

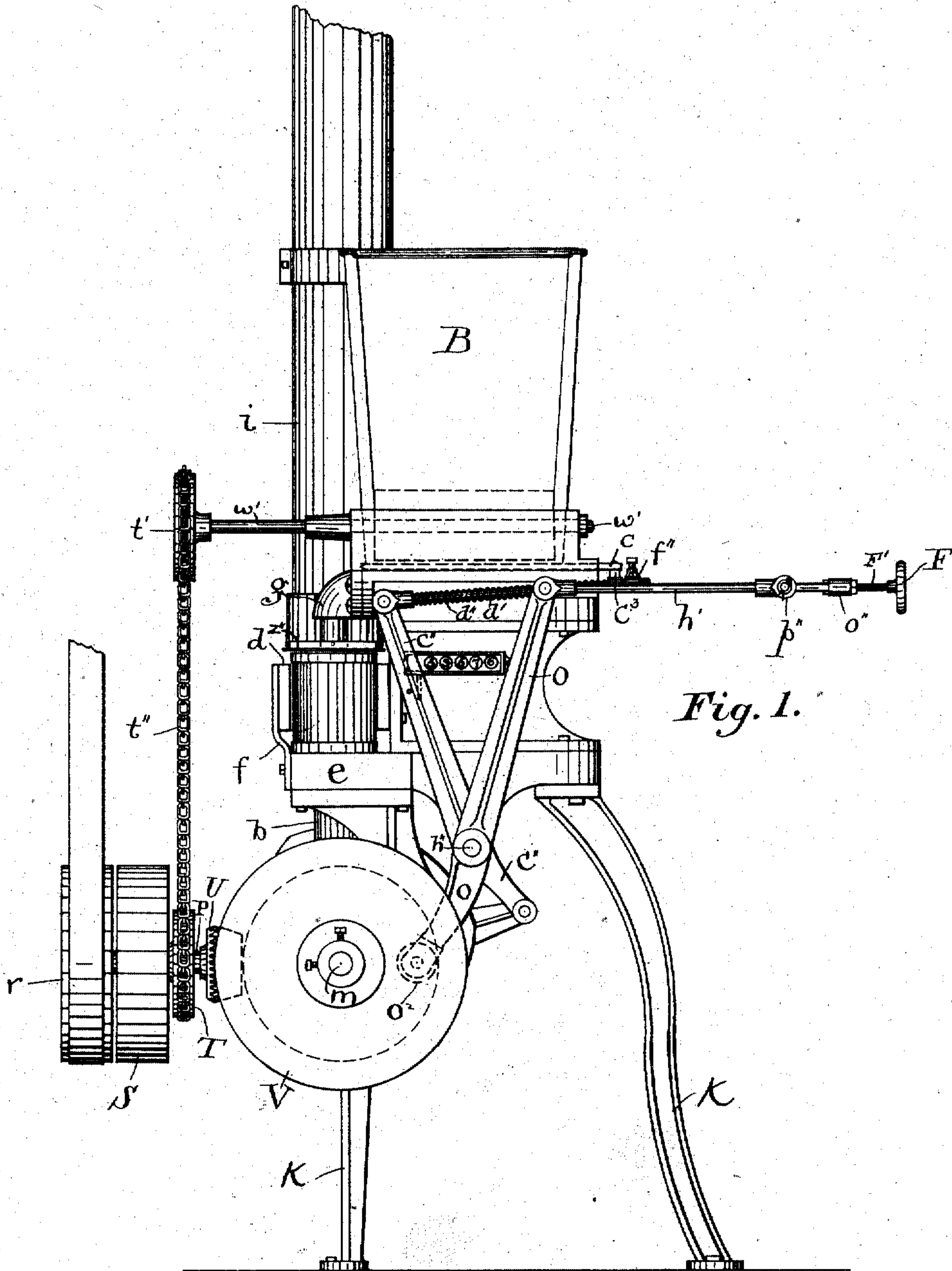
(No Model.)

