No. 715,539. Patented Dec. 9, 1902.

F. J. BEIER.

VENDING MACHINE.

(Application filed May 6, 1901.)

(No Model.) 4 Sheets—Sheet 1.

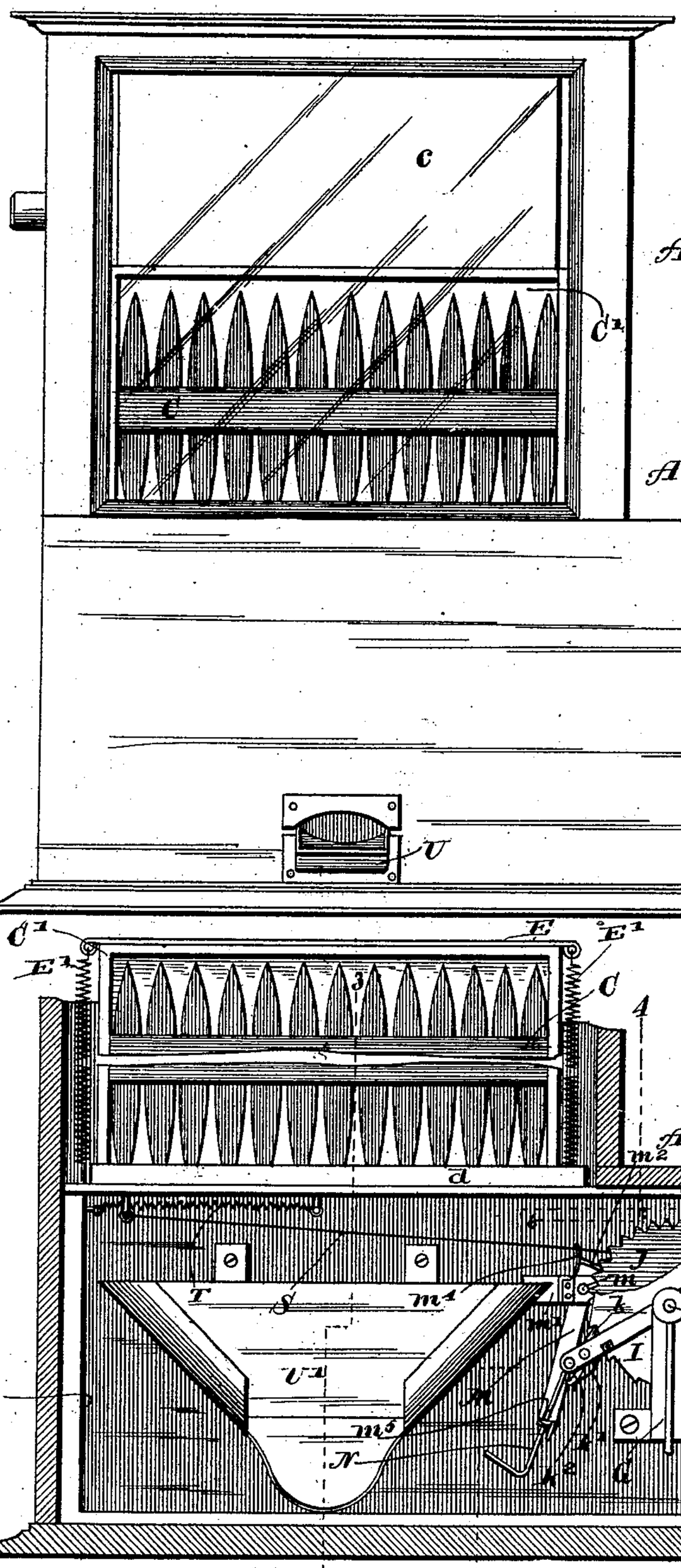

Fig 1

Fig 2

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William H. Hall

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his Attorneys

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(No Model.) 4 Sheets—Sheet 2.

