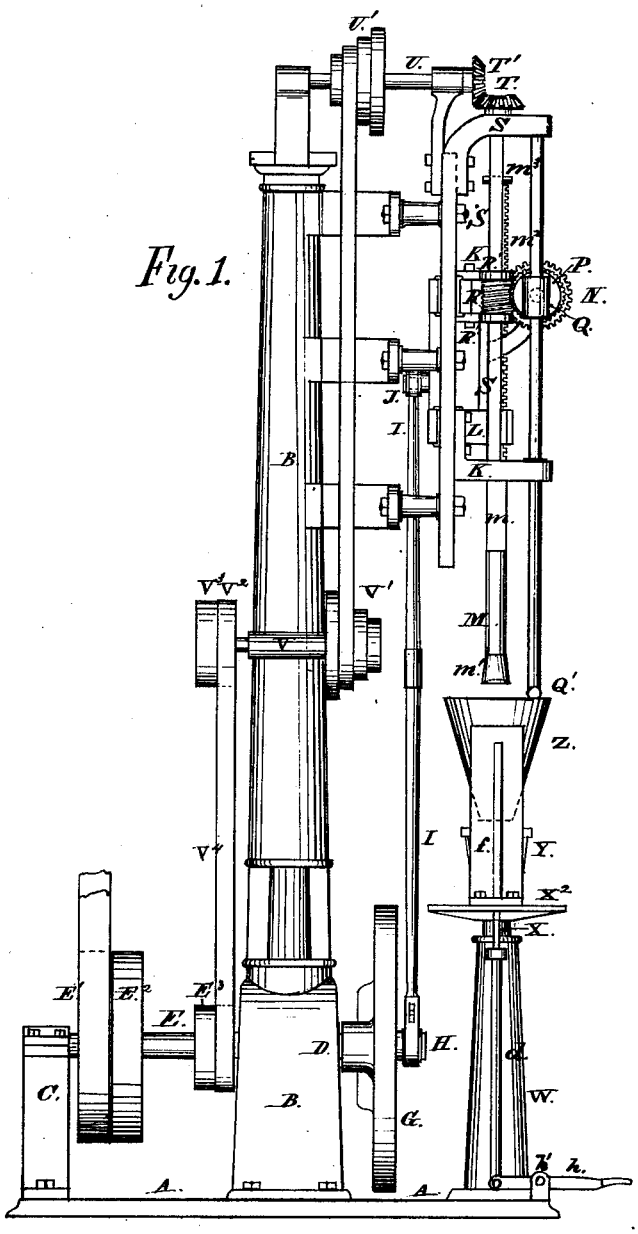
2 Sheets—Sheet 1.

C. J. BRYANT.

Machine for Filling Meat-Cans.

No. 214,100. Patented April 8, 1879.

Fig. 1.



Witnesses;
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By Knight Bros.
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Fig. 2.

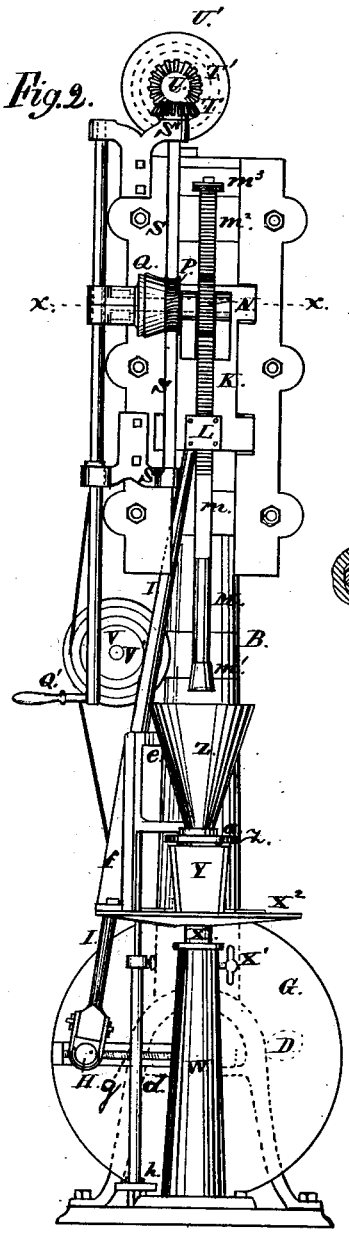


Fig. 3.