6 Sheets—Sheet 1.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.



Witnesses
S. M. Bates
William F. Smith

Inventor
Henry R. Stickney, 2nd
Franklin C. Taylor
BY ATTORNEY

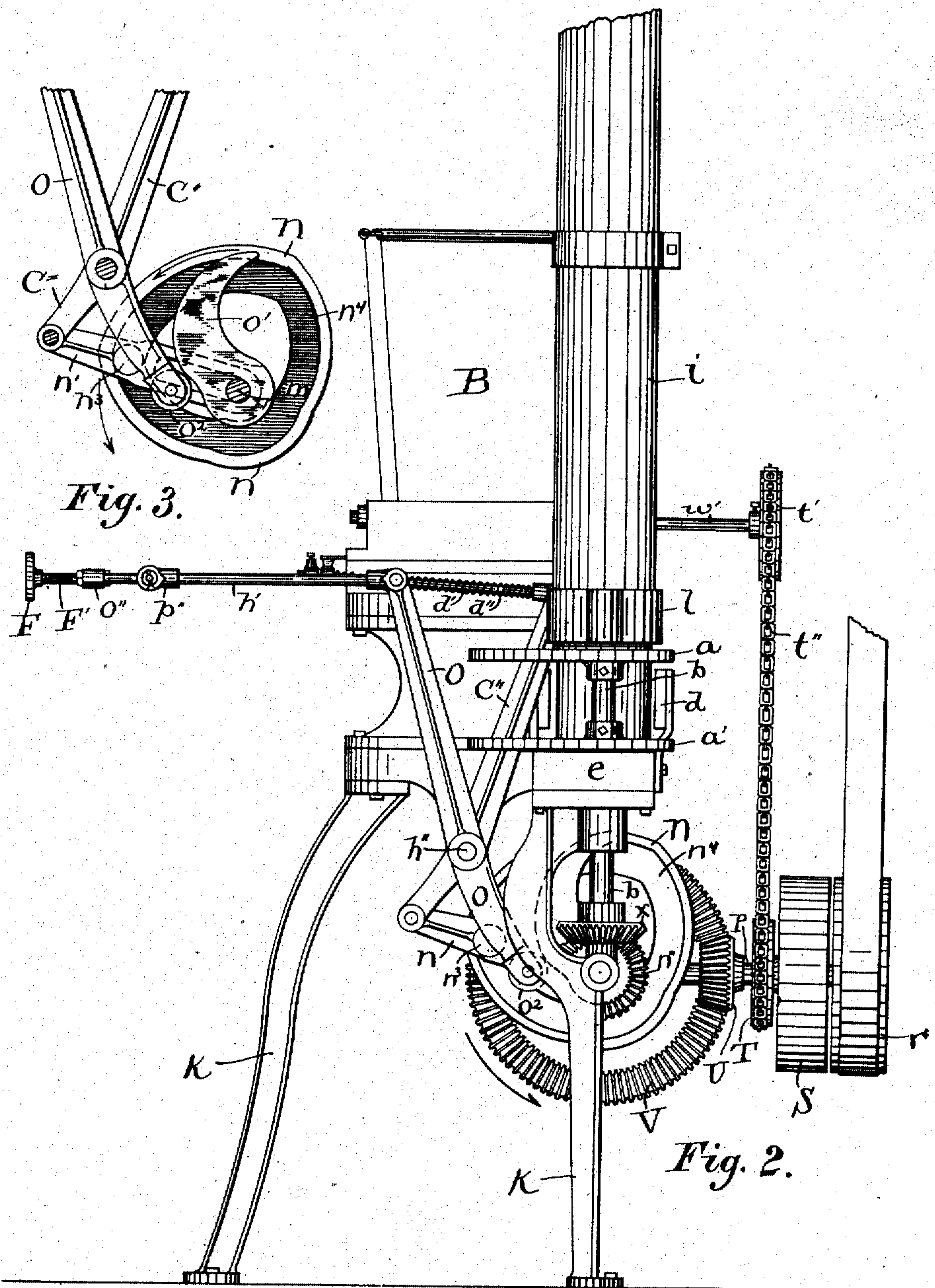
(No Model.)

6 Sheets—Sheet 2.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.



Witnesses
S. M. Bates
Milburn F. Lunt

Inventor
Henry R. Stickney, 2d.
BY Franklin C. Payson
ATTORNEY

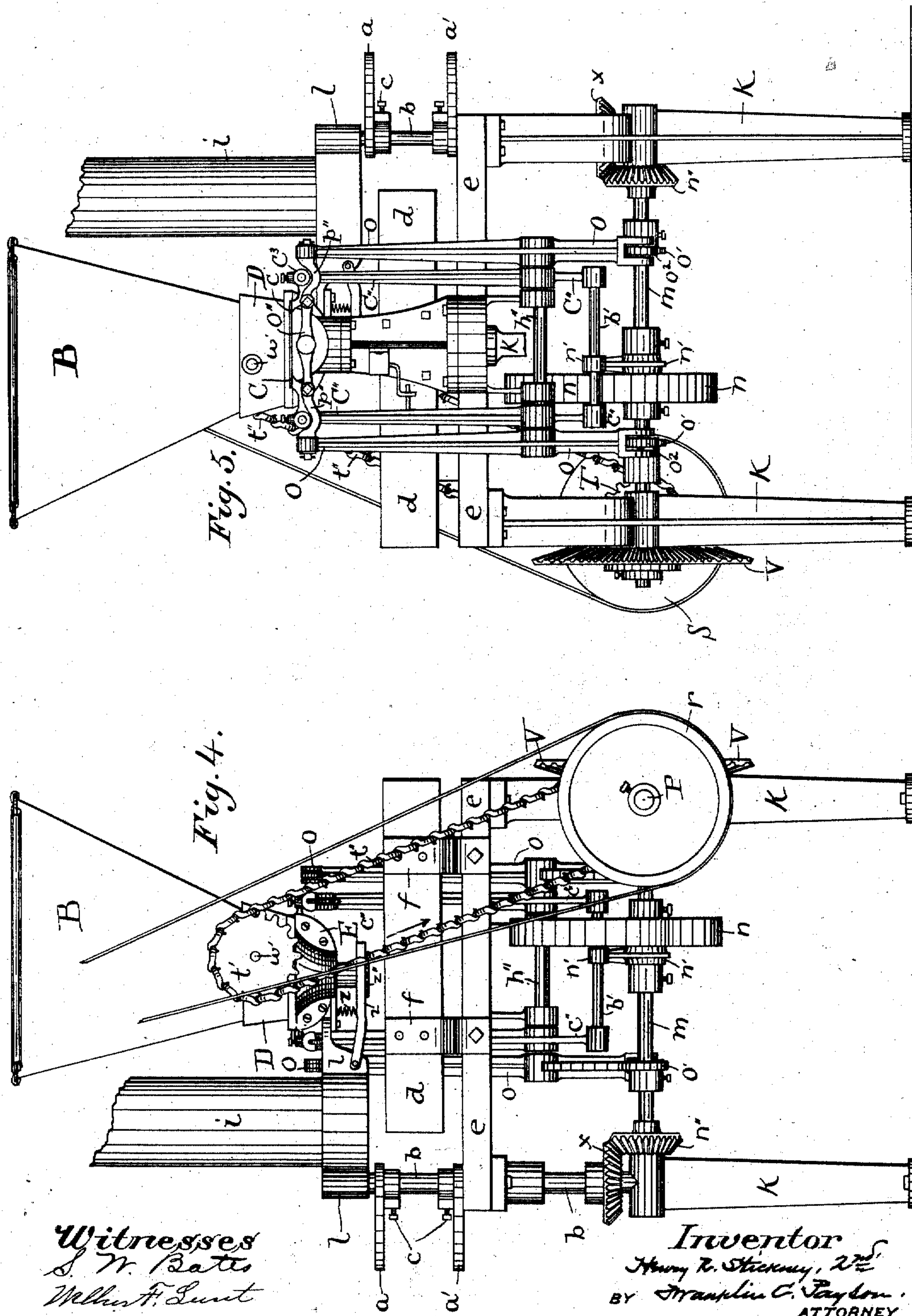
(No Model.)

