No. 698,919. Patented Apr. 29, 1902.

L. S. FLECKENSTEIN.

CAN FILLING MACHINE.

(Application filed June 22, 1901.)

(No Model.) 3 Sheets—Sheet 1.

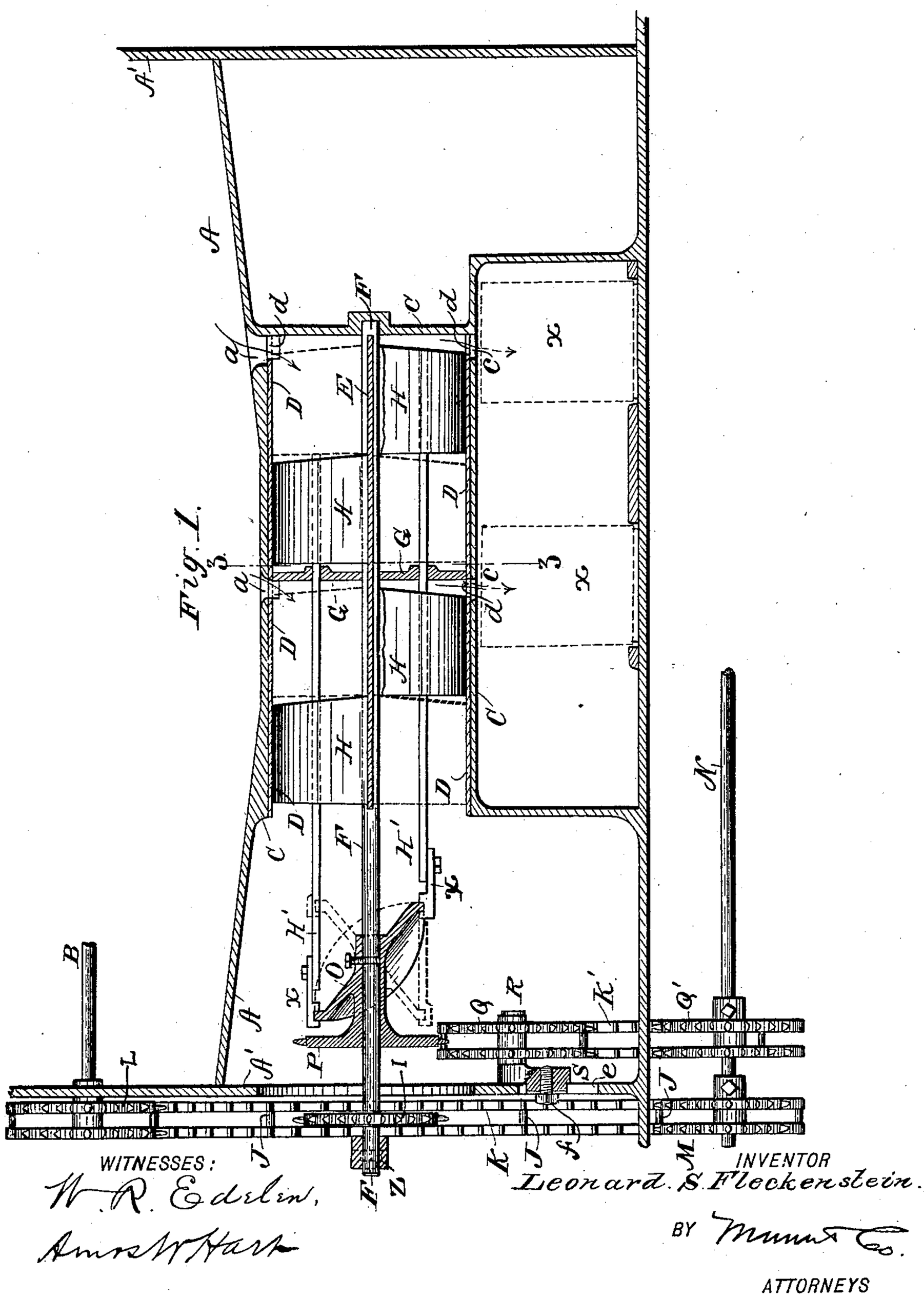

Fig. 1.

