringing of the filling-opening in cans of different sizes opposite the discharge-opening in the filling-cylinder. H is a sliding cut-off, arranged to intersect the lower or discharge end of the filling-cylinder C, for cutting off or separating the pressed substance in the can from that in the filling-cylinder. Thus the sliding cut-off H, working as a knife or blade within the discharge end of the filling tube or cylinder, does in a clean manner, without bruising or injuring the substance being canned, the same making a clean cut of the substance. Said cut-off H is operated by or through a stirrup or handle, c, which has a longitudinal sliding motion through the can-holder G as a guide, and its connection with the latter is such that the hand of the operator, as it is introduced from underneath through the stirrup c, to actuate the cut-off slide H when the can is filled, also serves to support or hold the can S to its place while being filled. Thus the stirrup c is slid or drawn outward by the hand of the operator holding up the can when the can is being filled. This lowers the cut-off H, and opens the discharge end of the filling-cylinder C by the connection of the sliding stirrup, through a crank, d, and arm or lever e, with the cut-off slide H, while a spring, f, pulling on the crank d, lifts the cut-off slide H, and shuts off the communication between

the filling-cylinder C and the can S, when the hand of the operator is relaxed from drawing out the sliding stirrup *c*.

I is the piston or plunger, which works within the filling-cylinder C to press the substance into the can. This piston is of elongated construction, as in other can-filling machines, and so that when it is drawn backward from under and behind the hopper E the substance to be canned passes into the filling-cylinder C, and when said piston is forced forward it cuts off further supply from the hopper E, and forces the material received within the filling-cylinder into the can. The piston I is worked backward by a treadle, J, having its fulcrum at *g*, and connected by rods *h* with levers K, which are connected by rods *i* with the piston or plunger I. Another and upper treadle, J', connected by rods *k* with the levers K, serves to give the plunger I its forward or filling stroke. These two treadles J J', which virtually form one compound treadle, and dispense with any spring or weight to produce a reverse action, are actuated alternately by the operator, accordingly as he presses down first with the one and then with the other of his feet on the independent treadles J J'; but as more force is required to fill the can than to draw the filling-plunger back, steam-power is brought to bear upon the filling-plunger I to give its forward or filling stroke, and such steam-power may not only be used to assist the operator in giving the plunger its forward stroke by pressing down on the treadle J', but independently of such treadle when necessary.

To thus operate the plunger I by steam, the same may be variously constructed as regards its internal and external details; but in each case it should be automatic, so that when the plunger I completes its forward or filling stroke it shuts off all further supply of steam or propelling fluid, and opens an exhaust for the same, in order that the plunger I may be worked backward by the treadle J. The following construction of the steam piston or plunger I and its operating parts will answer, however, as well as any other, to explain the automatic action of the filling-plunger when actuated by steam: Thus I' is a hollow tube or piston, arranged to fit within the plunger I, and passing out through a stuffing-box, *l*, in the latter. This tube I' is connected at its outer end with a steam-chest or valve-box, L, having any suitably-arranged inlet, *m*, and outlet *n* and valve *o*, controlling ingress and egress of steam to and from the plunger I through the tube I'. A valve-rod, M, extends from the valve *o*, down and along the outside of the filling-cylinder C, so that said rod may be slid longitudinally backward by the hand of the operator from the front of the machine to let on the steam, for the purpose of urging

the filling-plunger I forward to fill the can, and so that, as the filling-plunger I completes its forward stroke and the can is filled, a stop, *r*, on said plunger will strike a tappet, *s*, on the rod M and shift the valve *o*, to stop all further supply of steam, and to exhaust the spent steam from the filling-plunger.

The valve-box L is held to its place, or inward, by a spring, *t*, so that the same is capable of yielding outward and shutting off steam by the aid of the valve *o*, which then remains stationary, whenever an extreme pressure, liable to produce bursting or injury, is put upon the can in filling in advance of the tappet *s* being struck.

By the use of a steam filling cylinder or plunger working therein, a certain amount of heat is communicated to the substance being canned, which is preferable to canning the material cold.

The upper trough or portion D, carrying the filling-cylinder and its connections, is pivoted at *u*, whereby the same may be tilted, to facilitate washing out of the filling-cylinder from time to time by insertion of a hose within the hopper E.

I claim—

1. The combination, with the filling cylinder or tube C and its hopper E, of a steam piston or plunger, I, and a valve and valve mechanism for operating said plunger, substantially as specified.

2. The combination of a yielding valve-box and a valve therein with the steam piston or plunger of the filling-cylinder, essentially as and for the purposes herein set forth.

3. The combination of the treadle J, the rods *h*, the levers K, the rods *i*, the steam piston or plunger I, the filling-cylinder C, and a valve and valve mechanism for controlling the forward or filling motion of said plunger, the backward motion of which is controlled by said treadle, substantially as specified.

4. The combination of the treadles J J', the rods *k*, the levers K, the rods *i*, the piston or plunger I, and the filling-cylinder C, essentially as described.

5. The air-duct F, in combination with the filling cylinder or tube C, substantially as specified.

6. The combination, with the adjustable can-holder G, the filling-cylinder C, and the sliding cut-off H, of the sliding stirrup or handle *c*, the crank *d*, the arm or lever *e*, and the spring *f*, essentially as described.

7. The tilting trough or support D, in combination with the filling-cylinder C, its hopper E, and its piston or plunger I, substantially as specified.

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Witnesses:

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