6 Sheets—Sheet 3.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.



(No Model.)

6 Sheets—Sheet 4.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.

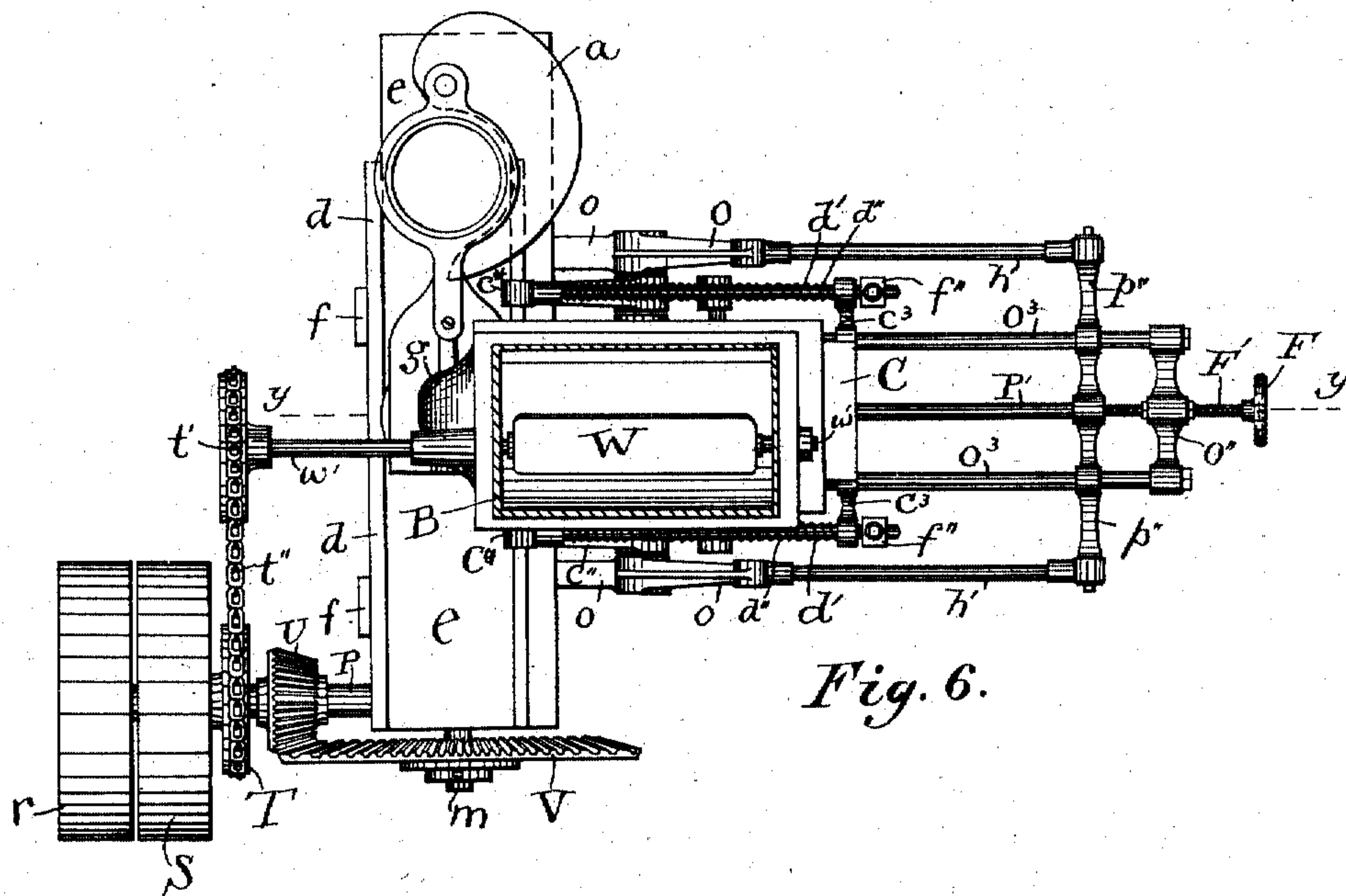


Fig. 6.