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Fig. 2.

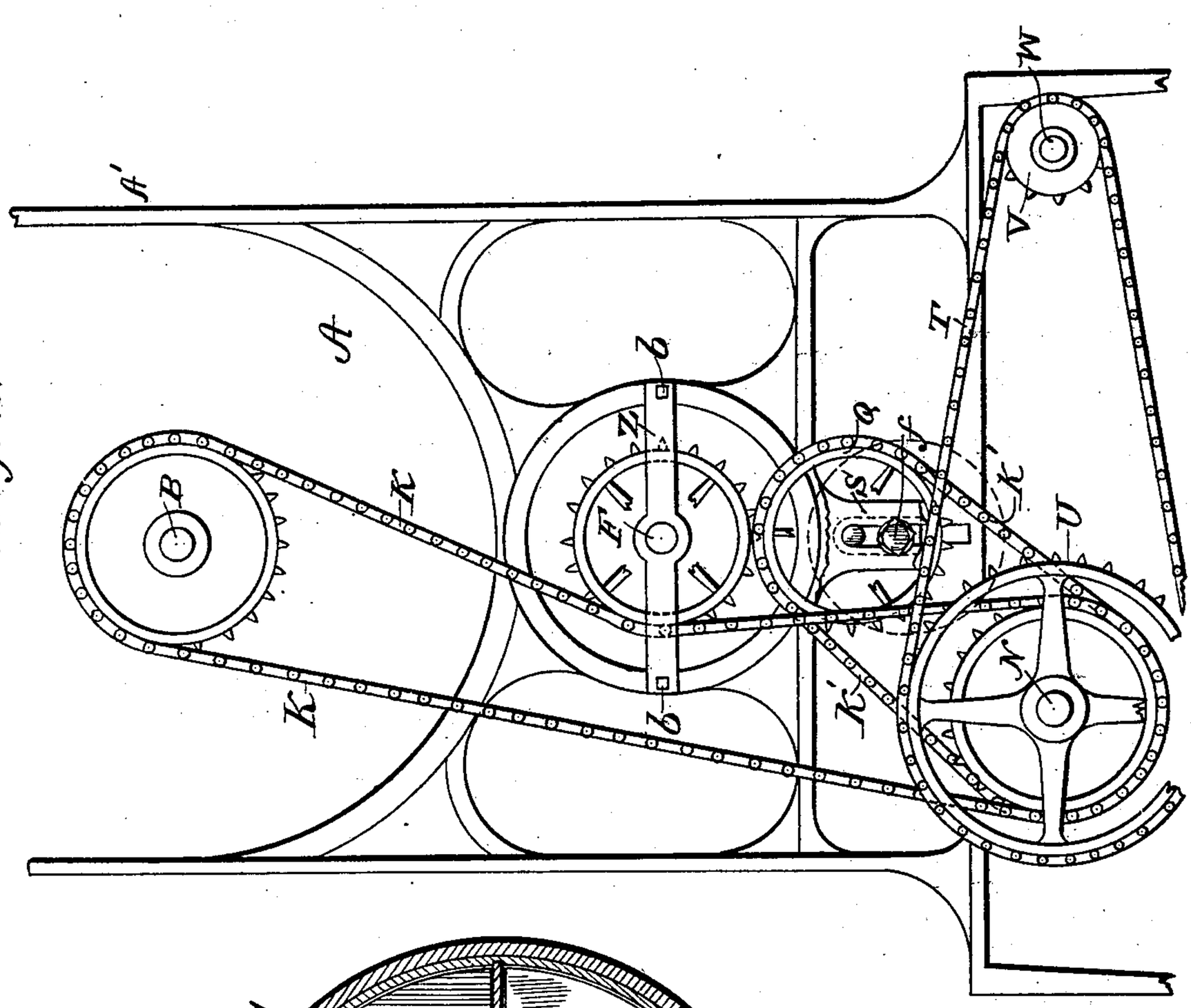

Fig. 3.