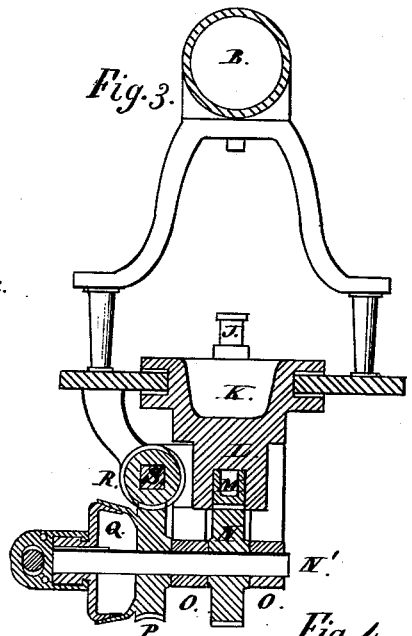
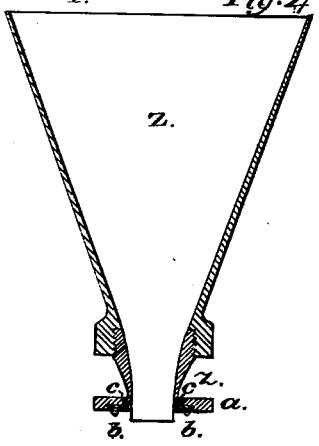


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES J. BRYANT, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE D. CAPEN, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR FILLING MEAT-CANS.

Specification forming part of Letters Patent No. **214,100**, dated April 8, 1879; application filed October 28, 1878.

To all whom it may concern:

Be it known that I, CHARLES JACKSON BRYANT, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Machines for Filling Meat-Cans and other Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My machine has an adjustable table for supporting the can and a funnel or hopper to contain the meat which is forced into the can by a vertically-reciprocating plunger, which is arranged to descend a less distance at each stroke, so as to fill the meat solid into all parts of the can.

My invention consists in certain mechanism for imparting to the plunger a variable movement.

My invention also consists in the device for supporting and lifting the funnel, and in the construction of the funnel to allow its application to cans of different sizes, and to keep the head channel clean and allow the escape of air from the can, as set forth.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a front elevation. Fig. 3 is a horizontal section at *x x*, Fig. 2. Fig. 4 is an axial section of the funnel.

A is the bed-plate. B is a strong post or upright secured to the bed-plate. C and D are pillow-blocks giving bearing to the main shaft E. This shaft E is driven by a belt upon a tight pulley, E^1, beside which is a loose pulley, E^2, to receive the belt when the belt is running and the machine at rest. G is a balance-wheel or disk or crank-arm upon the shaft E, upon which is a wrist-pin H, made adjustable in a radial slot, *g*, of the disk G, so as to enable the wrist-pin to be set at a greater or less distance from the center of the disk, to increase or diminish the throw of the pitman I, whose lower end is strapped to the wrist-pin H, and whose upper end is strapped to a wrist-pin, J, upon the vertically-reciprocating frame K.

L is a bearing, in which works the rod *m* of the plunger M. The plunger has a removable head, m^1, so the head may be adjusted properly in size with the mouth of the can or other vessel being filled. The plunger has a cog-rack, m^2, which is engaged by a spur-wheel, N, upon a shaft, N′, turning in bearings O O, and carrying a screw-gear wheel, P. This screw-gear wheel turns loose upon the shaft N′, except when secured thereto by a clutch, Q, connected by a feather-key with the shaft N′. The clutch is operated by a lever, Q′.

R is a gear-screw turning in bearings R′ upon the cross-head, and through it passes axially a prismatic shaft, S, supported in bearings S′, and rotated by miter-wheels T T′. The miter-wheel T is upon a shaft, U, carrying a cone-pulley, U′, that carries a belt which also passes around the pulley V^1 upon a counter-shaft, V. The counter-shaft V has upon it tight and loose pulleys, V^2 V^3, connected by belt V^4 with a pulley, E^3, upon the main shaft E.

W is a stand or post firmly fixed to the bed-plate A, and made in tubular form to receive axially in its upper end a cylindrical rod, X, extending down from the table X^2, which is vertically adjustable therein, and held in position by a set-screw, X^1, so as to hold the table X^2 at the proper height to suit the can Y to the other parts of the machine.