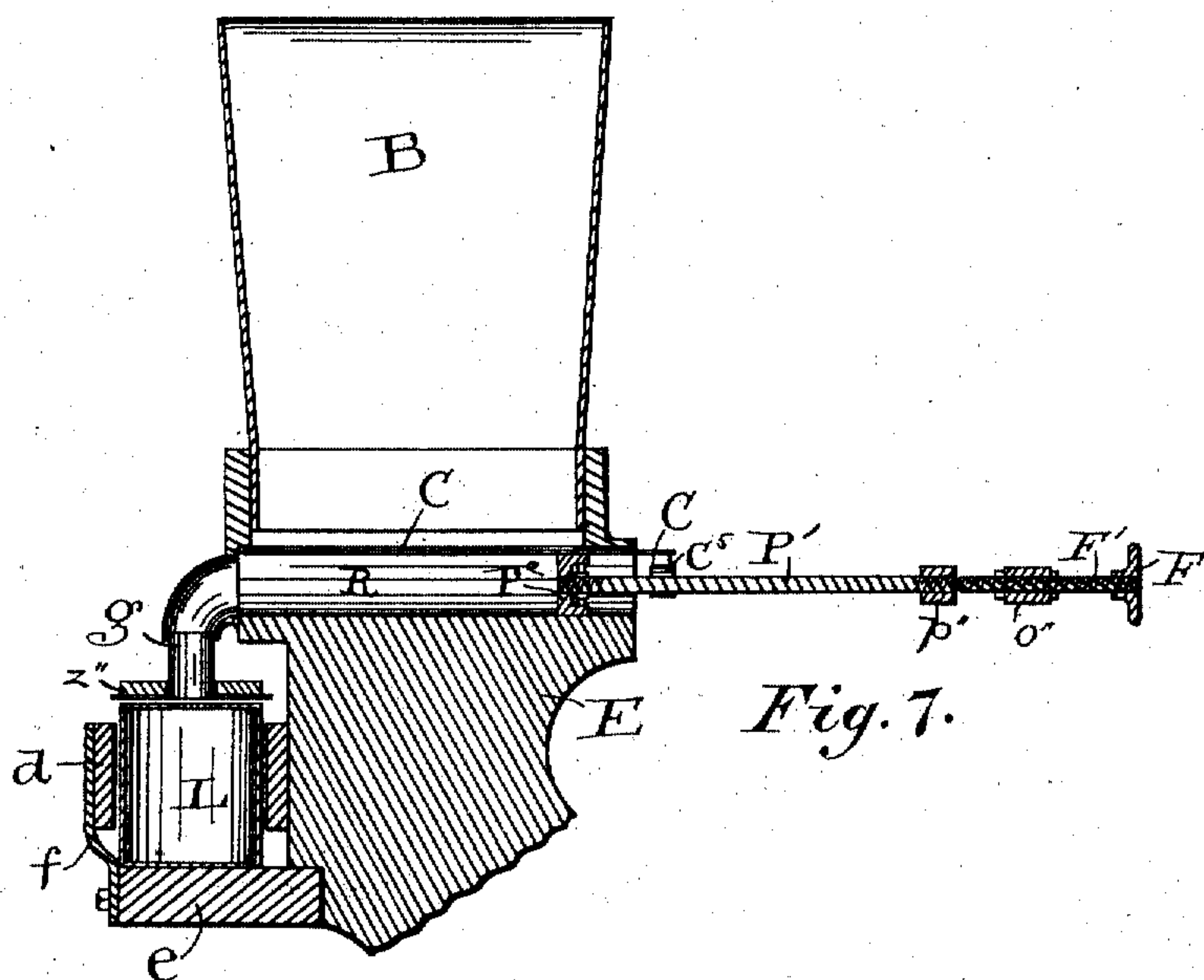


Fig. 7.

Witnesses
S. W. Bates
Wilbur F. Louth

Inventor
Henry R. Stickney, 2d.
BY Franklin C. Payson
ATTORNEY

(No Model.)

6 Sheets—Sheet 5.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.

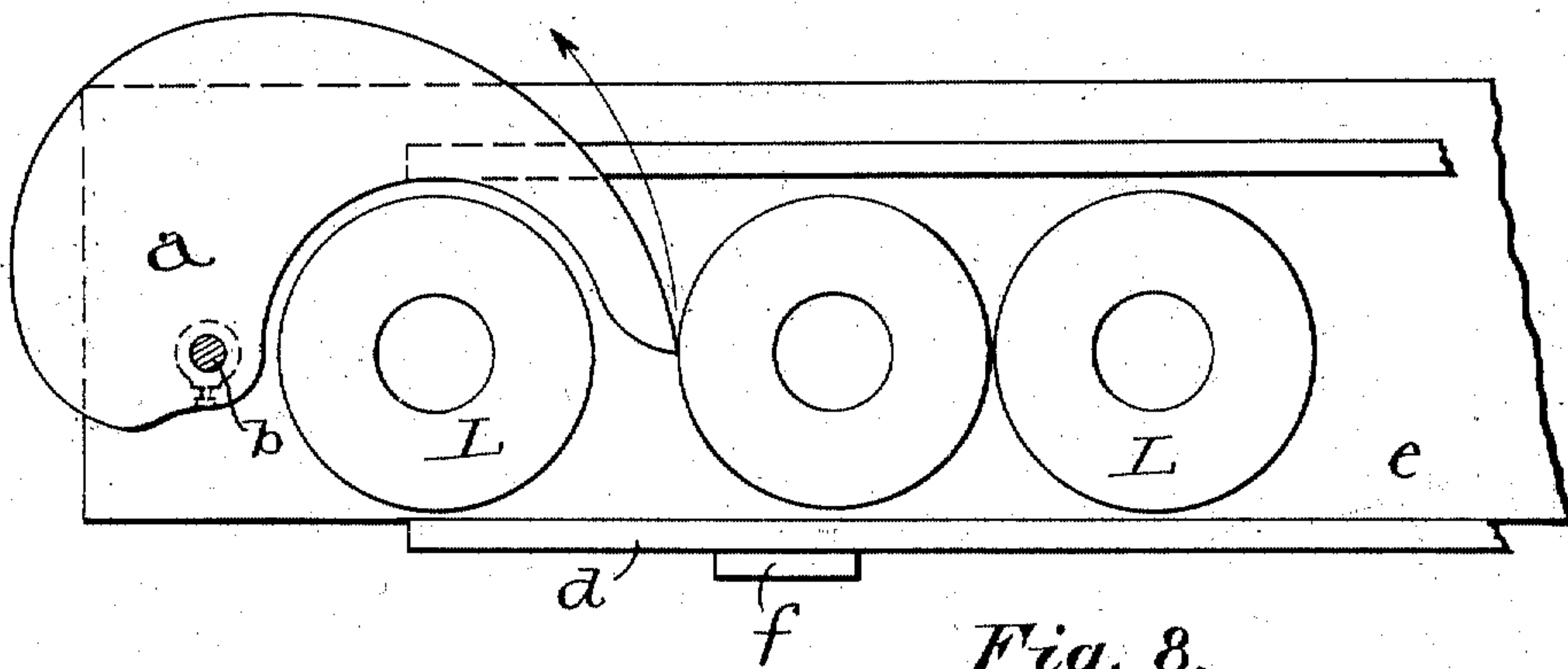


Fig. 8.

