(No Model.)

3 Sheets—Sheet 1.

E. JORDAN.

CAN FILLING MACHINE.

No. 301,897.

Patented July 15, 1884.

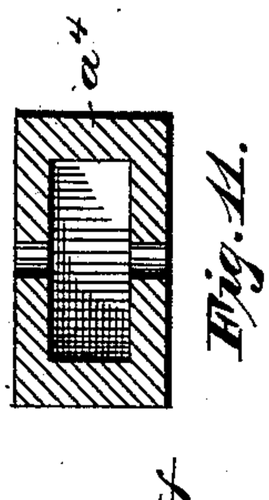

Fig. 11.

Fig. 1.

Fig. 12.

Attests:

J. H. Templin.

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Inventor.

Edmund Jordan

(No Model.) 3 Sheets—Sheet 2.

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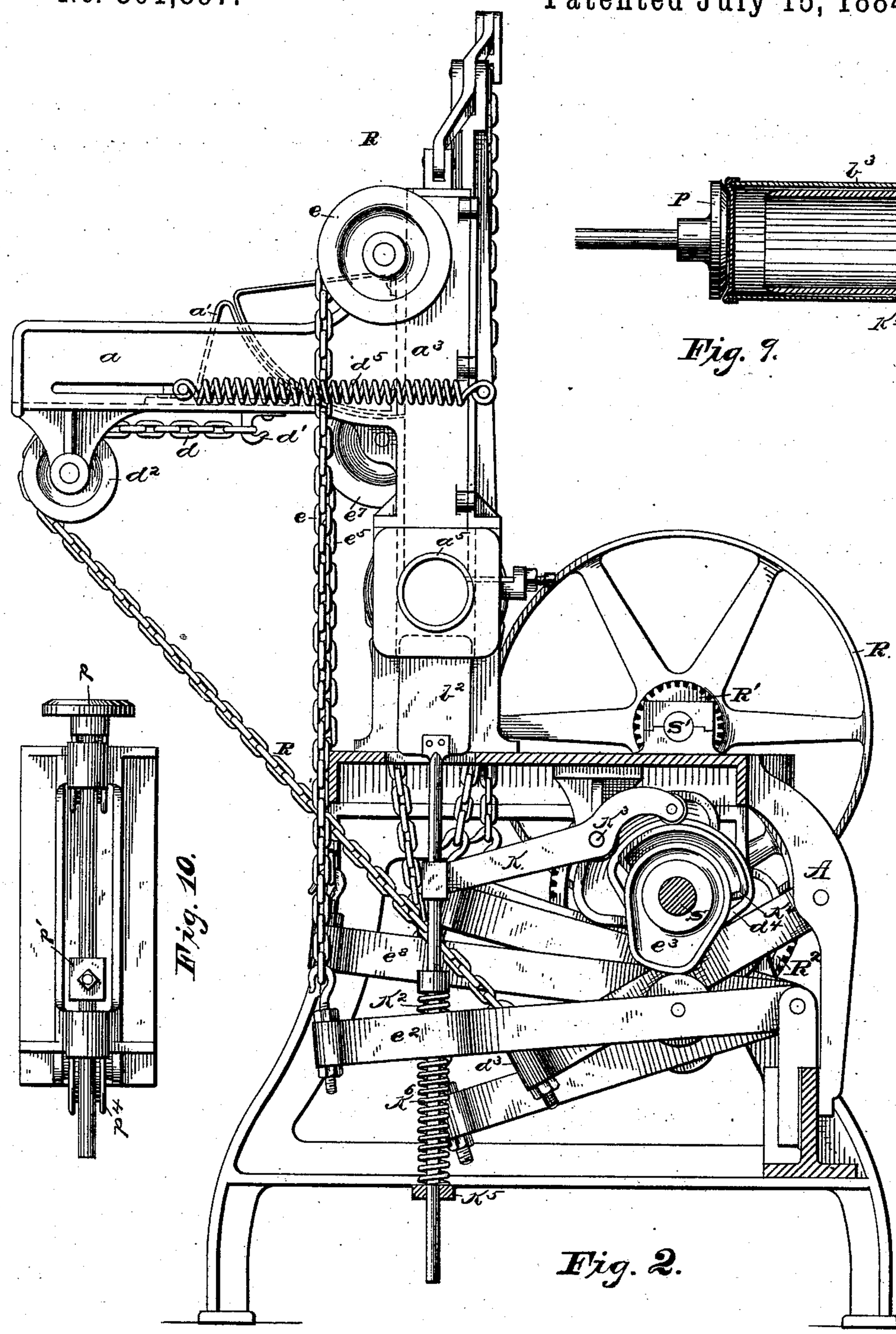