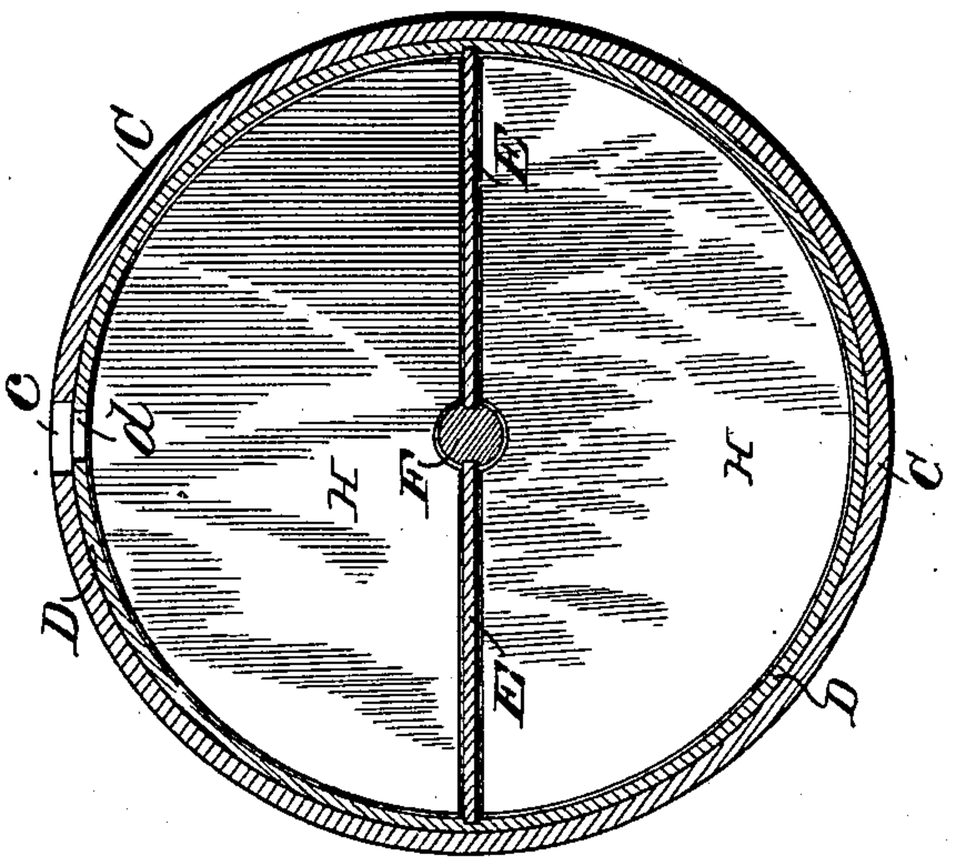

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Fig. 5.