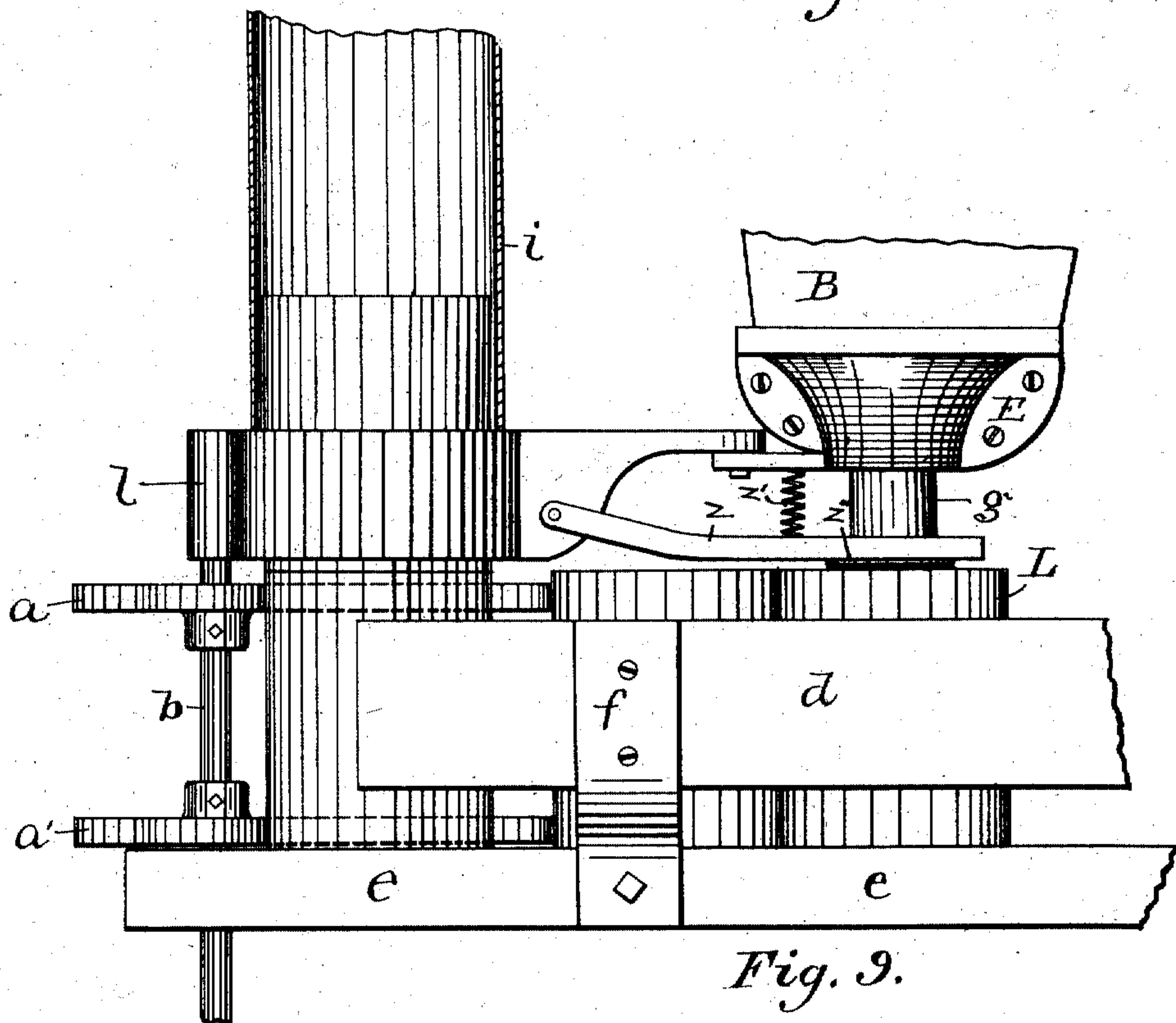


Fig. 9.

Witnesses
S. M. Bates
William F. Lantz

Inventor
Henry R. Stickney, 2d.
BY Franklin C. Payson
ATTORNEY

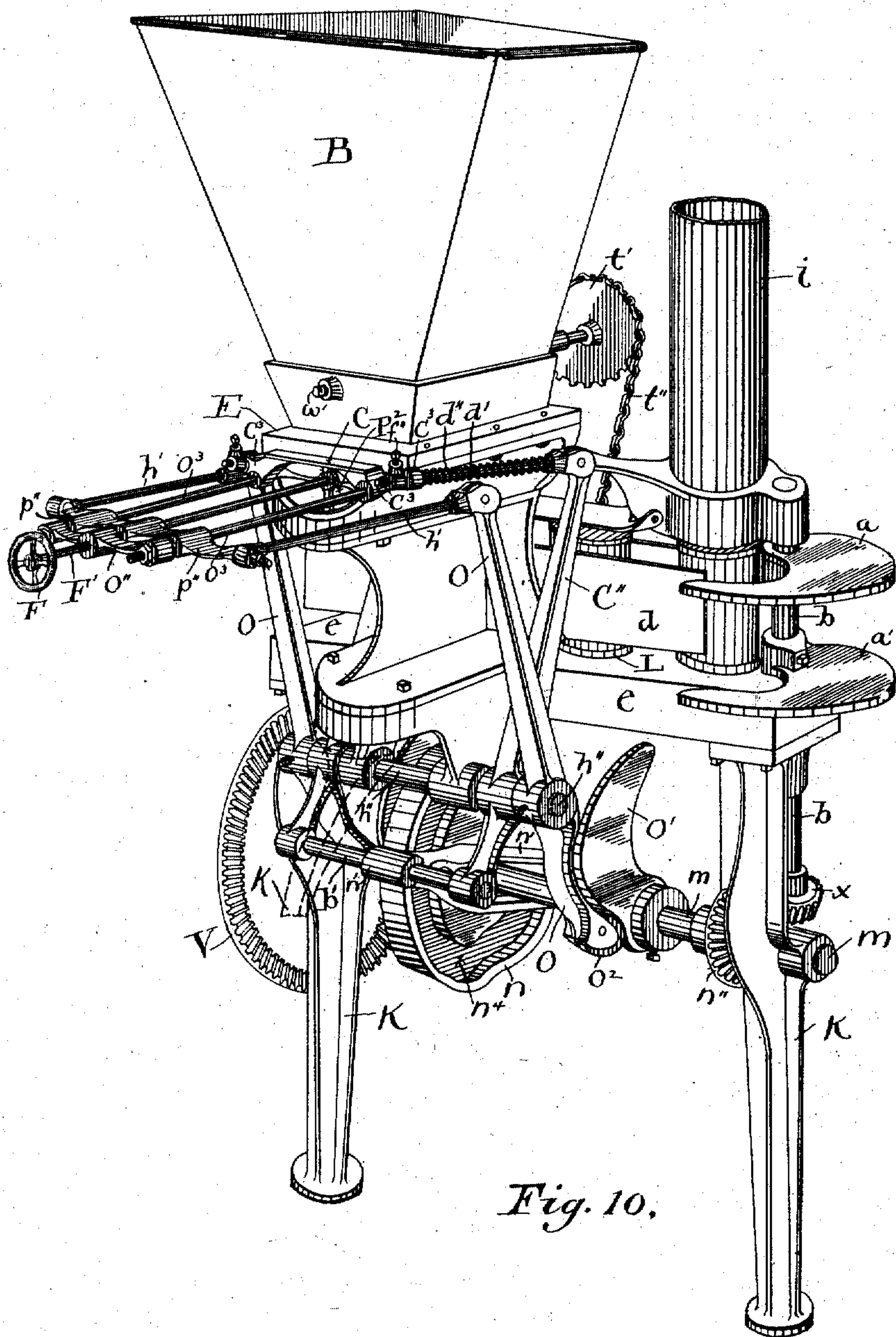
(No Model.)