Fig. 2.

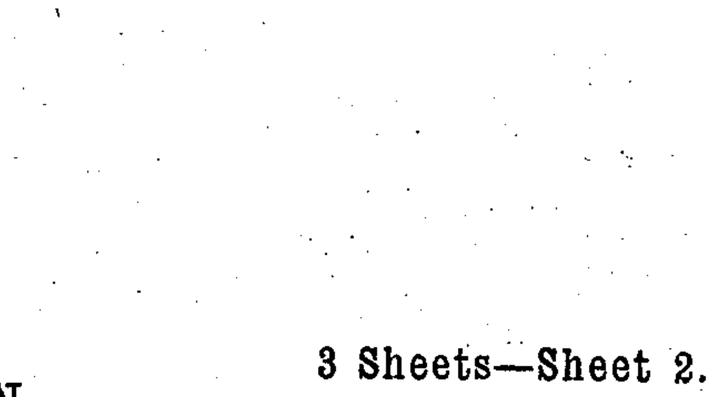

Fig. 9.

Fig. 10.

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(No Model.)

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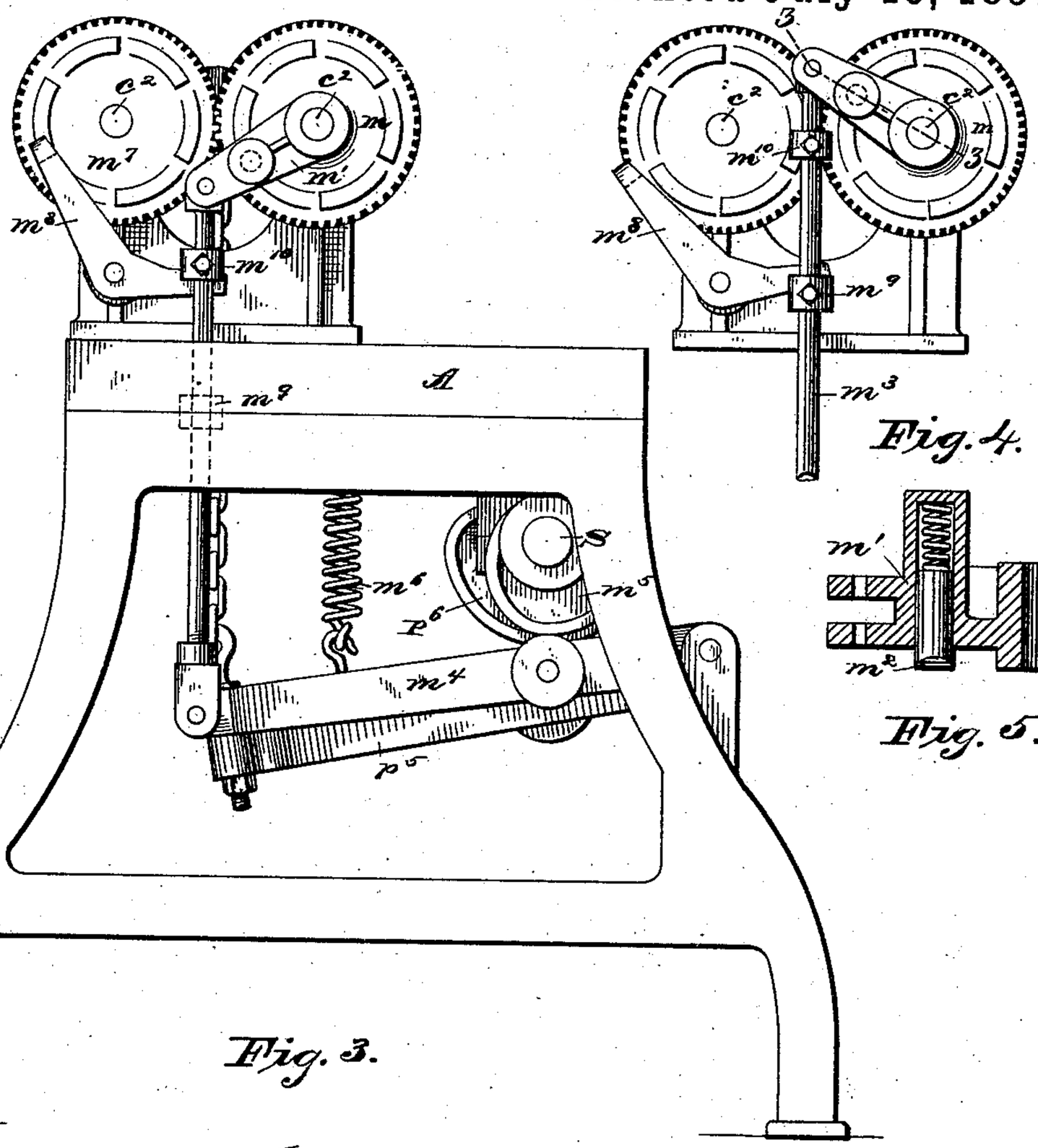