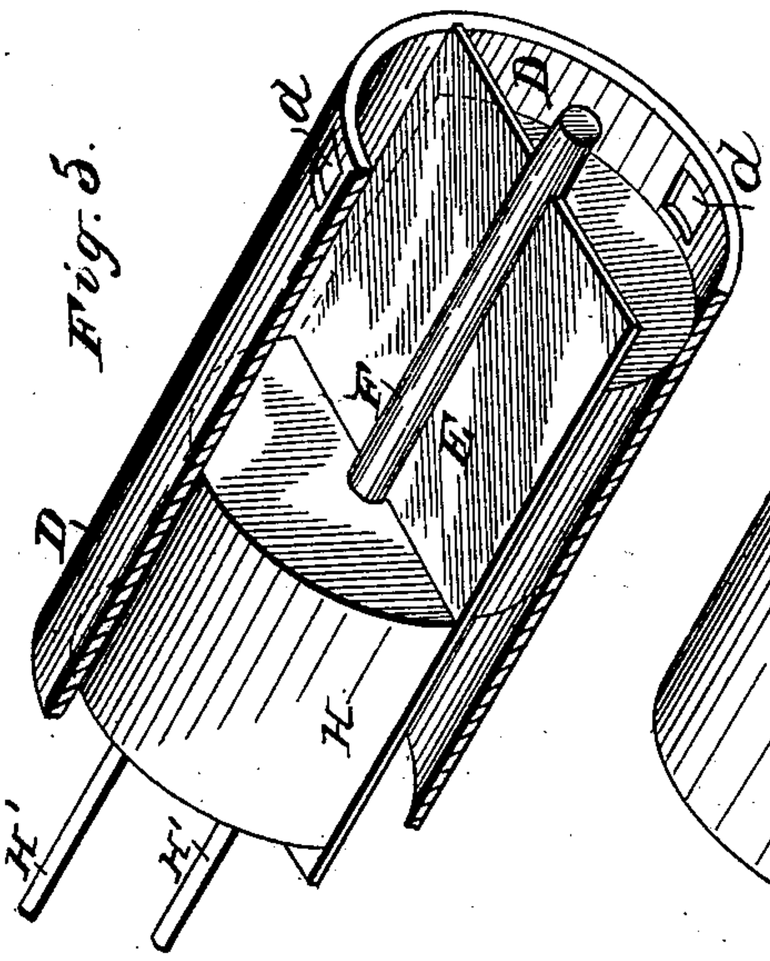


Fig. 6.

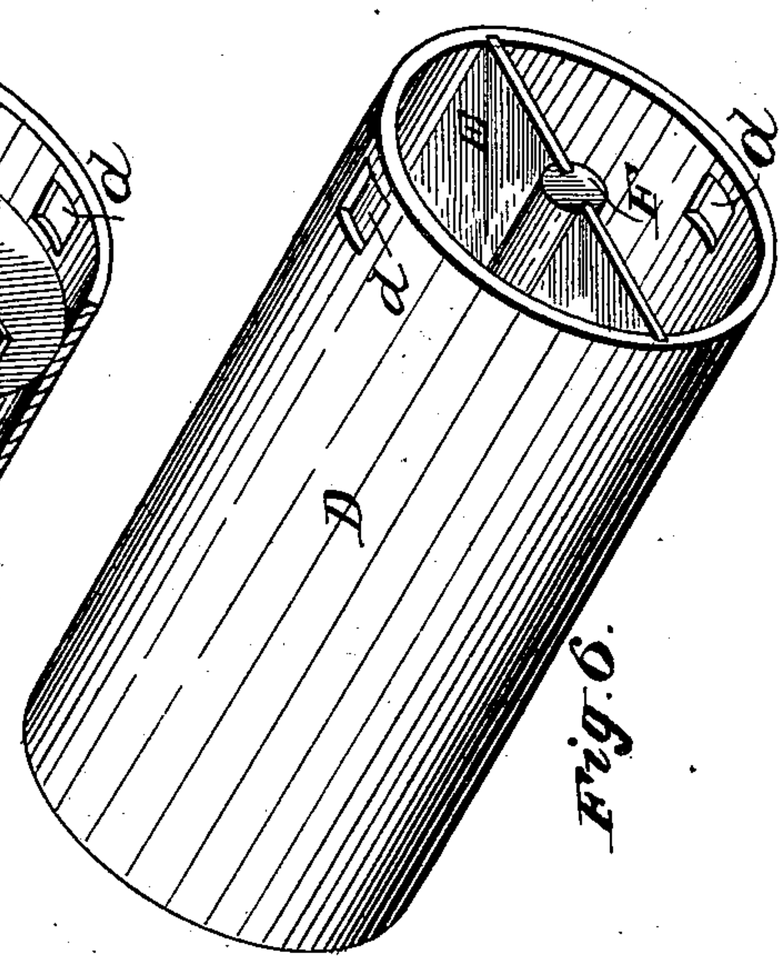


Fig. 4.