6 Sheets—Sheet 6.

H. R. STICKNEY, 2d.
MACHINE FOR FILLING CANS.

No. 360,541.

Patented Apr. 5, 1887.



Witnesses
S. M. Bates
Wm. F. Lunt

Inventor
Henry R. Stickney, 2nd
BY Franklin C. Payson
ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY R. STICKNEY, 2d, OF PORTLAND, MAINE, ASSIGNOR OF ONE-HALF TO
RICHARD A. CONANT, OF SAME PLACE.

MACHINE FOR FILLING CANS.

SPECIFICATION forming part of Letters Patent No. 360,541, dated April 5, 1887.

Application filed November 18, 1886. Serial No. 219,378. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. STICKNEY, 2d, a citizen of the United States of America, residing at Portland, in the county of Cumberland, State of Maine, have invented certain new and useful Improvements in Machines for Filling Cans; 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 relates to machines or devices for the rapid filling of cans in the packing of corn and other similar substances; and the object of my invention is to supplant the hand-labor which was formerly used in this operation by an automatic machine, which will do the work much more rapidly and accurately than it can be done by hand.

My invention relates to a device for taking the corn or other substance from a hopper into which it is fed and discharging it therefrom through a filling nozzle or spout into the open mouth of the can, just a sufficient quantity being thrown out at each discharge to fill the can or to furnish the amount, by weight, desired. I show in my present application a device for taking the cans from a vertical reservoir and delivering them intermittently under the filling-nozzle. This last-named portion of my machine I have made the subject of a distinct application, said application being filed October 28, 1886, and being numbered 217,400, and I shall herein limit my claims to parts of the machine other than those claimed in my former application.

My filling device consists, essentially, of a hopper into which the corn or other substance to be canned is placed, an agitator placed near the outlet of said hopper, a horizontal charge-chamber, a cut-off plate which is intermittently interposed between the hopper and the charge-chamber to cut off the charge, a plunger working in the charge-chamber, and which forces the charge through a filling-nozzle into the can when the said cut-off plate is in position, and means for imparting the desired motion to the plunger, the agitator, and the cut-off plate.

My invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of one end. Fig. 2 is an elevation of the opposite end. Fig. 3 is a detail of the two cams which impart motion to the cut-off plate and plunger. Fig. 4 is a front elevation. Fig. 5 is a rear elevation. Fig. 6 is a top view or plan. Fig. 7 is a section on *y y* of Fig. 6. Fig. 8 is an enlarged view showing means of feeding cans to the filling-nozzle. Fig. 9 is a portion of front elevation enlarged, and showing cans in process of being fed to filling-nozzle. Fig. 10 is a perspective view.

K K are the frame of the machine, and *e* is the top or table. S is the driving-pulley, running on the shaft P, which shaft has also a sprocket-wheel, T, and a bevel-gear, U, engaging the larger bevel-gear, V, fixed on the end of the counter-shaft *m*, which runs the length of the machine, Figs. 2, 4, and 5. The pulley S, sprocket-wheel T, and bevel-gear U revolve together upon the shaft P. Above the shaft *m*, and parallel to it, is the rocker-shaft *h''*, secured by hangers depending from the under side of the bed of the machine. Hung near the ends of shaft *h''* are independent upright arms or levers C' C', one at each end of the shaft, and the upright levers O O, similarly situated, the two latter being located on the extreme ends of shaft *h''*. Both these sets of levers are so hung that they have long arms above the shaft and short arms below it. The lower ends of levers O O, which reach to the level of the shaft *m*, are bifurcated, and within these bifurcations are the trucks O'. O' O' are two cams of identical shape, located upon the shaft *m* at points where they will respectively act against the trucks O' of levers O. One edge of the cams O' is convex and the other edge is concave, so that during about one-quarter of their revolution they throw the lower ends of the levers O out, and during the other part of their revolution allow them to return to their former position. The lower ends of levers C' C' are rigidly connected by a rod, *b'*, and pivoted to this rod is the sweep *n'*, having a longitudinal slot, through which passes the shaft *m*.