Fig 3

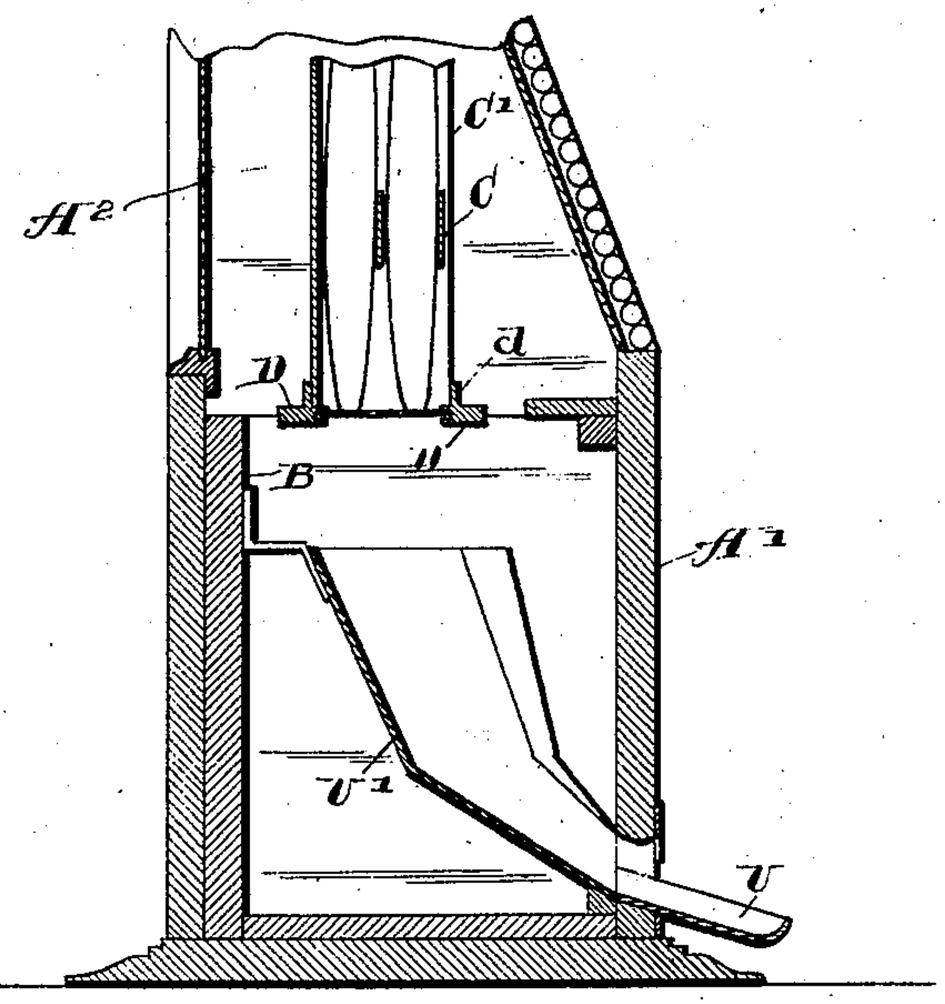

Fig 4

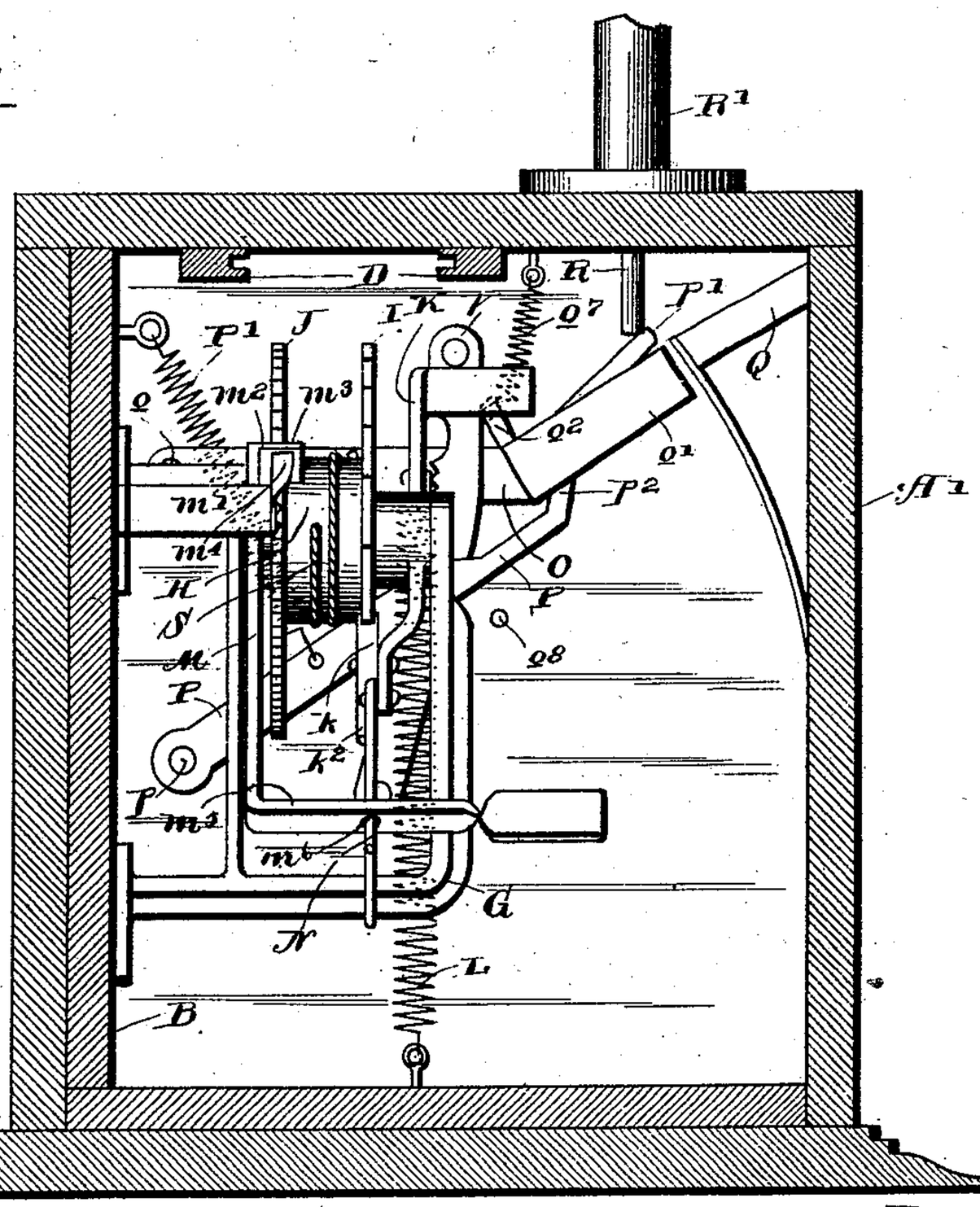

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Fig 5