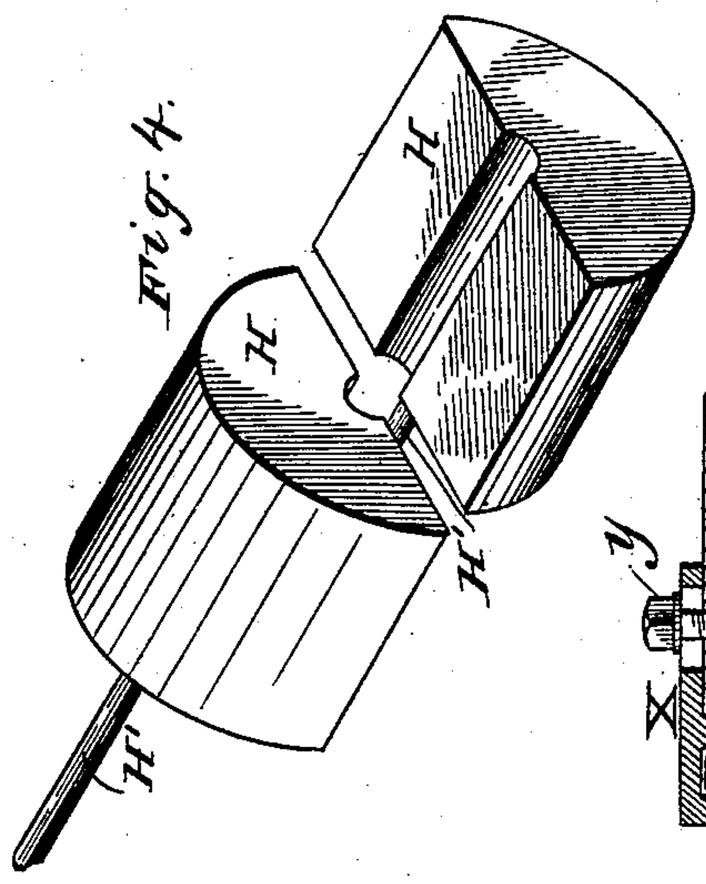


Fig. 7.

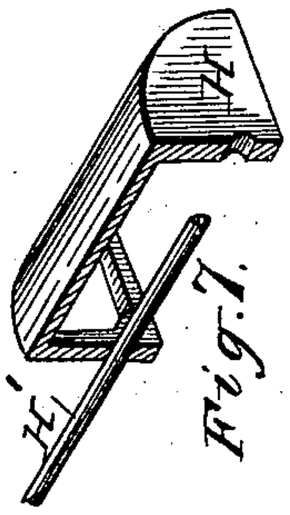
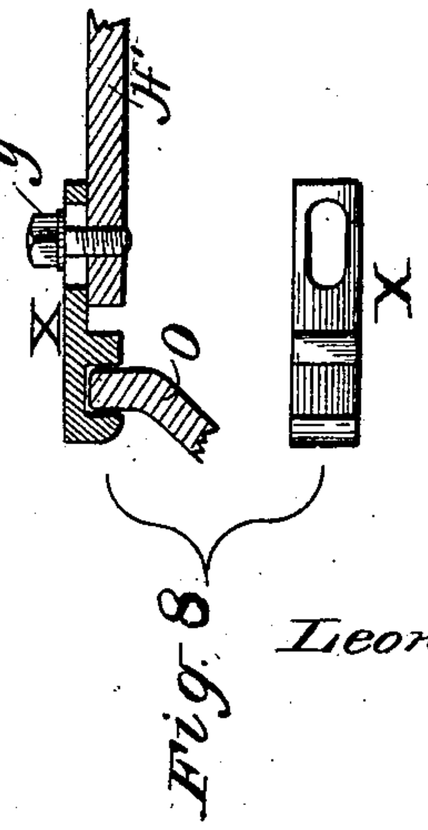


Fig. 8



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UNITED STATES PATENT OFFICE.

LEONARD S. FLECKENSTEIN, OF EASTON, MARYLAND.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 698,919, dated April 29, 1902.

Application filed June 22, 1901. Serial No. 65,628. (No model.)

To all whom it may concern:

Be it known that I, LEONARD S. FLECKENSTEIN, a citizen of the United States, residing at Easton, in the county of Talbot and State of Maryland, have made certain new Improvements in Can-Filling Machines, of which the following is a specification.

