No. 844,843. PATENTED FEB. 19, 1907.

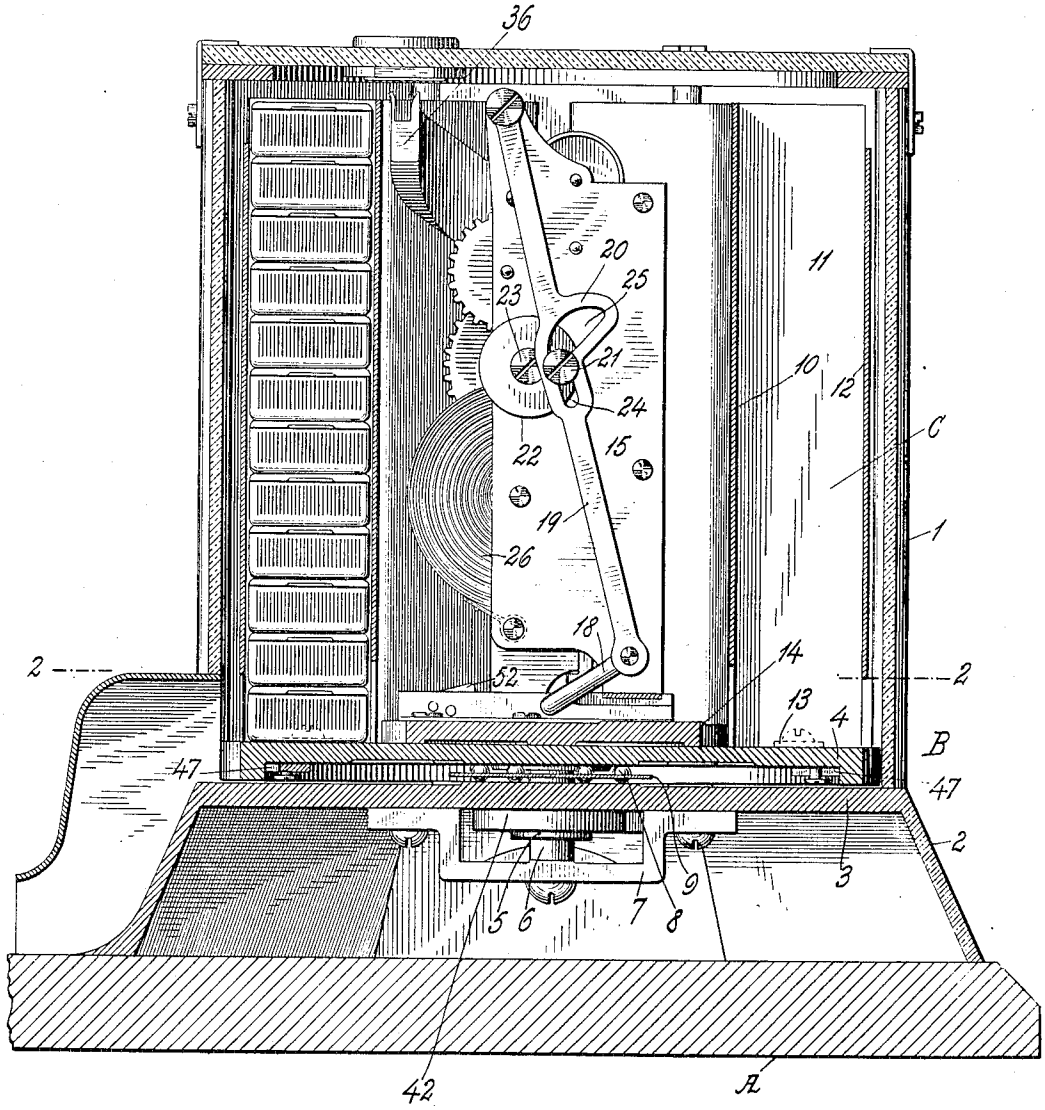
M. O. ANTHONY.

VENDING MACHINE.