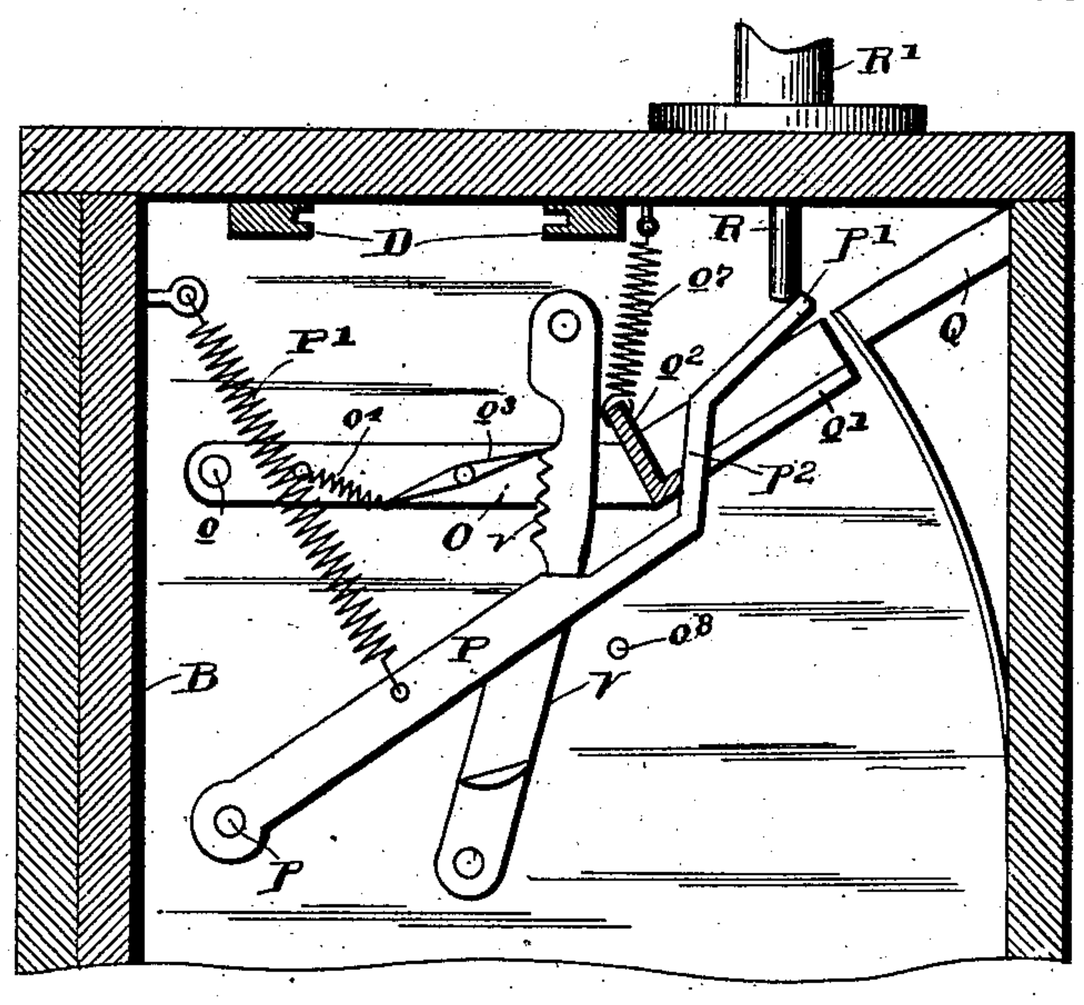


Fig 6

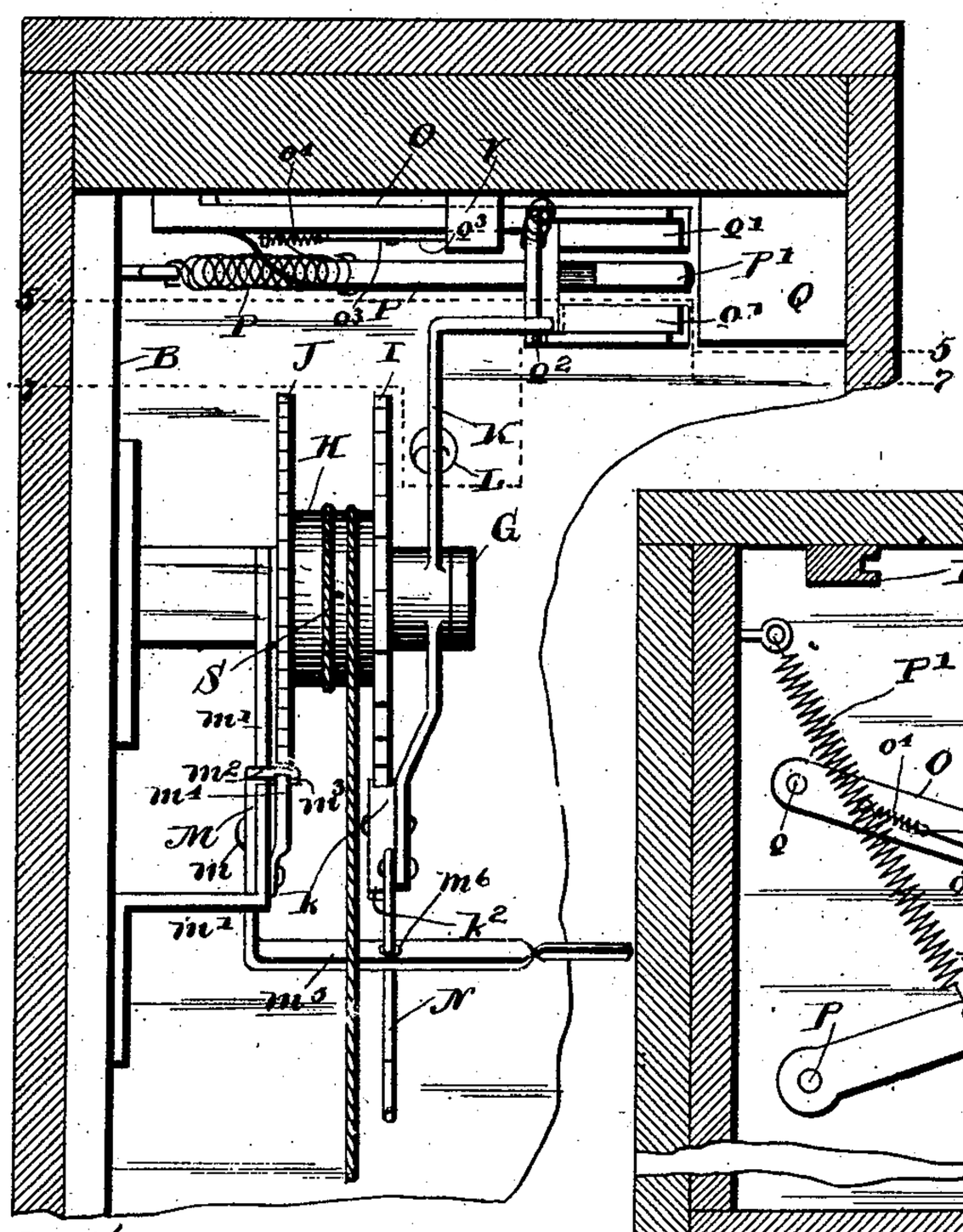
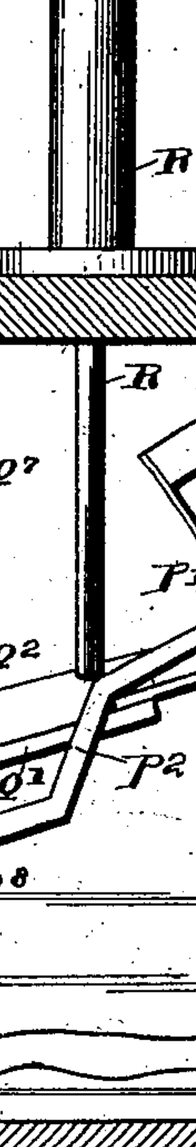