My invention is an improvement in the class of automatic can-filling machines in which the cooked corn or other article of food is intermittently delivered from a hopper into cans which are successively placed or carried beneath the discharge-orifice of the hopper.

My invention is distinguished by an arrangement of one or more reciprocating pistons arranged in a rotatable hopper, the piston or pistons being reciprocated and the cylinder containing them rotated alternately by means of suitable mechanism, the food article being received and discharged continuously. The construction, arrangement, and operation of parts are as hereinafter described, and illustrated in the drawings, in which—

Figure 1 is a vertical longitudinal section of my improved machine. Fig. 2 is an end view thereof, illustrating the arrangement of gearing. Fig. 3 is an enlarged vertical or cross section on the line 3 3 of Fig. 1. Fig. 4 is a perspective view illustrating the construction and arrangement of two pistons. Fig. 5 is a perspective view of such pistons arranged in a rotatable cylinder provided with a transverse partition. Fig. 6 is a perspective view of such cylinder, together with the partition and shaft by which they are rotated. Fig. 7 is a perspective view of a portion of one of the reciprocating pistons, and Fig. 8 is a detail section and plan of the adjustable connection between a piston-rod and cam for operating it.

Referring to Fig. 1, A indicates the lower portion of the hopper or receptacle for the cooked corn or other food article which is to be canned. In practice a stirrer or agitator (not shown) is operated within this hopper by means of a rotatable shaft B. The lower portion of the hopper A is formed in connection with a fixed cylinder C, within which is arranged a rotatable cylinder D, (see Figs. 5 and 6,) the whole being arranged within a frame or casing A′. The bottom of the hopper A is provided with discharge orifices or openings *a* and the fixed cylinder C with coincident openings, as shown. The said fixed cylinder is likewise provided on its under side with discharge-orifices *c*. The rotatable cylinder D is provided with diametrically opposite openings *d*, which come into coincidence with the opening *a* of the hopper A and the opening *c* of the fixed cylinder at each half-rotation, as will be further described. This rotatable cylinder D is provided with a transverse partition E, extending its entire length, as shown in Figs. 1 and 5. The side edges of said partition E fit in grooves in the inner periphery of the cylinder D. By preference said partition is made into two parts, as shown in Fig. 6, the inner edges of the same entering longitudinal grooves in the rotatable shaft F. By this means the cylinder D, partition E, and shaft F form one rigid structure, adapted to rotate within the fixed cylinder C. The rotation is effected intermittently by a suitable mechanism. Each half—that is to say, each semicylindrical chamber of the rotatable cylinder D—is divided transversely by a partition G. (See Fig. 1.) Within each such half of the cylinder D two pistons H are arranged to reciprocate, the same being spaced apart as required to receive a charge of food suitable for filling a can. Describing the details of construction and arrangement further, I will state that the transverse partition G divides each half of the cylinder D into practically two compartments, into and from which the corn or other article is alternately received and discharged. It will be seen that there are thus two sets of pistons H, one set or pair being arranged on one side of the horizontal partition E and the other set or pair on the other side thereof. Further, the two sets of pistons are arranged "staggering" or in such diagonal relation that when one set of pistons is retracted to allow the food article to enter one of said compartments of cylinder D the other set of pistons is advanced to the position required to effect discharge of the article from the opposite compartments. Thus, as shown in Fig. 1, the cylinder D is in such position that the partition E is horizontal and the upper set of pistons H are retracted, so that the food article may enter the compartments in front of the pistons, while the lower set of pistons H

