(No Model.)

L. M. MAXHAM.

COIN OPERATED VENDING MACHINE.

No. 602,543. Patented Apr. 19, 1898.

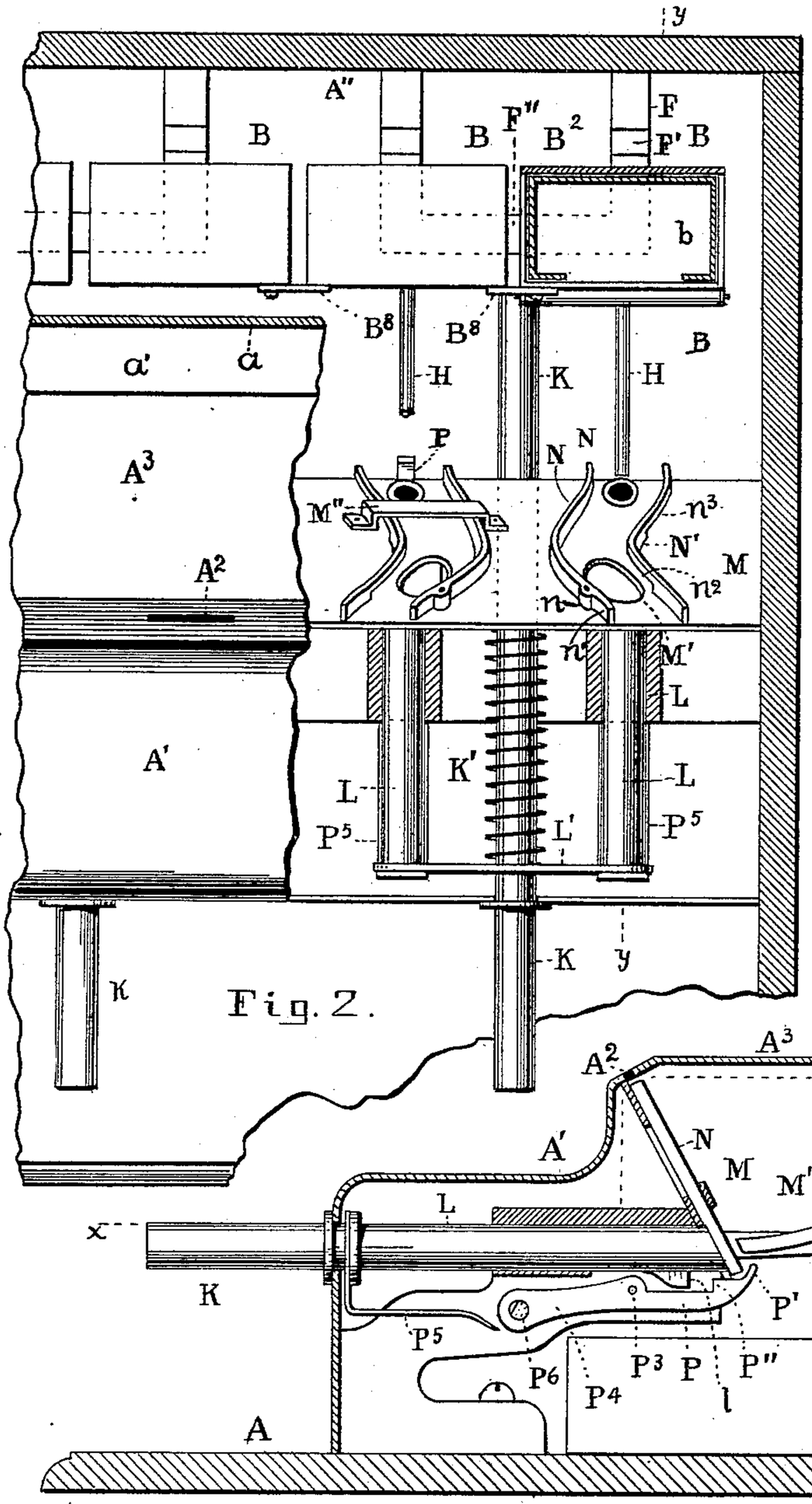

Fig. 2.