Fig 7



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VENDING MACHINE.

(Application filed May 6, 1901.)

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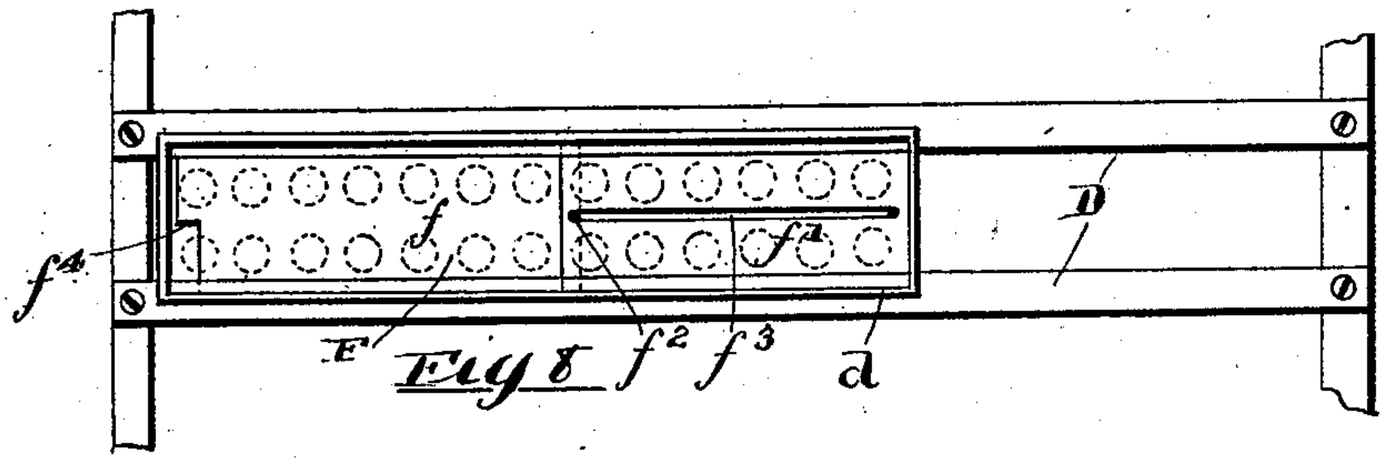