Fig. 3.

Fig. 4.

Fig. 5.

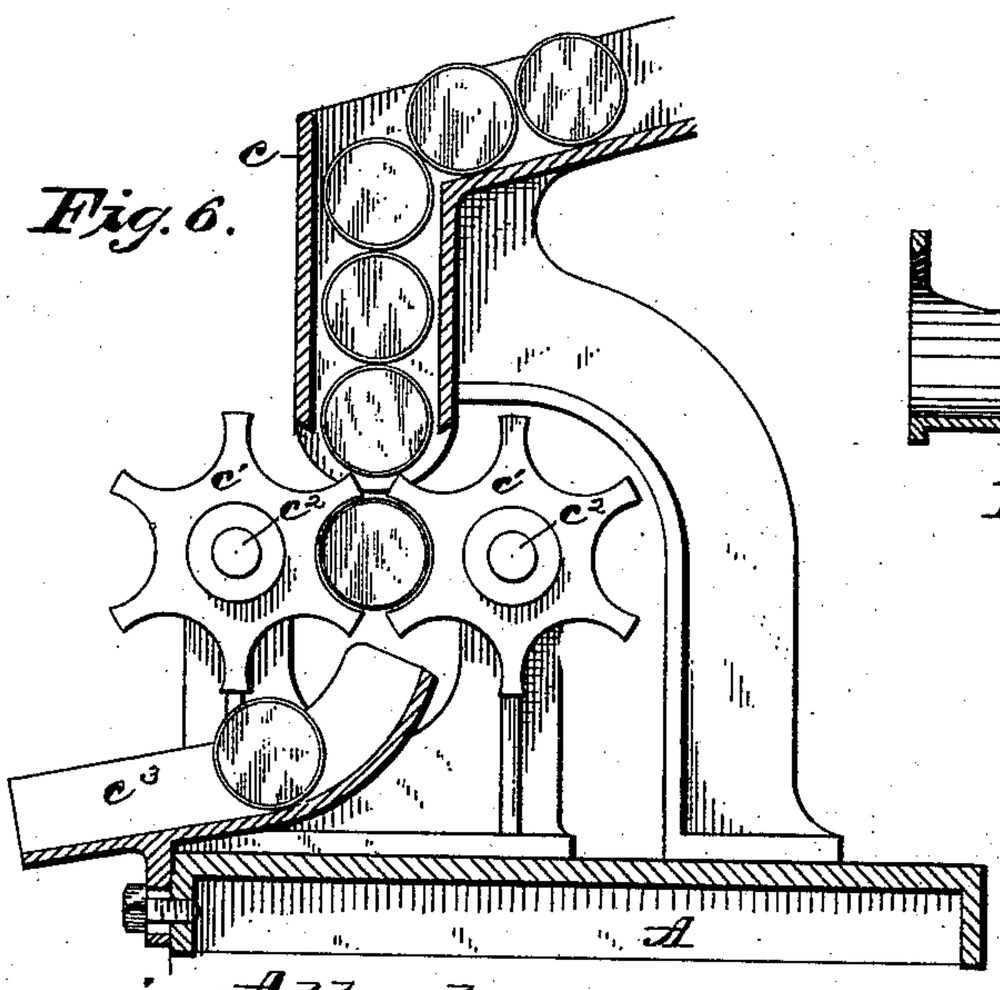

Fig. 6.

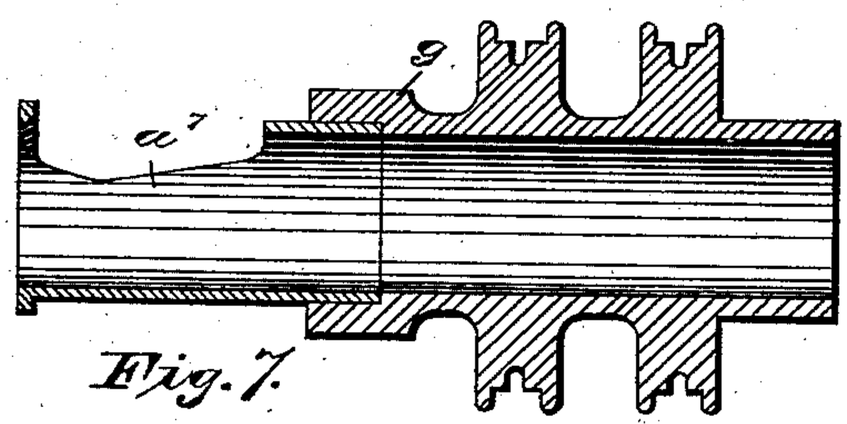

Fig. 7.

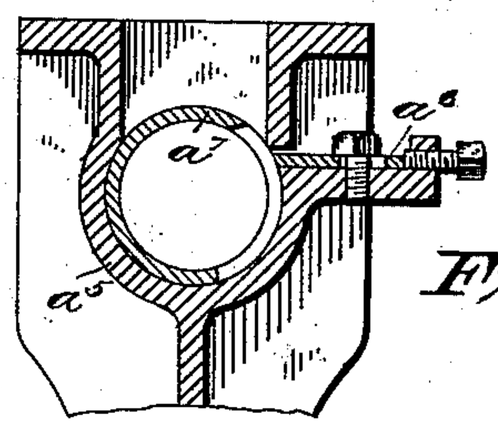

Fig. 8.

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Inventor:
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UNITED STATES PATENT OFFICE.

EDMUND JORDAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO E. W. BLISS, OF SAME PLACE.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,897, dated July 15, 1884.

Application filed May 29, 1884 (No model.)

To all whom it may concern:

Be it known that I, EDMUND JORDAN, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Can-Filling Machines, of which the following is a specification.

My invention embraces an apparatus for automatically filling cans with fruit, meat, fish, or other substance preparatory to hermetically sealing them; and it consists in a machine hereinafter fully described.