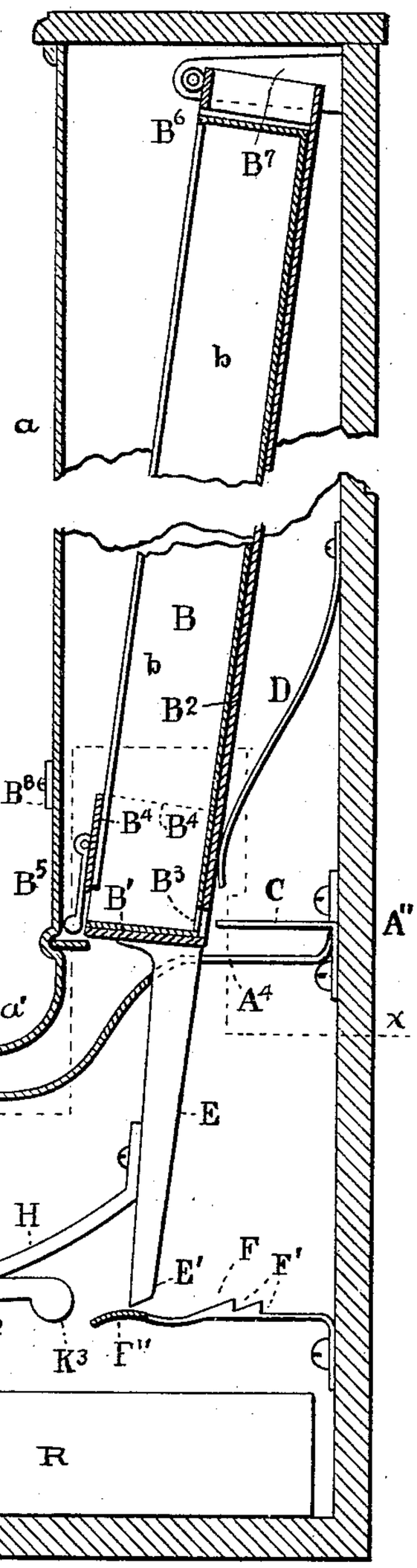

Fig. 1.

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LOWELL MASON MAXHAM, OF BOSTON, MASSACHUSETTS.

COIN-OPERATED VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,543, dated April 19, 1898.

Application filed December 12, 1896. Serial No. 615,440. (No model.)

To all whom it may concern:

Be it known that I, LOWELL MASON MAXHAM, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Coin-Operated Vending-Machine, of which the following is a full, clear, and exact description.

This invention has for its object the effecting of certain improvements in that class of dispensing-machines in which a reservoir containing a quantity of small articles is made to deliver one or more thereof by the introduction of a coin and the pressing of a rod.

In the drawings forming part of this specification, Figure 1 is a vertical section of my apparatus through line *y y* in Fig. 2. Fig. 2 is a horizontal section of the same through line *x x* in Fig. 1.

Referring to the drawings, A A′ A″ *a* represent, respectively, the base, front, back, and door of the case containing the operating mechanism of my apparatus.