On one side of the sweep *n'* is pivoted the wheel or roll *n''*, (see Fig. 3,) adapted to run in the groove *n'''* of the path-cam *n*, which is fixed to the shaft *m*. The path *n'''* of this cam

is divided into four parts, two opposite portions being concentric with the shaft *m*, and the two remaining portions being eccentric, each of the two latter having an opposite inclination. The path-cam is thus adapted in one revolution to impart to the sweep *n'*, and consequently to the levers *C''*, first, a motion away from the center, then an idle motion, then a motion toward the shaft or center, and, finally, an idle motion, which completes the revolution.

To the upper ends of the levers *C''* *C''* are pivoted the two rods *d' d'*, which extend horizontally, or nearly so, back from the body of the machine, Figs. 6 and 10. These rods are encircled throughout their entire length by the stiff spiral springs *d'' d''*, and the back ends of the rods pass through the opposite ends of a yoke, *C³*. Back of the yoke, and on the ends of the rods *d' d'*, are stops *f''*, provided with set-screws.

The yoke *C³* runs or slides on two horizontal rods, *O³ O³*, which are fixed to the body *E* of the machine, and extend backward to a considerable distance, being united at their rear ends by a yoke or cross-bar, *O''*.

A horizontal screw, *F'*, having a hand-wheel, *F*, passes through the cross-bar *O''*, the end of the screw being toward the machine. (See Figs. 6 and 10.) The yoke *p''* also slides on the rods *O³*, the opposite ends of said yoke being pivoted to rods whose other ends are pivoted to the upper ends of levers *O*.

The casting *E*, which rests on the table *e*, contains near its top the horizontal elongated charge-chamber *R*, having a semicircular cross-section open at the top. (See Figs. 4 and 10.) Within the charge-chamber *R* fits closely the plunger *P²*, operated by the plunger-rod *P'*, the rear end of which is secured to the yoke *p''*. (See Figs. 7 and 10.) The hopper *B* fits within flanges formed in the top of the casting *E*, and its lower end opens directly into the charge-chamber *R* throughout the entire length of said charge-chamber.

The cut-off plate *C* slides in horizontal grooves just above the sides of the charge-chamber, and when in position it completely cuts off all connection between the hopper *B* and the charge-chamber below it. The back end of the cut-off plate *C* is secured to the yoke *C³*, which has already been described, and it slides in and out with the motion of the yoke along the rods *O³*, as will be hereinafter shown.

W is an agitator consisting of a single flat blade hung horizontally on a rotating shaft, *w'*, which passes through the hopper near its lower end, this shaft *w'* having on its outer end the sprocket-wheel *t'*, which takes its motion from the corresponding sprocket-wheel *T* by means of the chain *t''*. (See Figs. 1, 2, and 6.)

g is the filling-nozzle, leading from the forward end of chamber *R* and making a quarter-bend, so that its opening is downward and a trifle above the top of the can as it sets on the table *e*.

Fitting around the lower end of the nozzle

g is the collar *z''*, which is kept pressed downward by the lever *z*, acted upon by the spring *z'*. The purpose of this collar *z''* is to keep the corn or other substance from spilling upon or spreading over the top of the can by being constantly pressed down upon it while the same is being filled. This collar also does away with any device for raising the can to the filling-nozzle. The cans are fed to the feeding-nozzle between the guides *d d* and over the table *e* by the action of the cams *a* and *a'* revolving on the vertical shaft *b*, which gets its motion from the shaft *m* by means of the miter-gears *x* and *n''*. The cans are fed down through the spout *i*. The operation of this feeding device has been particularly set forth and explained by me in my former application, already spoken of.

The operation of my machine is as follows, namely: Power is imparted to the shaft *m* through the driving-pulley *S* in the direction indicated by the arrow in Fig. 2. I will first consider the motion of the cut-off plate *C* as imparted to it by the cam *n* through levers *C'' C''*, yoke *C³*. Supposing the roll *n³* (see Fig. 3) to be at a point near the shaft *m*, then the lower ends of levers *C''* are drawn in and the upper ends are pushed back away from the hopper, thus withdrawing the slide. The corn or other substance is stirred up and packed into the charge-chamber by the rotation of the agitator *w*. The cam *n* rotates through one-quarter of a revolution and brings the levers *C''* to the position seen in Fig. 3—that is, the upper ends of the levers are forced in toward the hopper, closing the cut-off plate, the charge-chamber being filled with corn. When cam *n* has reached this position and closed cut-off plate, the cams *O'* begin to act on the lower ends of levers *O*, Fig. 3, forcing in the upper end of these levers, and with them the yoke *p''* and plunger-rod *P'* and plunger *P²*, the motion of the plunger forcing out the contents of the charge-chamber through the filling-nozzle *g* into the open mouth of can *L*, which is in place to receive it. While plunger *P²* is passing in, the roll *n³* is traversing the concentric portion of cam *n*, so that levers *C''*, and consequently cut-off plate *C*, remain at rest within the hopper, keeping the charge-chamber closed. When cam *O'* has pushed the plunger in, the shaft will have completed half a revolution, and the yoke *p''* will have moved in against the back of yoke *C³*. The roll *n³* now begins to traverse the other eccentric portion of the cam *n*, which draws in the lower end of levers *C''*, forcing back the upper ends of the levers, together with yoke *C³* and cut-off plate *C*, and also forcing back with it the yoke *p''*, bearing the plunger *P²*, against the end of the screw *F'*, which is adjusted to allow the plunger to come back far enough to admit the desired charge into the charge-chamber. By means of this screw *F'* the capacity of the charge-chamber can be varied, so that the quantity of filling substance therein will be just sufficient for the size of the cans to be filled. It is thus

seen that by the action of the cams n and O' , acting through intermediate mechanism upon the cut-off plate and the plunger, the former is first pushed in, cutting off the charge-chamber, which has been filled with corn from the hopper. The plunger then comes in, forcing the corn into the can, and the cut-off plate then moves back, carrying the plunger with it, thus completing the filling of one can and the revolution of the shaft m . The ends of rods d' pass loosely through the yoke C^3 , the springs d'' d'' , which are very stiff springs, forcing the yoke against the stop f'' . The springs d'' press back the cut-off plate C . The somewhat rapid motion with which the machine is run renders these springs desirable.