Z is the hopper of the funnel. This is supplied with a removable nozzle, *z*, which screws into its lower end. The nozzles *z* are made of various sizes to suit them to the size of the mouth of the cans. The nozzle has upon it a horizontal flange, *a*, which extends over the top of the can, and has beneath it an annular rubber packing, *b*, which enters the top crease or channel of the can, surrounding the mouth. *c c* are air-holes in the flange *a*, inside the packing *b*, to allow the escape of air from the can when the meat enters it, the nozzle being somewhat smaller than the mouth of the can.

The funnel is attached to the top of a pitman, *d*, by bracket-frame *e*, which works vertically on a guide-standard, *f*, attached to the table X^2. The lower end of the pitman *d* is connected to the inner end of a treadle-lever, *h*, fulcrumed at *h′*, so that when the outer end of the treadle is depressed the funnel is lifted from the can,

and the can can be removed and another one put in its place. The pitman *d* is made adjustable in length.

The operation of the machine is as follows: The can is put in place upon the table X^2, (proper guides being used to fix its position,) then the foot is removed from the treadle *h*, and the funnel descends upon the can, the rubber packing *b* entering the channel in the top of the can, surrounding the mouth. The packing *b* prevents the entrance of meat into the channel and dispenses with the labor of cleaning it out to enable the application of the lid.

The cross-head in its reciprocation causes the plunger at first to descend nearly to the bottom of the can in its first stroke, and at the next stroke does not descend quite so low, and so on until the can is filled. This variable descent of the plunger is accomplished by the plunger being gradually raised relatively to the reciprocating frame K by the spur-wheel N acting on the rack m^2, the spur-wheel having rotation from the screw-gear P R, shaft S, miter-gears T T′, pulleys U′ V^1 V^2 E^2, and connecting-belts. When it may be desired to stop the gradual rise of the plunger relatively to the cross-head, the belt is shifted onto the loose pulley V^3, and then the plunger will continue to descend to the same point until the belt is again shifted onto the tight pulley and the screw or worm-gear again put in motion.

During the reciprocation of the frame K the gear-screw works freely up and down on the prismatic shaft S. Said shaft may be round, if preferred, and have feather-key communication with the gear-screw.

After a can has been filled and an empty one put in its place, the clutch Q is disconnected, so as to allow the plunger M by its weight to descend again to its lower position relatively to the cross-head. Then the proper quantity of meat is put into the funnel, and the filling of the can proceeds.

It will be understood that the plunger M passes through the mass of meat in the funnel and carries down a portion into the can at each descent.

When a small-sized can is to be filled the wrist-pin H is placed nearer the center of the disk or balance-wheel G, and the stroke of the plunger will be thereby shortened. The descent of the plunger being checked, the table X^2 will raise the can the intervening distance. This is also provided for by making the table adjustable in height by the described or other means.

As an obvious modification of the machine, I would say that the gradual descent of the table in place of the gradual ascent of the plunger (relatively to the head) would accomplish the same result—namely, the gradual decrease of descent of the plunger into the can as the filling proceeds.

The end of the plunger is preferably made concave in form to give a better hold of the material, and to tend to draw it (the material) inward from the sides of the mouth in the finishing-stroke of the plunger.

At the top of the rack m^2 is projection m^3, to limit the descent of the plunger by impingement against the reciprocating frame K. This projection is preferably cushioned with rubber, to ease the blow.

I claim as my invention—

1. The combination of reciprocating plunger M, funnel Z, having removable nozzle *z*, horizontal flange *a*, annular rubber packing *b*, and air-holes *c*, and the table X^2, substantially as and for the purpose set forth.

2. The combination, with the reciprocating frame K and plunger M, of the rack m^2 and wheel N, shaft N′, gear-screw and screw-gear wheel R and P, and shaft S, turning in fixed bearings, substantially as and for the purpose set forth.

3. The combination of disk or crank arm G with adjustable wrist-pin H, pitman I, frame K, plunger M, and adjustable table X^2, substantially as and for the purpose set forth.

4. The funnel Z, with removable nozzle *z*, having flange *a*, rubber packing *b*, and air-holes *c*, for the purpose set forth.

CHARLES J. BRYANT.

Witnesses:

SAML. KNIGHT,

GEO. H. KNIGHT.