The reservoirs B are hinged at their upper front edges B^6 to brackets B^7 and are normally held with their lower ends swung forward, as shown, by means of leaf-springs D, fixed to the case-back A″. Articles held in these reservoirs are removed therefrom by the fingers C, rigidly projecting from the case-back and extending through the aperture B^3 of the reservoir when the latter is pressed backward. The lowermost of a quantity of articles contained in one of these reservoirs being thereby prevented from swinging back with its reservoir is dropped into the delivery-chute A^3 and so brought into view of the purchaser. My means for thus swinging the reservoirs and obtaining their contents is as follows: Extending rigidly downward from the bottom of each reservoir is an arm E, from which projects the slender rod H. In line with said rod is the tubular push-rod L, projecting through the inclined plate M and having its end beveled to the same incline. This plate has formed upon it the coin-chute down which pass the coins inserted through the slot A^2. This slot A^2 is, as indicated in Fig. 1, horizontal in direction and parallel with the upper edge of the plate M. Hence when a coin is inserted through said slot it rests flat upon said plate. When a coin is dropped through said slot, it comes to rest, as hereinafter described, directly between the ends of the rod H and tubular rod L. Upon pushing the tubular rod the coin communicates an equal movement to the rod H, and thereby swings the reservoir backward and causes the delivery of one of its contained articles. Were no coin thus held between said rods, the tubular rod would simply telescope the other, and so communicate no motion thereto. To prevent an unlimited number of oscillations of the reservoir and a consequent emptying of its contents when a coin has been inserted between the rods H L, and is kept thus in position by not allowing the tubular rod to be retracted to its extreme forward limit, I have devised an arrangement for temporarily retaining the reservoir at the rearward end of its swing until the tubular rod has been retracted far enough to insure the release of the coin. My arrangement for this purpose comprises two elements—a catch for detaining the reservoir at the rear end of its swing and a release for subsequently permitting its return to its normal position. The catch consists of the spring-bracket F, provided with one or more teeth F′, adapted to engage the extremity E′ of the reservoir-arm E when the latter has been pushed backward. To release the arm E, and consequently the reservoir, the tubular rod L has connected rigidly with it an arm K^2, provided with a lug K^3, adapted to contact with the end of the spring-bracket F and depress the same. As will be seen, when the tubular rod L returns after having left the reservoir caught in its rearward position the lug K^3 engages the raised part F″ of the spring-bracket F, and thereby depresses the same and releases the arm E. The forward advance of the reservoir is limited by the arm E meeting the end of the slot a^4, in which it oscillates. This holds the rod H and tubular rod L at a sufficient distance apart to permit the easy reception of a coin between their terminals.

The slot A^4 above referred to is made no wider than the arm E, which oscillates therein, and said arm should be slightly less in thickness than the designated coin in order that should the vending-machine be turned upside down the coins contained in the receptacle R cannot be shaken out through said

slot, for, as should have been stated, the object of the partition A^3, in which is said slot, is to prevent access to the coin-receptacle on the part of any save those who have the key thereto. Hence men can be sent around to replenish the reservoirs without any possibility of their tampering with the accumulated coins, they being furnished with the key to the door *a* alone. This immunity from loss is made possible by this practically imperforate partition A^3.

In the construction of my coin-chute I have succeeded in accomplishing several most important results—viz., first, the insuring that the designated coin shall not fail in actuating the delivery mechanism, and, secondly, that neither of the following means shall be similarly successful: a blank of equal diameter, but thinner; a blank of equal thickness, but of smaller diameter; a blank of equal thickness and diameter, but of greater or less weight; of iron washers of equal weight, diameter, and thickness, and, finally, of a flexible strip of either metal or cardboard introduced into the slot and so manipulated from without as to actuate the delivery mechanism. The first of these—the thin blanks—are evacuated from the upper portion of the coin-chute through the slot n^2 in the side wall N', such slot being made of insufficient height to receive a coin even if somewhat worn. Blanks of smaller diameter fall through the opening M', made in the floor of the chute and elongated in the direction of the chute, but of less width than the coin's diameter. The blanks of proper size, but dissimilar weight, are rendered inoperative by means of the counterbalanced detent P. Said detent, with its upturned finger P', is pivotally supported at P^3 directly below the tubular rod L and is formed with the shoulder P'', held normally by the counterbalancing end P^4 in the path of the lug *l*, projecting below and affixed to the tubular rod L. When, now, the proper coin comes sliding down the chute, it rests upon the detent P, and by its weight depresses said detent far enough to bring the shoulder P'' below the path of the lug *l*. The coin being thus in the proper position and the said shoulder and lug out of possibility of engagement, the tubular rod L can be pushed in far enough to actuate the reservoir, as described. If, now, a light blank reaches the detent P, the latter is not depressed, the lug *l* strikes the shoulder P'', and the tubular rod cannot be impressed. As shown in Fig. 1, there is considerable play allowed between the lug *l* and the shoulder P'' of the detent P, and the push-rod can thereby be allowed some little motion even when the said detent is not depressed. Hence when a light blank descends upon the detent and is caught by the finger P' this limited play of the push-rod is sufficient to dislodge such blank from the finger P' and so leave the same free for the reception of the subsequent proper coin. It being evident that any one who will insert a false blank will unfailingly press the push-rod to see what success he will have, the detent is cleared by the very one who is attempting to overreach the dispensing-machine.