In the accompanying drawings, Figure 1 represents a front view of my improved can-filling machine, and also a partial section view taken through R R, Fig. 2. Fig. 2 is a cross-section of my improved machine, taken at line *x x*, Fig. 1. Fig. 3 represents an end view of the same, showing the ratchet and cams for operating the can-filling mechanism in point of line *y y*, showing the position of ratchet after a can has been filled. Fig. 4 is an end view of the ratchet and its position when ready to bind a can. Fig. 5 represents a longitudinal section of the ratchet-arm, taken through line *z z*, Fig. 4. Fig. 6 is a cross section of the can-feeding device, taken at line *w w*, Fig. 1. Fig. 7 is a longitudinal section of the cylindrical cutter and its operating-sleeve, taken at line *v v*, Fig. 1. Fig. 8 represents a cross-section of the box supporting and guiding the cylindrical and straight cutters, taken at line *u u*, Fig. 1. Fig. 9 is a longitudinal section of the filling and supporting tube, with a can in position to be filled, taken through line *t t*, Fig. 1. Fig. 10 is a top view of the reciprocating slide, which moves the cans onto the filling and supporting tube, and holds the same while being filled. Fig. 11 is a cross-section of the weighted piston, taken at line *q q*, Fig. 1. Fig. 12 is a side view of the packing-plunger, which pushes the contents from the cylindrical cutter into the can.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents the frame suitably supported on legs L, provided therefor.

a represents a feed-chute, open at the top, one end connected with an opening in the feed-hopper.

a^2 represents the cars on the under side of the chute.

a' represents a plunger, with a curved face sliding in *a*.

a^8 represents a segmental oscillating plunger conforming to the circular face of a', and covering opening in the side of the feed-hopper.

a^3 represents a vertical feed-hopper, with an opening in the side communicating with chute *a*.

a^4 represents a weighted piston working in the feed-hopper a^3.

a^5, Fig. 8, represents a box underneath the feed-hopper, in which the cylindrical knife revolves, and to which the straight stationary knife a^6 is attached.

a^7 represents a cylindrical knife revolving in box a^5. A portion of the knife is cut away to admit the contents of the hopper into the aperture in the knife. One surface of the knife is brought to a cutting-edge, which works against the edge of stationary knife a^6, producing a shearing cut, the cavity in the knife forming a circular mold, approximately the size and shape of the can to be filled.

b, Fig. 12, represents a reciprocating adjustable plunger sliding in and through the knife.

b^2 represents a sliding gate, covering the outer end of the knife a^7, and the inner end of the tube b^3, Fig. 9, on which the can is placed to be filled.

b^3, Fig. 9, represents a tube rigidly attached to the box a^5 in line with the cylindrical knife, where the can is placed to be filled.

c, Fig. 6, represents a chute for feeding empty cans to be filled.

c' c' represent part-molds, having a rotary intermittent motion, attached to shafts c^2 c^2.

c^3 represents a chute for conducting filled cans from the machine.

c^4, Fig. 10, represents a reciprocating slide to push the empty cans from the molds onto tube b^3, Fig. 9. a' is drawn outwardly by chain *d*, attached to hook d', passing over sheave-wheel d^2. The opposite end of the chain is attached to lever d^3. This lever is pivoted to the frame and actuated by cam d^4 on the main shaft S. a' is drawn inwardly by coiled spring d^5, Fig. 2. The segmental plunger a^8 is actuated by chain *c*, Fig. 2, one end made fast to wheel e' secured to one of the trunnions of a^8, and the opposite end to lever e^2, Fig. 2.