Fig 8

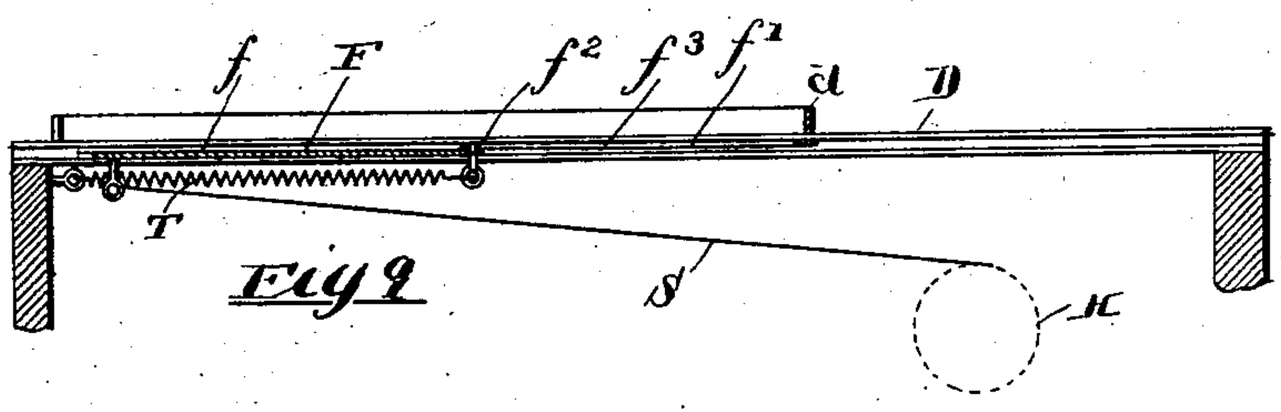


Fig 9

Fig 10

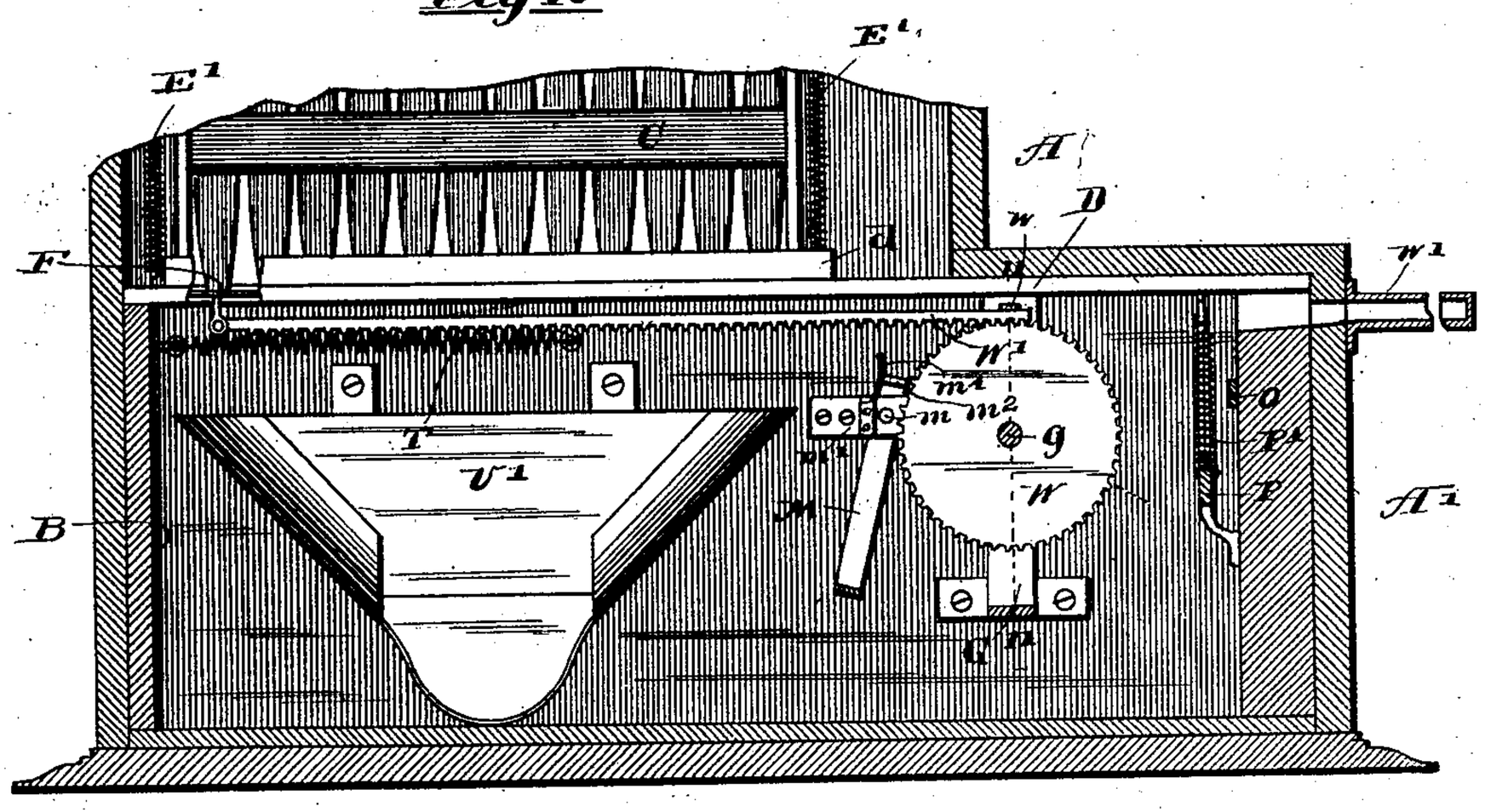
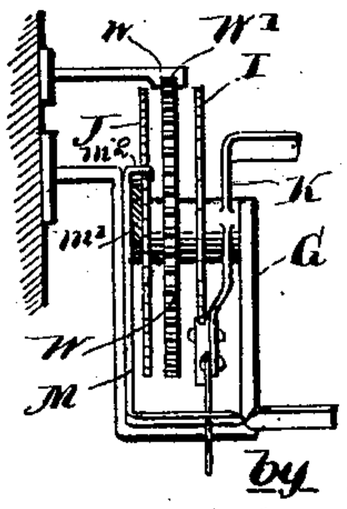


Fig 11



Witnesses:
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William L. Hall.

Inventor:
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UNITED STATES PATENT OFFICE.

FRANK J. BEIER, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO BERNARD S. AUSTRIAN AND CHARLES S. ROSENTHAL, OF CHICAGO, ILLINOIS.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 715,539, dated December 9, 1902.

Application filed May 6, 1901. Serial No. 58,847. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. BEIER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vending-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in coin-controlled vending-machines.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In general terms the device comprises a series of pockets or holding-racks adapted to hold the articles to be vended in regular rows or series, means constructed to permit the release or discharge of the contents of the pockets *seriatim*, and means for actuating the releasing or discharging devices.