I wish to call added attention to the utility of the delicately-balanced detent P, for, being accurately adjusted to be depressed only when the proper weight is resting upon the finger P', any object lighter than the designated coin will not depress the detent and permit the movement of the push-rod. Furthermore, an object of more than the proper weight will depress the detent too far and be thereby caused to slip off from the finger P'. Hence this one arrangement alone is capable of rendering ineffectual several of the commonest methods of robbing dispensing-machines. On the other hand, the heavy blank will depress the detent P too far and will therefore not be held thereby, but dropped at once into the coin-drawer R. Iron or other washers are rendered inoperative by being simply strung upon the rod H, from which they will at the next movement of the push-rod be shaken off into the coin-drawer. A cardboard strip is prevented from reaching the bottom of the chute and the detent P by making the chute of a pronounced zigzag or serpentine form, as shown in Fig. 2. To further insure against such a strip, even if cut to correspond with the path of the chute, I fasten the guard-strip M'' over a portion of the chute just above the point which would be reached by a coin when operating the mechanism. This will prevent such a strip from moving away from the chute with the rods H and L.

In constructing the chute-walls N N', I usually affix the wall N' immovably to the plate M, constructing it with the slot n^2, before described, and with a similar slot n^3, described below. The other wall N is made capable of swinging toward its neighbor at its lower end, being pivoted at *n* to the plate M and provided with the arm *n'*, bent toward the wall N' enough to contract somewhat the width of the chute. When, therefore, a coin is put into the slot A^2, the lower part of the wall-strip N is made to swing over the path of the chute, and thereby caused to remove therefrom any paper or other wads which may have been inserted therein. These wads, or light metal blanks as well, are swept by this means through the slot n^3, above referred to. Such obstructions thus removed from the chute, the coin inserted in the slot moves downward to its proper place, pressing by its weight the wall-strip N back in position.

Another improvement which I have effected is that of enabling a single push-rod to actuate either or both of two reservoirs. The construction for the purpose is shown more clearly in Fig. 2. Here it will be seen that the push-rod K is located midway between two tubular rods L and rigidly connected thereto by the bar L'. A spring K' coiled about the push-rod K serves to retract said

rod and the tubular rods connected therewith. The counterbalanced detents P are also coupled rigidly together by means of the bar P^6. (Shown in cross-section in Fig. 1.) Thus constructed, a coin dropped into either chute depresses both detents P; but that reservoir alone is actuated where the coin has been inserted.

To enable two reservoirs to be operated by a single coin, I secure a button B^8 to the reservoir where the coin is to be inserted and have said button overlap the edge of the reservoir at its side. This arrangement I employ when it is desired to have one of the reservoirs dispense certain articles gratis to those who drop a coin in the slot for some of the other objects contained. For instance, I may have one reservoir contain packages of chewing-gum and another of chocolate, while between them is a third containing fortune-telling cards. By means of said buttons one of these cards will be thrown out with either the gum or the chocolate. In Fig. 1 the central reservoir is the one represented as operated by a coin and those at each side as the ones which are actuated by its pressure against the buttons B^8.

In the means above described for enabling a single push-rod K to actuate either of the tubular rods L, I omitted to state that in this case the arm K^2 is an extension of the push-rod K and that the adjoining bracket-springs F are coupled terminally by means of the strip F'', the median point of which is struck by the lug K^3 of the arm K^2.

The detailed construction of my reservoirs is as follows: Instead of making each reservoir a complete box with a partially open front, as is usually the case, I construct it as a light frame adapted to receive a removable article-containing box *b*. The said frame comprises the back B^2, a top B^6, pivotally attached to the bracket B^7, a bottom B', a rectangular frame B^4 a short distance above said bottom, and a weighted door B^5, hung from said frame and adapted to close the open front of the lower end of said reservoir-frame. The object of this door is, by its impact after a package has been pushed from the reservoir, to prevent the next succeeding package from partially following suit either through friction or the jar of the swinging frame.