The opposite end of the lever is pivoted to the frame and is actuated by cam c^3 on the main shaft S. A reversible oscillating motion is imparted to a^8 by chain c^5 attached to the wheel on the opposite trunnions. The chain passes over idler c^7. The opposite end of the chain is attached to a similar lever, c^8, pivoted to the frame and actuated by cam c^9 on the main shaft. The weighted piston a^4, Fig. 1, is attached to a lever by a connecting-rod, and is moved upward by chain b attached to the end of lever f'. The opposite end of this chain is attached to lever f^2, pivoted to the frame, and is actuated by cam f^3 attached to the main shaft S, and is moved downward by its own gravity and the adjustable weight f^4. The adjustable weight is movable on the lever f, to regulate the pressure on the material under the piston. The cylindrical knife is rigidly attached to sleeve g, Fig. 7, and is rotated forward to make the cut by chain g' attached to wheel g^2. The opposite end of the chain is attached to lever g^3 pivoted to the frame and actuated by cam g^4 attached to the main shaft S. A reverse motion is imparted to the knife and sleeve by chain g^5 attached to wheel g^6. The opposite end of the chain is attached to lever g^7, pivoted to the frame and actuated by cam g^8 on the main shaft S. The plunger b slides in and is supported in the cylindrical knife.

h represents the stem of the plunger, moving in and supported by a guide in the frame. h' represents the guide in the frame.

h^2 represents an adjustable clamp, one end attached to the stem of the reciprocating plunger and the opposite end to chains h^3 and h^4. The chain h^3 is attached to clamp h^2 and passes over idler h^5, and the opposite end is attached to lever h^6, pivoted to the frame and actuated by cam h^7. This mechanism is for imparting a forward motion to the reciprocating plunger. A reverse motion is imparted to the plunger by chain h^4 attached to clamp h^2, passing over idler h^8, the opposite end attached to lever h^9, pivoted to the frame, and actuated by cam h^{10} attached to the main shaft S. A downward motion is imparted to gate b^2, provided with a projecting stem, K^2, moving in a guide in the frame. The gate moves in a groove in plate carrying b^3, Fig. 4, and forming a part of the box a^5.

K' represents the plate.

K represents a lever, one end connected with stem K^2 pivoted to the frame at K^3, and the opposite end working on the face of cam K^4.

K^5 represents a guide in the frame in which the stem moves. An intermittent rotary method is imparted to the part molds c' c' by ratchet-wheel, pawl, and lever working on a cam.

m represents a gear-wheel with ratchet-teeth in the side, rigidly attached to shaft c^2, to which one of the part-molds is rigidly attached.

m' represents a pawl-lever working loosely on shaft c^2, and the opposite end is pivoted to the connecting-rod m^3.

m^2, Fig. 5, represents a sliding pawl actuated by a coiled spring, and works on the ratchet on the side of the wheel m.

m^3 represents a connecting-rod, one end attached to pawl-lever m' and the opposite end to lever m^4.

m^4 represents the lever pivoted to the frame and actuated by cam m^5 on the main shaft S. The cam moves the connecting mechanism downward and spring m^6 brings it back.

Fig. 4 represents the reverse position of Fig. 3.

m^7 represents a wheel similar to m', rigidly attached to shaft c^2, on the opposite end of which a part-mold is rigidly attached and meshes with the gear m'.

m^8 represents a bent lever. The long arm of the lever is provided with a hook acting on the face of the ratchet-teeth on m^7, to stop the gear-wheels at a given point. The short arm of the lever works between the collars on the connecting-rod m^3. When the mechanism makes an upward motion, causing the pawl to engage with the ratchet-teeth, the lever-collar on the connecting-rod strikes the under side of the short arm of the bent lever, thereby drawing the hook from the ratchet-tooth on wheel m^7, bringing it to the position shown in Fig. 4. When the connecting-rod makes a downward motion, collar m^{10} strikes the upper side of the short arm of lever m^8, causing the hook to move toward the center of the wheel m^7 to meet the ratchet-tooth, and thereby produce a positive stop, as shown in Fig. 3. A reciprocating intermittent motion is imparted to slide p, a plan view of which is shown in Fig. 10, by chains, lever, cam, and spring.