The device hereinafter illustrated and described is more especially adapted for vending cigars, but a device embodying similar principles of construction may be used for the sale of a variety of articles.

In the drawings, Figure 1 is a view in front elevation of a device which includes the main features of the invention, showing an inclosing case and a holding-rack located therein. Fig. 2 is a view principally in elevation of the parts within the inclosing case, the walls of the latter being shown in section to disclose the mechanism for releasing the contents of the holding-rack. Fig. 3 is a view in cross-section, taken on line 3 3 of Fig. 2, showing the holding-rack, the slide closing the bottom thereof, and the delivery-chute. Fig. 4 is a view in cross-section, taken on line 4 4 of Fig. 2, showing the main parts of the coin-controlled mechanism. Fig. 5 is a sectional view taken on line 5 5 of Fig. 6, showing the parts of the coin-controlled mechanism which are immediately acted upon by the actuating-plunger. Fig. 6 is a plan view of the parts shown in Figs. 4 and 5, taken on line 6 6 of Fig. 2. Fig. 7 is a sectional view similar to Fig. 5, showing the parts in changed positions. Fig. 8 is a detail plan view of the slide which closes the bottoms of the pockets and showing the supports for said slide. Fig. 9 is a longitudinal sectional view of the slide. Fig. 10 is a sectional elevation of the main parts of the device, illustrating a modified construction in the devices for moving the slide. Fig. 11 is a sectional view taken on line 11 11 of Fig. 10.

Referring to the drawings, A represents an outer or inclosing case having a lower or base portion A′ and an upper part A^2. Said base portion A′ contains a case B, which is open at its front and top and in which is mounted the actuating mechanism. The upper part A^2 of the outer case, as herein shown, is adapted to receive a cigar-box C′, containing a suitable holding-rack or series of pockets C. Said holding-rack, as shown in the drawings, is adapted to contain cigars, and the box C′, in which said rack is contained, is placed on edge, with its front wall removed and its lid *c* turned up so as to display the label thereon and the contents of the box. The front of the said upper part A^2 of the case is made of glass to allow a clear view of the box. Said rack or the box containing it rests on parallel horizontal guides D and is removably secured in position by longitudinal stops *d*, Fig. 3, on the guides and by a spring-clasp formed by a bar E, adapted to extend over the upper side of the box when the latter is in position, and springs E′, secured at their upper ends to the bar E and at their lower ends to one of the guides D. Said box C′ is made with a removable side, which preferably has sliding engagement with the ends and bottom of the box that it may be readily taken out after the box is secured in position on the guides. Said guides D are in turn secured to and supported by the end walls of the case B, so that they may be removed from the outer case A with the inner case B. Said guides, as herein shown, comprise parallel grooved bars having their grooves turned toward each other. The contents of the rack or box is retained in position after the removal of the side of the box and when the device is in readiness for operation by a plate or slide F, having marginal sliding engagement with the guides D and adapted when in its initial position to cover the space be-

tween the guide throughout the length of the rack C. Said rack, as herein shown, has two rows of pockets which hold the cigars in two layers or rows. The pockets C are shown in Fig. 1 as located midway of the width of the box C'; but, obviously, said guide-partitions may be secured in the box adjacent to the lower or removable side thereof. The guides D extend beyond the inner end of the rack or box C' a sufficient distance to allow the slide F to be retracted entirely clear from the rack or box. As herein illustrated, said slide F comprises two sections $f f'$, Fig. 8, having relative sliding engagement with each other in the guides D, so as to close upon each other when retracted beyond the rack or box C', thereby requiring a length in the part of the guide beyond the box only one-half of that required for a single-piece slide. The latter construction may be used, however, with the disadvantage of requiring a longer outer case to contain it. The two pieces $f f'$ are prevented from becoming entirely separated when extended by a pin f^2 on the lower slide which engages an elongated slot f^3 in the upper slide. The pin engages the forward end of the slot when the slides are extended and engages the rear end of the slot when the lower plate is retracted.

The outer end f^4 of the outer section f of the slide is herein shown as adapted to successively uncover the pockets of the two rows of pockets in the rack. To accomplish this, the said end f^4 is cut away or notched at one side of its center line, with the end margin of the notched part at such distance from the extreme end of the slide that the contents of the first pocket of the outer or front row of the rack C will be half uncovered when the first pocket of the inner row is fully covered, as plainly shown in Fig. 8. A step-by-step longitudiual movement is imparted to the slide F, so that it is retracted at each step a distance equal to the distance between the pocket-centers, so that the pockets of the front and back rows will be alternately opened so as to permit of the successive discharge of their contents. To impart such motion to the said slide, the following mechanism is provided: A bracket G is secured to the rear wall of the case B below the portion of the guides D which project beyond the rack C. In said bracket G is supported a pivot-shaft g, Fig. 2, on which a drum H is rotatively mounted, so as to revolve in a vertical plane below the guides D, and preferably centrally thereto. Attached to one end of said drum is a ratchet-wheel I, Figs. 4 and 6, and to its other end is attached a toothed wheel J. An actuating-lever K is pivoted on the outer end of the pivot-shaft g adjacent to the ratchet-wheel I and carries at its lower end a pivoted pawl k, adapted to be held normally in engagement with the ratchet-wheel I by a spring k'. Said pawl is also provided below its pivot with a tailpiece k^2. To the end of the lever K remote from the pawl k one end of a spiral spring L is attached, the other end of the spring being secured to the bottom wall of the case B, so that the spring is in tension when the lever K is in the position indicated in Fig. 2. Said spring tends to depress the lever and rotate the ratchet-wheel I. A detent-lever M is pivotally mounted on the rear wall of the case B by a pivot pin or stud m, secured in a bracket m'. The upper end m^2 of said lever is bent so as to project outwardly at right angles thereto, Figs. 4 and 6, and constitutes a detent m^3, which is adapted to engage the teeth of the wheel J. A spring m^4, suitably disposed and secured, acts to throw the upper end of the said lever M into engagement with the notched edge of the wheel J. The lower end m^5 of the lever M is bent outwardly to form an arm by which the lever may be manually moved to throw it out of engagement with the wheel J. Said arm m^5 is provided with a guide-aperture m^6, through which passes the lower end of a rod N, the upper end of said rod having pivotal engagement with the lower end of the actuating-lever K, as most clearly shown in Fig. 2, the parts being so disposed that when the lever M is thrown out of engagement with the toothed wheel J the rod N will depress the heel or tailpiece k^2 of the pawl k and release the latter from the ratchet-wheel I.