The removable box above referred to is shown in cross-section in Fig. 2 and differs from an ordinary elongated pasteboard box simply in being partially open in front, as shown, and in having the slot B^3 for the admission of the push-arm C. By the employment of this transportation-box *b* it can be packed with the desired articles at the manufacturers, transported to the locality of the delivery apparatus, placed in position in the frame B, and kept therein until the contents have been exhausted, as described. The emptied boxes can be thrown away or returned to the manufacturers for refilling. This enables the dispensing-machines to be refilled with the expenditure of the least possible loss of time. In case the machine contains four dispensing arrangements four empty boxes are removed and the four filled ones placed therein. This obviates the otherwise necessary labor of filling each reservoir by the man upon his rounds with the small articles one by one—a tedious operation.

What I claim as my invention, and desire to secure by Letters Patent, is as follows, to wit:

1. The oscillatory reservoir, B, having rigid arm, E, in combination with the spring-bracket, F, having teeth adapted to engage said arm, and means for releasing said arm therefrom, for the purpose set forth.

2. The combination of the reservoir, B, rigid arm, E, toothed spring-bracket, F, and the push-rod having the lug, K^3 for disengaging said arm and teeth, for the purpose set forth.

3. The combination of the coin-chute, the tubular push-rod, the pendulous reservoir, and the slender rod rigidly connected with said reservoir and terminating with its axis substantially coincident with that of said tubular push-rod, substantially as and for the purpose set forth.

4. In a coin-operated vending-machine, the combination of a reservoir, an arm and means whereby an article is removed from the reservoir when said arm is impressed, a toothed spring-bracket for detaining said arm, the tubular push-rod, the lug connected with said push-rod for disengaging said arm and spring-bracket, and the slender rod rigidly projecting from said arm and terminating in line with said push-rod, substantially as and for the purpose set forth.

5. In a coin-operated vending-machine, the combination of the inclined plate, the casing having a coin-slot at the upper edge of said plate and parallel therewith, a push-rod at the lower edge of said plate, a detent normally engaging said push-rod, and chute-walls on said plate joining said slot and push-rod terminal and formed with lateral bends intermediate of their ends adapted to permit the unimpeded passage of a coin but to wholly prevent the insertion of a narrow strip by which said detent might be surreptitiously disengaged, substantially as and for the purpose set forth.

6. In a coin-operated vending-machine, the combination of the inclined plate adapted to receive a coin thereon, and having side walls for confining such coin laterally, the longitudinally-movable rod having its end normally flush with said plate and having the lug projecting from its under side, the detent pivoted in substantially the same plane as said lug and provided with the shoulder designed to normally intercept said lug, the upwardly-turned finger held beneath said plate and rod end, and said detent being further provided with the counterweighted arm so balanced that when a light coin or blank is received upon said finger the detent is not depressed, when

a proper coin is received thereon the detent is depressed just far enough to release said lug from said shoulder, and when a blank is received exceeding the proper coin in weight the detent is depressed so far that the detent is thereby freed from such blank, substantially as and for the purpose set forth.

7. In a coin-operated vending-machine, the combination of the inclined chute-plate, M, the rod, L, having its end beveled to the same inclination, and the balanced detent having a finger beneath said beveled end, said inclination being such that a coin received upon said detent-finger shall lean lightly back against said beveled end of the push-rod, for the purpose set forth.

8. In a coin-operated vending-machine, the combination of the push-rod, K, having arms, L′, and spring, K′, the tubular rods, L, held by said arms, the chutes, the weighted detents, P having fingers, P′, and the cross-bar, P^6, rigidly uniting said detents, substantially as and for the purpose set forth.

9. In a coin-operated vending-machine, the combination with a plurality of pendulous reservoirs, of turn-buttons affixed thereto and adapted by being turned to cause more than one of the reservoirs to be oscillated when one actuating-coin is inserted, substantially as and for the purpose set forth.

10. In a coin-chute, the inclined plate, M, and the chute-wall, N′, having slot, n^3, in combination with the chute-wall, N, adapted to be swept over the lower part of the chute when a coin is inserted at its upper end, substantially as set forth, and for the purpose set forth.

11. The coin-chute comprising the inclined plate, M, having opening, M′, the chute-wall, N′ having slots, n^2, n^3, and the oscillatory chute-wall, N, substantially as and for the purpose set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand and seal this 17th day of October, in the year 1896.

LOWELL MASON MAXHAM. [L. S.]

Witnesses:
JASON T. BARTLETT,
JOHN J. O'LALOR.