p' represents an adjustable clamp, one end attached to the stem of the slide, and the opposite end to chains p^2 and p^3. Chain p^2 is attached to clamp p' and passes over an idler, p^4, and the opposite end is attached to lever p^5, which is pivoted to the frame and works on cam p^6, which imparts a backward motion to the slide, and a projection on the cam carries the slide backward to free it from the part-molds, as indicated in Fig. 1. A forward motion is imparted to the slide by chain p^3, one end attached to clamp p^2, passing over an idler, p^7, and connected with coiled spring p^8 attached to the frame.

R R represent a fast and a loose pulley attached to short shaft S' journaled in the frame. On the opposite end of shaft S' is a pinion, R', meshing in a larger gear-wheel, R^2, rigidly attached to the main shaft S, which is journaled in the frame.

Operation: The circular-faced plunger a', Fig. 2, is drawn outward and segmental plunger a^8 is moved outward and upward. The substance to be placed in the can is then placed in the feed-chute a in front of the circular-faced plunger a'. The plunger then advances by the action of the spring d^4, and remains at rest while the segmental oscillating plunger carries the substance into the opening in the hopper a^3 under the weighted piston a^4, the segmental plunger remaining at rest

until after the weighted piston passes the opening in the hopper. As the weighted piston descends, it forces the material through the open space into the cylindrical knife, remaining at rest until the knife makes a one-half revolution, cutting off the exact quantity of material to fill one can. After the knife has made the half-revolution it remains at rest until the plunger *b* has forced the contents out of the knife into the can. At the same time plunger *b* makes a backward stroke the knife makes a backward half-revolution, leaving the opening in the knife open, ready to receive another charge. Immediately preceding the forward motion of the plunger, gate b^2 is drawn downward to allow the material to pass from the knife to the can, and closes immediately after the plunger makes its backward stroke. The motion of the part-mold wheels *c' c'*, Fig. 6, takes a can from the bottom of chute *c*, and while the part-mold wheels are at rest they hold the can in the mold in line with the center of the filling and supporting tube b^3, Fig. 9, and the cylindrical knife and plunger *b*, as shown in Fig. 6. The forward motion of slide *p* frees the empty can out of the mold onto the tube b^3, as shown in Fig. 9, while plunger *b* forces the material out of the knife, into the tube b^3, into the can, and against the end of the same, forcing the cans with the contents from the tube back into the mold, carrying the slide *p* with it against its spring-pressure. At this stage of the operation a projection on the face of the cam forces the slide backward, and frees the same from the molds, which then make a partial revolution, freeing the can from the molds into the discharge-chute, and at the same time bringing another can into position to be forced onto the tube, as before described.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a can-filling machine, a circular-faced plunger having a reciprocating travel in a feed-chute to carry the material under the segmental oscillating plunger, as described.

2. In a can-filling machine, a segmental oscillating plunger to fit the circular face of the reciprocating feed-plunger to receive and carry the material into the feed-hopper and close the opening, while the reciprocating piston carries the contents into the opening in the knife, as described.

3. In a can-filling machine, a feed-chute emptying into a feed-hopper, a reciprocating plunger moving in the feed-chute, and a segmental oscillating plunger to move the contents of the feed-chute into the feed-hopper, and to cover the opening therein for moving the material from the feed-chute to the feed-hopper, as described.

4. In a can-filling machine, a feed-hopper to receive and conduct the material into the cylindrical part-rotating tubular knife working in the box in the lower portion of the feed-hopper, in combination with a reciprocating plunger to carry the contents of the feed-hopper into the rotating knife, as described.

5. In a can-filling machine, a cylindrical rotating knife, with a section cut away to admit the contents of the feed-hopper, rotating in contact with a stationary cutting-surface, forming shearing edges to separate the contents of the knife from the material in the hopper, as described.