In practice, I find it convenient to place rubber buffers to connect the yoke O'' with the ends of the rods O^3 , thus easing the blow from the yokes p'' and C^3 as they come back.

The agitator W is rotated continually by means of the sprocket-wheels T and t' and the chain t'' , and the corn or other substance is thus packed into the charge-chamber with a uniform density which it would not have if it were simply allowed to flow by its own weight.

The cans are fed along under the filling-nozzle g , between the guides d d , by the revolution of the cams a and a' , which rotate under the mouth of the spout i . One revolution of these cams is made in the same time as one motion of the plunger, and it is so adjusted that the can arrives under the filling-nozzle before the plunger makes its stroke, pauses there while the corn or other substance is forced into it, and then is fed along to make room for the next can. A more particular description of this part of the machine is to be found in my former application, already referred to.

It is obvious that a variety of mechanism can be applied to produce the movements of the plunger and the cut-off plate, as described, and hence I do not wish to be limited to the exact forms here shown. The agitator may be dispensed with, though it adds to the efficiency of the machine.

I am aware that a can-filling machine has been used wherein a hopper was used opening into a box or chamber of indefinite capacity, within which box operated a plunger, said box discharging into an upright measuring or filling cylinder; but in my present invention the charge-chamber does the work of the two chambers described—namely, it receives and measures the material from the hopper, and is the filling-chamber at the same time.

I am aware that a can-filling machine has been made wherein an agitator or stirrer was used near the bottom of the hopper; but the function of said stirrer was to draw the material from the sides of the hopper to the center, where it could be taken by a downward-moving plunger. I do not claim such construction.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for filling cans, the combination of a hopper the lower end of which opens into a charge-chamber, an agitator within said hopper, a filling-nozzle leading from said charge-chamber, a cut-off plate intermittently interposed between said hopper and said charge-chamber, a plunger working in said charge-chamber, and mechanism for actuating said cut-off plate and said plunger in the manner substantially as described.

2. In a can-filling machine, the combination of a hopper having its lower end opening into a charge-chamber, a filling-nozzle leading therefrom, a cut-off plate adapted to slide in between said hopper and said charge-chamber, a plunger working in said charge-chamber and connected by a piston-rod with a cross-head traveling on guides, a pair of levers pivoted to the body of the machine and having each a long arm connected to said cross-head by a connecting-rod and a short arm operated upon by a cam, whereby the plunger is forced into the charge-chamber, and mechanism for withdrawing said plunger and forcing in and withdrawing said cut-off plate, substantially as described.

3. In a can-filling machine, in combination, a hopper having its lower end opening into a charge-chamber, a filling-nozzle leading therefrom, a cut-off plate adapted to slide in between said hopper and said charge-chamber, a yoke attached to said plate and traveling on guides, a pair of levers pivoted to the machine and having long arms connected to said yoke by connecting-rods, and short arms connected with each other by a shaft, a sweep pivoted to said shaft and having a roll playing in a path-cam, whereby the rotation of said cam slides said cut-off plate in and out, a plunger working in said charge-chamber, and means for operating the same, substantially as described.

4. In a can-filling machine, a hopper having its lower end opening into a charge-chamber, a filling-nozzle leading therefrom, a cut-off plate adapted to slide in between said hopper and said charge-chamber, a yoke attached to said plate and traveling on guides, a cross-head traveling on said guides in rear of said yoke and connected by a piston-rod with a plunger operating in said charge-chamber, cam mechanism operatively connected with said yoke for forcing it in and withdrawing it, and cam mechanism operatively connected with said cross-head for forcing it in, whereby the withdrawal of the cut-off plate effects the withdrawal of the plunger, all combined as and for the purposes set forth.

5. In a can-filling machine, a hopper connected with a charge-chamber, a cut-off plate adapted to slide in between them, and means for operating said cut-off plate, consisting of a yoke attached to said plate and sliding on guides, a pair of levers pivoted to the machine and having each a long arm and a short

arm, a rod with one end pivoted to said long arm and the other end connected with said yoke, and a sweep pivoted to the lower ends of said levers and having a lateral roll playing in the groove of a path-cam, and having a slot or groove through which passes the shaft on which said cam revolves, whereby the said plate is forced in and then stopped for a time and then withdrawn, all combined substantially as described and shown.

6. In a can-filling machine, the combination of a hopper, a charge-chamber connected with said hopper, and an agitator rotating on a horizontal shaft near the bottom of said hopper, whereby the material is stirred and at the same time pressed downward into the charge-chamber, substantially as shown.

7. In a machine for filling cans, the combination of a hopper the lower end of which opens into a charge-chamber, a filling-nozzle leading from the same, a cut-off plate intermittently interposed between said hopper and the charge-chamber, a plunger working in said charge-chamber, a device for limiting the stroke of said plunger, and mechanism for interposing the cut-off plate and then forcing in the plunger and afterward withdrawing both, substantially as shown.

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

HENRY R. STICKNEY, 2d.

Witnesses:

FRANKLIN C. PAYSON,
HARRISON M. DAVIS.

It is hereby certified that the name of the assignee in Letters Patent No. 360,541, granted April 5, 1887, upon the application of Henry R. Stickney, 2d, of Portland, Maine, for an improvement in "Machines for Filling Cans," was erroneously written and printed "Richard A. Conant," whereas said name should have been written and printed *Richard O. Conant*; and that the Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 12th day of April, A. D. 1887.

[SEAL.]

D. L. HAWKINS,
Acting Secretary of the Interior.

Countersigned:

R. B. VANCE,
Acting Commissioner of Patents.