APPLICATION FILED JAN. 2, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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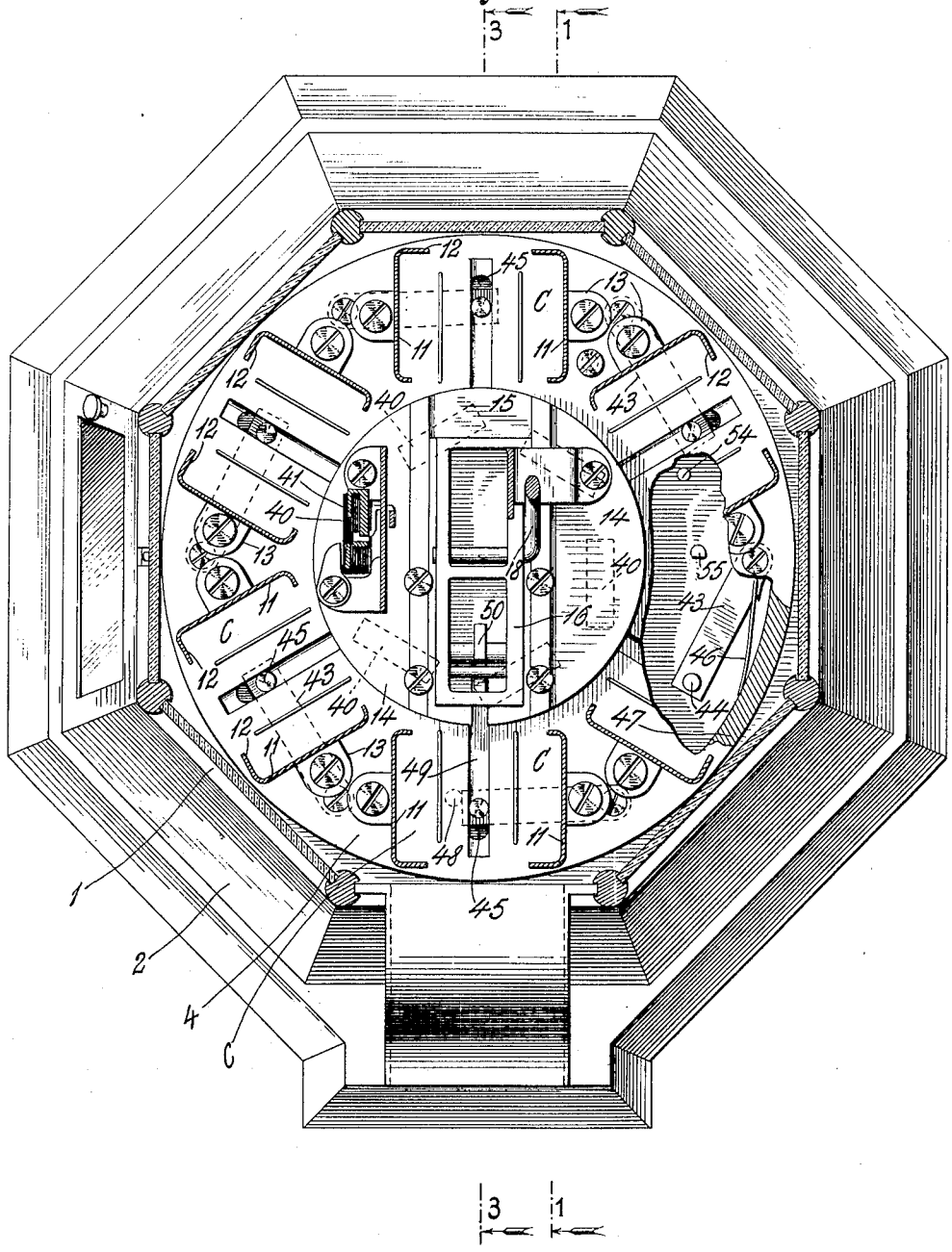
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