On the inner end wall of the case B and at right angles to the ratchet-lever M is pivoted on a pivot-stud o a lever O, Figs. 4, 5, and 7, the forward end of which swings or moves vertically and is widened and slotted or forked to provide a coin-receptacle. The prongs o' of the forked end of the lever are provided with external raised ribs, between which the coin is held when it rests in a horizontal position on the said forked end of the lever, and said ribs are connected by a transverse rib o^2 at their rear or inner ends, said flat forked end of the lever, with its ribs o' and o^2, forming a shallow trough-like coin-receptacle. Said lever is engaged by the upper end of the lever K, which extends over the same, Figs. 4, 6, and 7, the end of said lever K being bent forwardly, so that it extends over the laterally-extended forked forward end of said lever O in position to engage the upper edge of the transverse rib o^2 thereon. Said lever O is held in an elevated position by a spring o^7, as shown in Fig. 5, the arms and actuating-springs of said levers K and O being so proportioned that normally the parts assume the position shown in Figs. 2 and 5. A second lever P is pivotally mounted on the end wall of the case B, with its pivot-stud p below the pivot of the lever O. Said lever P is provided with a flat tip p', which is adapted to pass between the prongs of the forked end of the lever O and is connected with the outer end of the lever proper by an oblique shank p^2, Figs. 4, 5, and 7, which rises from the end of the lever, so that the tip p' will be supported above the level of the flattened and forked end of the lever O when the lever P

is in its elevated position. The lever P is held normally elevated by a coiled contractile spring P', Figs. 5 and 7. The forked and flattened end of the lever O stands normally in an upwardly and forwardly inclined position, Fig. 5, and is adapted to receive coins inserted through an inclined coin-chute Q, inserted in the front wall of the outer case, with its inner end adjacent to the forward end of said lever, the parts being so arranged that a coin deposited in said chute will slide by gravity through the same and downwardly upon the flattened end of the lever O beneath the tip p' of the lever P. The coin thus deposited in the holder formed by the flattened end of the lever O will be held or confined therein by the lateral ribs o' o' thereon.

R indicates a vertically-sliding plunger which is mounted in a guide-tube R' on the top of the base portion of the outer case, with its lower end in position to rest upon the tip p' of the lever P. Said plunger is provided with a head or knob r.

A cord S is attached at one end to and wound upon the drum H and is attached at its outer end to the outer section f of the slide F. A contractile coiled spring T, attached to said section f of the slide and to the outer end of the case, tends to hold the sections of the slide extended and the entire slide in position to close the bottoms of the pockets of the rack C.

U indicates a receptacle secured in front of a delivery-aperture in the front wall of the outer case A', and U' a deflector plate or chute of hopper shape, the upper and wider end of which is located beneath the pockets of the rack C and the narrow lower end of which is arranged opposite to and in position to discharge into the receptacle U.

The operation of the device made as described is as follows: The pockets of the rack C being filled with cigars or other articles and the slide F extended, the device is in readiness for the vending of the cigars or other articles in the pocket. If a coin be placed in the coin-chute Q, the same will slide downwardly until it lodges in the outer forked end of the lever O beneath the tip p' of the lever P. If the plunger R be depressed when no coin has been inserted, its downward movement will merely result in the depression of the end of the lever P through the yielding of its lifting-spring P', the tip p' thereof passing at such time freely downwardly through the slot in the forked end of the lever O. If, however, a coin be lodged on the said forked end of the lever O when the plunger is depressed, it will strike and depress the lever P, and as said lever will be locked by the presence of the coin beneath the tip p' in engagement with the lever O the said lever O will also be depressed by said plunger. As the actuating-lever O is depressed the lever K, the free end of which engages and is held in its upper position by the lever O, will be drawn down by the spring L, with the effect of turning the drum H one step through the action of the pawl k and ratchet-wheel I. As said drum is turned a portion of the cord S will be wound thereupon and the outer end of the slide will be retracted a short distance. The downward movement of the lever O is limited by a stop o^8 on the case B, so that the lever K will be moved far enough only at each depression of the plunger to rotate the drum an angular distance equal to the length of one tooth of the ratchet-wheel I, and the teeth are made of such length as to give the extent of movement in the drum required for moving the slide a distance necessary to release the contents of one of the pockets of the rack. As the drum is turned by the pawl-and-ratchet device described, any backward movement thereof is prevented by the engagement of the detent-lever M with the toothed periphery of the wheel J, the spring m^4 being adapted to hold the lever pressed against the said wheel with sufficient force to prevent backward turning of the drum, while permitting the forward turning thereof under the force exerted by the spring L. As the slide moves backwardly step by step the articles in the pockets, which rest at their lower ends on the slide, are successively released and fall into the chute U', from whence they are delivered to the receptacle U. The outermost section of the slide is first retracted and when the rivet or lug projecting upwardly therefrom engages the inner end of the slot in the section f' of the slide both sections are retracted simultaneously until all the cigars or other articles are released. After the rack C is empty and it is desired to refill the same the case is opened, the rack and parts supporting it are removed, and the apparatus again set for action in connection with a filled rack. The sections of the slide F are returned by pressing on the lower end of the lever M, so as to swing said lever laterally until it is free from the wheel J and until the rod N by its pressure on the heel or tailpiece of the pawl k' releases said pawl from the ratchet-wheel I, and the drum is thereby released, permitting the cord S to unwind from the drum and the slide to return to its extended position through the action of the spring T.