are shown as having been pushed forward to the limit, and the food previously contained in the lower compartments is supposed to have been forced out into cans, (shown in dotted lines,) which are in practice successively brought beneath the discharge-orifices *c* by mechanism which is not necessary to describe in this connection. It will be seen that the right-hand end of the cylinder D serves as an abutment for the two right-hand pistons H and that the transverse or vertical partition G serves as an abutment for the left-hand pistons. As before stated, the cylinder D, with its contained partitions and pistons, is rotated intermittently. It will be understood that the rotation occurs immediately following the filling of the two compartments which are uppermost. Immediately that the upper compartments are filled the cylinders are rotated half-way around, and the pistons contained in the compartments which were previously uppermost are then forced forward, while those which were previously in the lower compartments are retracted, whereby the material held in the previous upper compartments is forced out into the can, while the compartments which were previously lowermost are being filled. There is thus intermittent rotation of the cylinder D and an intermittent reciprocation of the pistons, and such rotation and reciprocation occur alternately and at different times. It will be understood that while I show and describe two sets of pistons in the upper and lower compartments of the cylinder D this is mainly for the purpose of more rapid work in can-filling and that the main feature of my invention is embodied in the arrangement of a rotatable cylinder and a piston adapted to rotate therewith and to reciprocate at the required times. As shown in Fig. 1, the working end of the pistons H is inclined at a slight angle, which construction facilitates filling the upper compartments of the cylinder and especially the discharging of the contents from the lower compartments.

As before stated, the shaft F is rotated intermittently in one direction, the same completing a half-revolution at each movement. For the purpose of obtaining this motion I propose to employ any suitable mechanism; but in this instance I illustrate a particular mechanism consisting of a sprocket-wheel I, keyed on the end of said shaft exterior to the frame or casing A′ and engaging a double sprocket-chain K. (See Figs. 1 and 2.) This chain is formed of two single sprocket-chains having at suitable intervals transverse connections or pins J and spaced apart a distance sufficient to receive the aforesaid sprocket-wheel I. It is apparent that if the said chain K be arranged to run on two sprocket-wheels L on agitator-shaft B and on two corresponding sprocket-wheels M on the lower shaft N the wheel I will be rotated intermittently by contact with the pins J, while the shafts B and N will be rotated continuously. The lower shaft N is in practice so connected with other mechanism (not shown) as to effect the automatic placing of the cans *x* in due position under the discharge-orifices *c* of the fixed cylinder C and removal of the same therefrom, as required. The two sets of pistons H are reciprocated alternately by suitable connection of their rods H′ with a cam *o*, which is arranged in connection with the sprocket-wheel P, mounted rotatably, but not slidably, on the shaft F. The said cam *o* is in the nature of a disk having a general inclination to the shaft F at an angle of forty-five degrees. The piston-rods H′ are connected with the edges of the cam at diametrically opposite points, so that when one set of pistons moves in one direction the other set is necessarily moved in the opposite direction. As before stated, this reciprocating movement is preferably intermittent, and for this purpose the sprocket-wheel P obviously requires to be rotated intermittently. This is effected by a double chain K′, constructed similar to the longer chain K (before described) and adapted to run on two sets of sprocket-wheels Q and Q′. The lower wheels Q′ are mounted on and revolve with the lower shaft N and the upper wheel Q and are provided with a hub adapted to rotate on a stub-shaft R, which is provided with a lateral arm S, adapted for vertical adjustment, as will be presently described. As shown in Fig. 2, the double chain K′ is arranged at an incline, and a third chain T extends from a sprocket-wheel U and the shaft N to the similar sprocket-wheel V, mounted on a drive-shaft W.

In order to provide for a certain adjustment of the pistons H, so that they may be brought near to or farther from the abutting portions of the cylinders C and D, I employ an attachment. (Shown in Figs. 1 and 8.) As shown in the latter figure, the said attachment consists of a plate X, having lugs adapted to engage the periphery of the cam O, and also having a slot in its inner end through which passes the screw Y, that secures the device to the piston-rod H′ and permits longitudinal adjustment as may be required.

For the purpose of cleaning the cylinders C and D and the pistons and other parts contained in the rotatable cylinder I provide for removal or withdrawal of the cylinder D and its contained parts from the fixed cylinder C. As shown in Fig. 2, the outer end of the shaft F is journaled in a cross-bar Z, whose ends are detachably secured to the frame A′ by means of bolts *b*. It is apparent that if the longer double sprocket-chain K be duly slackened and the sprocket-wheels Q be lowered to the position shown in dotted lines, Fig. 2, and the bolts *b* be withdrawn, so as to release the bar Z, the shaft F and all its movable connections and attachments may be withdrawn bodily. To permit such downward adjustment of the sprocket-wheels Q, the arm S, before referred to, has a portion which is adapt-

ed to slide vertically in a slot *e*, provided in the frame, and is duly clamped therein by means of a screw *f*.