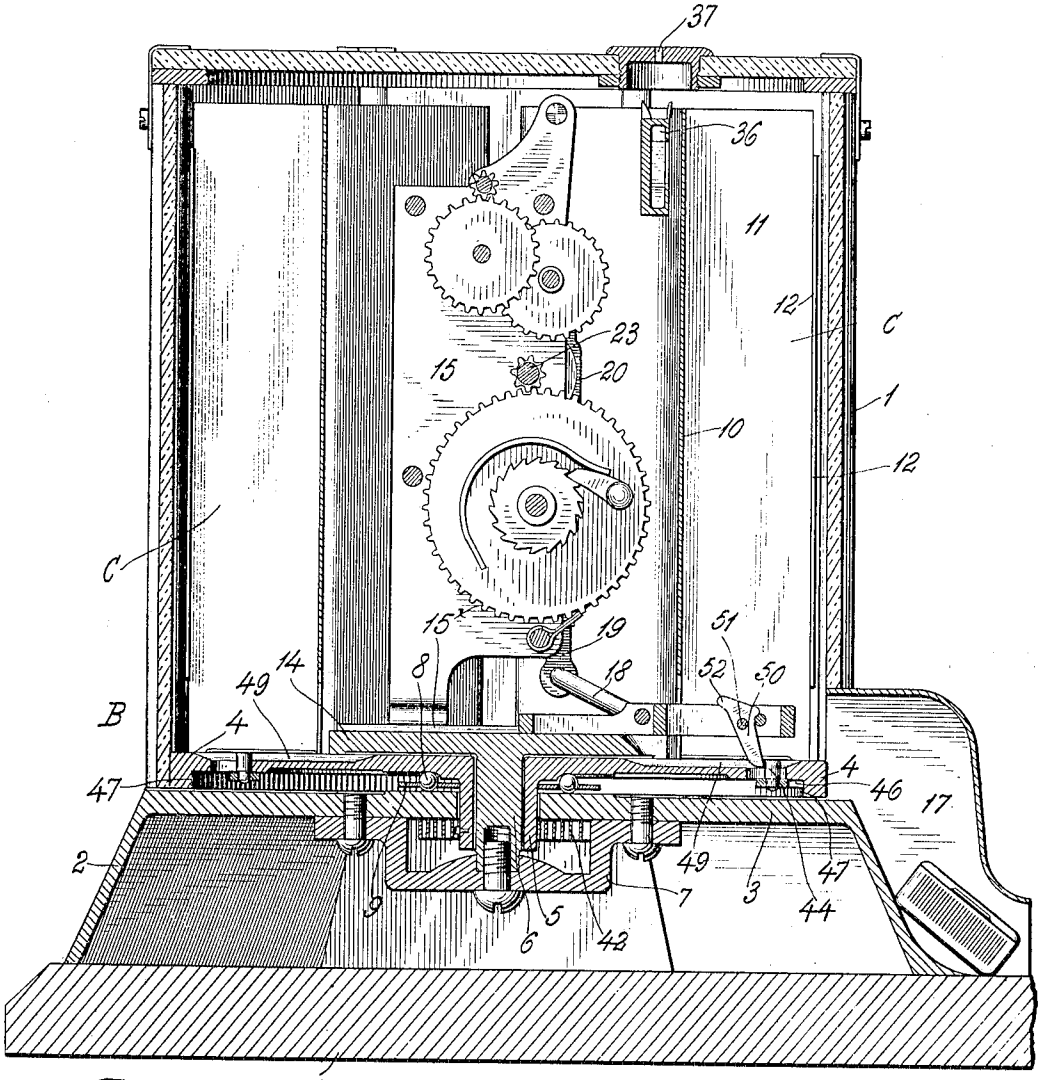


Fig. 5.

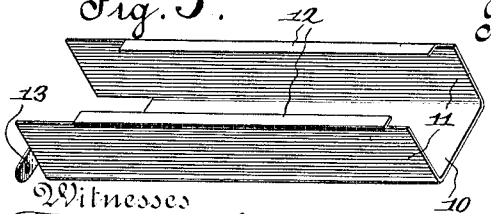
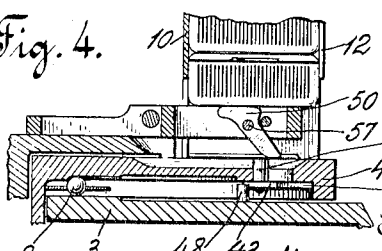


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARCUS O. ANTHONY, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNITED MACHINE & SUPPLY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VENDING-MACHINE.

No. 844,843. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed January 2, 1904. Serial No. 187,492.

To all whom it may concern:

Be it known that I, MARCUS O. ANTHONY, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to vending-machines. Its object is to provide an apparatus which, while entirely automatic in its action, shall combine simplicity and durability of construction with reliability and efficiency of operation and shall at the same time be of large capacity yet occupy comparatively small space.

To this end the invention comprises various novel features of construction and combinations of parts, which will be hereinafter fully described and claimed.

The present apparatus has been designed for the vending of boxes or packages of matches; but obviously other objects or articles may be dispensed thereby.

In the drawings, Figure 1 is a vertical section through a machine embodying a preferred type of my invention, the section being taken on the line 1 1 of Fig. 2 and one of the magazines being illustrated as supplied with boxes of matches to be vended. Fig. 2 is a horizontal section of the machine as on the line 2 2 of Fig. 1, part of the turn-table being illustrated as broken away to expose underlying parts. Fig. 3 is a vertical section of the machine as on the line 3 3 of Fig. 2, the pusher being represented in its forward position immediately upon the discharge of the last box from the magazine and the trip-dog on the pusher being indicated in position to release the stop device for the turn-table. Fig. 4 is a sectional detail of the pusher and adjuncts, illustrating the action of the boxes upon the trip-dog to maintain it above the plane of the stop device. Fig. 5 is a perspective view of one of the magazines detached.