In order to prevent any partial movement of the lever O or the movement thereof in the depression of the plunger through a distance less than that required for turning the drum far enough to release an article from one of the pockets, a device is provided as follows:

V indicates a segmental bar attached to the end wall of the case B adjacent to the lever O. On said lever O is mounted a pawl o^3, the end of which is adapted to engage a series of teeth v on the said segmental bar V. The pawl o^3 is so mounted that it stands in an inclined position when engaged with the teeth v, but it is adapted to swing in either direction from a central position, and a spring

o^4 is applied to act thereon in such manner as to tend to hold it in such central position. At the ends of the series v of teeth on the segmental bar the latter is provided with notches or depressions to admit the end of the pawl, and thereby permit it to swing into and past its central position. The result of this arrangement is that the direction of movement of the lever O can be reversed only at the upper or lower limit of its stroke, the engagement of the pawl with the ratchet-teeth preventing the backward movement of the lever after it has been started in either direction and the reversal of position or inclination of the pawl required to reverse the direction of movement of the lever taking place only at the upper and lower limits of the stroke of the lever, at which points the pawl enters the notches v'.

In the construction shown in Figs. 10 and 11 the wheels I and J are mounted on a shaft, which carries a gear-wheel W, which is in mesh with a rack-bar W', attached to the outer section f of the slide F. The operation of this form of the device is the same as that hereinbefore described. In this instance a guide w is provided for the rack-bar W' above the gear-wheel W, and to provide room for the end of the rack-bar a metal pocket w' is attached to the end wall of the outer case.

Obviously the rack may be constructed to contain one or more than two articles, in which event the slide will be correspondingly modified. Other changes may be made in the details of construction without departing from the spirit of the invention, and I do not wish to be limited to such details except as hereinafter made the subject of specific claims.

I claim as my invention—

1. A vending-machine embracing a rack provided with two rows of pockets and in which the pockets of the rows are arranged laterally in alinement with each other, a slide beneath the said rack, and means for moving the slide step by step a distance equal to one-half the width of the pockets at each step, to release the contents of the pockets, the releasing end of said slide being notched or stepped in such manner that its end margin at one side thereof is located in advance of that at the opposite side thereof a distance equal to one-half of the width of the pockets, whereby the pockets in the two rows are uncovered in alternation as the slide is retracted.

2. A vending-machine embracing a plurality of pockets and a slide beneath the same embracing two telescopic sections and means acting on said sections to give an intermitting or step-by-step movement to said slide.

3. A vending-machine embracing a plurality of pockets and a slide beneath the same embracing two sections which have relative longitudinal movement, interlocking parts between said sections which, when engaged, causes both sections to move together, and mechanism for operating said slide to give the same a step-by-step movement.

4. The combination with a plurality of pockets, and a horizontally-movable slide beneath the same, of means for giving intermittent movement to the slide, comprising a rotative shaft, operative connections between said shaft and said slide, a ratchet-wheel and a toothed wheel on said shaft, a spring-actuated detent-lever acting on said toothed wheel, an actuating-lever pivoted concentrically with the ratchet-wheel and provided with a pawl acting on said ratchet-wheel, and means for operating said actuating-lever.

5. The combination with a plurality of pockets, of a horizontally-movable slide beneath the same, and means for actuating said slide comprising a revolving shaft having operative connection with the slide, a ratchet-wheel and a toothed wheel on said shaft, a detent-lever acting on the toothed wheel, an actuating-lever provided with a pawl acting on the ratchet-wheel, a spring acting on said actuating-lever, and directed to turn the ratchet-wheel, and mechanism controlling the movement of said actuating-lever.

6. The combination with a plurality of pockets, of a horizontally-movable slide located beneath the same, and means for intermittingly actuating said slide, comprising a rotative shaft having operative connections with the slide, a ratchet-wheel and a toothed wheel on said shaft, a detent-lever engaging said toothed wheel, an actuating-lever having a pawl engaging the ratchet-wheel, and an arm pivoted to the actuating-lever engaging and moving with the detent-lever, said arm being adapted to act upon said pawl to release the same from the ratchet-wheel when the detent-lever is disengaged from the toothed wheel.

7. The combination with a plurality of pockets and a horizontally-movable slide beneath the same, of means for giving intermittent movement to said slide comprising a rotative shaft, operative connections between said shaft and slide, a ratchet-wheel and a toothed wheel on said shaft, a spring-actuated detent-lever acting on said ratchet-wheel, an actuating-lever provided with a pawl acting on the ratchet-wheel, means for operating said actuating-lever, and means for preventing said actuating-lever from being moved less than its full stroke.

In testimony that I claim the foregoing as my own invention I affix my own signature, in the presence of witnesses, this 2d day of May, A. D. 1901.

FRANK J. BEIER.

Witnesses:
C. S. ROSENTHAL,
ROY BURGESS,
GEORGE TORMER,
ED BERGGREN.