As shown in Figs. 4 and 5, the pistons H have a longitudinal central groove in their flat sides to adapt them to fit upon the shaft F. The pistons may be constructed hollow for sake of lightness and economy of material. While I have described the pistons as having a particular form, it is obvious that in the broader aspect of my invention I do not necessarily restrict myself in this regard and that any form or shape may be employed which will effect the desired result.

In an accompanying application for Letters Patent, No. 68,005, I have claimed a double sprocket-chain and gearing, whereby continuous rotary motion of two shafts and intermittent rotary motion of a third shaft may be obtained.

While the machine above described is very effective in operation, it is very simple in construction and may be manufactured at small cost as compared with others of its class.

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

1. The improved can-filling machine, comprising a hopper provided with a discharge-orifice, a fixed cylinder having a coincident opening and a discharge-opening at the lower side, a rotatable cylinder arranged within the fixed cylinder, and provided with a transverse partition or diaphragm, pistons arranged slidably on opposite sides of the partition, and means for rotating the cylinder containing the pistons and for reciprocating said pistons in opposite directions alternately with such rotation, substantially as shown and described.

2. The improved can-filling machine, comprising a hopper, a fixed cylinder provided with coincident orifices, a rotatable cylinder arranged in the fixed cylinder and provided with diametrically opposite induction and discharge orifices adapted to be brought into coincidence with the orifices of the fixed cylinder, a horizontal partition arranged in the rotatable cylinder, a rotatable shaft arranged concentrically in the rotatable cylinder, pistons arranged on opposite sides of the partition, a rotatable cam for imparting simultaneous reciprocation to the two pistons in opposite directions, and means for rotating the said shaft and cam, alternately, substantially as shown and described.

3. The improved can-filling machine, comprising a hopper and a fixed cylinder with two sets of orifices as specified, a rotatable cylinder having two sets of orifices for reception and discharge of the food article, said orifices being arranged diametrically opposite and adapted to be brought into coincidence with the discharge-orifices of the hopper and fixed cylinder, a longitudinal, central partition arranged in the rotatable cylinder and dividing the same into like compartments, a pair of pistons arranged in the two opposite sets of compartments, those of each pair being on opposite sides of the said partition and duly spaced apart, and means for reciprocating the two sets of pistons simultaneously, but in opposite directions, and for rotating the cylinder with the contained partitions and pistons, the reciprocation and rotation being alternate and both intermittent, substantially as shown and described.

4. In a can-filling machine, the combination, with a fixed cylinder, of a rotatable cylinder arranged therein, and two semicylindrical pistons arranged in said rotatable cylinder, means for reciprocating said pistons, a shaft for rotating the cylinder and its contained pistons, a fixed frame having a removable bar constituting a bearing for said shaft and extending across an opening in said frame, which opening is alined with the rotatable cylinder and has a greater diameter than the latter, whereby the rotatable cylinder and its attachments may be removed bodily through said opening, substantially as shown and described.

5. In a can-filling machine, the combination, with a suitable hopper and a fixed cylinder communicating therewith, of a rotatable cylinder arranged in such fixed cylinder, a shaft for imparting rotation thereto, pistons adapted to slide in the rotatable cylinder, a cam, a sprocket-wheel for rotating the said cam, gearing adapted for rotating said sprocket-wheel and cam intermittently, a vertically-adjustable support for such gearing, a removable bearing for the outer end of the rotatable cylinder and shaft, and the frame or casing having an end opening adapted to permit removal bodily of the rotatable cylinder and its connections, substantially as shown and described.

LEONARD S. FLECKENSTEIN.

Witnesses:
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GEO. W. WILSON.