6. In a can-filling machine, a cylindrical tubular knife, with a part of the surface cut away, placed in a box under a feed-hopper and adapted to receive into the knife the required quantity of material to fill a can, provided with a reverse rotating motion to the knife, to separate the contents of the knife from the material in the hopper, as described.

7. In a can-filling machine, a cylindrical reversible rotary knife, with a portion of the surface cut away to admit the material within the knife, in combination with a reciprocating plunger to force the contents of the knife into a can, as described.

8. In a can-filling machine, a circular mold to form the material to be placed in a can into the required cylindrical shape, an extension circular tube, b^3, adapted to receive and support the can, and to conduct the material to the bottom of a can, and a reciprocating plunger to force the material from the mold into the can, as described.

9. In a can-filling-machine hopper, a rotating cylindrical tubular-shaped knife with part of the surface cut away, rotating in the lower part of the hopper for receiving and separating the quantity of material to be placed in a can from the contents of the feed-hopper, in combination with a reciprocating gate, b^2, for retaining the material in the mold when the same is being separated from the contents of the hopper, and opening to allow the same to be forced out of the tubular-shaped knife into the can, as described.

10. In a can-filling machine, one or more intermittently-revolving part-molds, to receive the empty cans from the can-feeding chute and carry the same in front of extension-tube, and to receive the can when filled, and discharge the same into the discharge-chute, in combination with a reciprocating slide to force the can onto tube b^3, as described.

11. In a can-filling machine, feed-hopper a^3, with a cylindrical tubular knife at the bottom with suitable aperture to admit the material into the knife, a rotating mold-shaped knife with a part of the surface cut away for separating the contents of the knife from the hopper, an extension-tube, b^3, to conduct the contents of the knife to the bottom of the can, a reciprocating plunger working in the knife to force the material through the tubular mold into the can filling the same from the bottom, and a reciprocating slide to carry the can onto the tube, combined and arranged substantially as described, as and for the purposes stated.

12. In a can-filling machine, a reciprocating piston, in combination with an adjustable weight to adjust the force to be applied to the material under the piston, as described.

13. The herein-described can-filling machine having the following elements: a reciprocating circular-faced plunger working in a chute, a segmental oscillating plunger fitting the circular plunger, a feed-hopper to receive and conduct the material to a circular mold or knife, a reciprocating adjustably-weighted plunger working in the feed-hopper to carry the material to the mold or knife, a rotating cylindrical tubular knife, a section cut away working in the bottom of the feed-hopper to admit the contents into the knife, a rotating knife working against a stationary cutting-surface to sever the material in the knife from the material in the hopper, a cylindrical tubular mold to contain and form the exact quantity of material to be placed in the can, an extension-tube to receive and support the can to be filled and to conduct the material from the knife or mold to the bottom of the can, a reciprocating gate between the tube and mold or knife to retain the material to be placed in a can when separated from the hopper and to recede to allow the contents to be moved into the can, a reciprocating plunger working in the knife to force the material from the knife and mold into the can, two or more rotating part-molds to receive the cans from the can-feed chute and carry the same on a line in front of tube b^3 and to discharge the cans when filled, and a reciprocating slide to carry the cans onto the tube b^3 and to recede when the can and contents are forced from the tube by the plunger, as described, with the operating mechanism to actuate the same, substantially as described and shown.

14. In a can-filling machine, a mold-shaped knife, in combination with a feeding-chute or hopper.

15. In a can-filling machine, an oscillating mold-shaped knife, in combination with a piston provided with an adjustable weight.

16. In a can-filling machine, a reciprocating plunger, in combination with a mold-shaped knife to form the material cut out of the knife into the can to be filled.

17. In a can-filling machine, two or more part-mold wheels for feeding empty cans to be filled, in combination with an oscillating mold-shaped knife and a reciprocating plunger sliding in and through the knife.

EDMUND JORDAN.

Witnesses:
CYRUS WILLIAMS,
WM. G. WILLS.