A designates a suitable base, and B a casing thereon, which latter, in the present instance, comprises an octagonal body 1, with an expanded lower portion 2, separated therefrom internally by a floor-plate 3. Mounted within the body of the casing is a turn-table 4, embodying, preferably, a disk having a centrally-depending boss or hub 5, which extends through a central orifice in the floor and turns about a stud 6, rising fixedly from a bracket 7 on the under side of the floor-plate and projecting above the disk. A series of antifriction-balls 8, contained in a ring 9, are preferably interposed between the floor-plate and the disk. Rising from the turn-table, adjacent to the periphery thereof, is a circular series of vertically-disposed magazines C, which are adapted to contain the articles to be vended. Each of these magazines is preferably constructed of a piece of sheet metal bent to form a back wall 10 and two side walls 11, with inwardly-turned lips or flanges 12 on their front edges. The side walls are provided at their lower ends with outwardly-extending lugs 13, through which are passed screws or the like to secure the magazine rigidly to the turn-table, and the rear wall, as well as the flanges, are cut away adjacent the turn-table to permit the ejection of the contents of the magazine, as will be hereinafter described.

On the upper end of the fixed stud immediately above the turn-table is a plate 14, upon which a clockwork mechanism 15 is supported, surrounded by the series of magazines. In the top of this plate 14 is a suitable guideway $15^{\times}$, in which is slidingly fitted a cross-head 16, constituting a pusher. The pusher is reciprocable through the instrumentality of the clock mechanism into and from the lower portion of a magazine adjacent thereto in a manner to eject from such magazine the lowermost box in the pile, the pusher entering through the lower open or cut-away portion of the back wall of the magazine and the box being expelled through the corresponding portions of the flanges above referred to. The front wall of the casing is provided in line with the pusher with a suitable chute 17, by way of which the box is discharged from the magazine when acted upon by the pusher. The discharge of the box occurs, of course, during the forward stroke of the pusher, and upon the retraction of the pusher the next lowermost box of the pile drops into position to be acted upon by the pusher in its next succeeding stroke.

The pusher is connected on one side, by means of a link 18, with the lower end of a lever 19, which is fulcrumed at its upper end

to the frame of the clock mechanism and is provided at a suitable point in its length with a cam-slotted portion 20, into which extends a wrist-pin 21 on a crank-disk 22, which is mounted on the end of a driven arbor 23 of the clock-movement, whereby during the operation of the latter the lever is oscillated to effect the reciprocation of the pusher. The cam-slot comprises a straight portion 24, extending lengthwise of the lever, and an upper enlarged portion 25, having a curved front and upper wall and an inclined rear wall, so that during the revolution of the wrist-pin it rides against the opposed straight and curved walls of the slot to move the lever forward comparatively slow and then against the inclined wall to retract the lever abruptly. The object of this latter movement is to effect the quick removal of the pusher from the superposed pile of boxes, and thus permit them to drop quickly by gravity to the lowermost position within the magazine, as otherwise the forward portion of the bottom box is apt to be canted during the back stroke of the pusher, and consequently to disarrange the contained boxes, and so interfere with the succeeding operation of the machine.

The mainspring 26 of the clock mechanism is wound up by a suitable key in the usual way, and the parts are so arranged that the arbor 23 makes a single revolution each time the mechanism is set in operation.

As hereinbefore stated, the pusher acts upon the successive boxes contained within the adjacent magazine. Hence means are provided whereby the turn-table during the operation of the pusher is locked in place until all the boxes contained in the said magazine have been discharged therefrom, whereupon the locking means is tripped in a manner to release the plate, following which the succeeding filled magazine is brought into the path of the pusher for a repetition of the discharging operation upon its contents. This done, the turn-table is released as before and the next magazine is moved into place, and so on successively until the contents of all the magazines have been completely discharged.

In the present instance the turn-table is automatically revolved by means of a convolute spring 42, the inner end of which is secured to the depending hub of the table and the outer end to the side of the bracket. By turning the magazines and turn-table bodily on their axis by hand (when refilling the magazines) the spring is wound up, and the locking means above referred to then serves to maintain the magazine in the operative position desired against the reverse action of the spring. This means includes a series of arms 43, which correspond in number with the magazines and are pivoted on the under side of the turn-table 4, so as to extend directly beneath the respective magazines. Each of the arms is provided near its free end with an upwardly-projecting stud 44, which extends into a short radial slot 45 in the turn-table, so as to rise flush with or slightly below the top of the latter, such free end being held normally inward by a flat spring 46, interposed between the arm and a peripheral flange 47 on the turn-table. On the floor 3, immediately below the path traversed by the pusher within the magazine, is a stud 48, which constitutes a stop against which the free end of the arm abuts when the magazine is in position for operation, thereby temporarily locking the turn-table.

On the top of the turn-table in communication with each of the slots is a radial groove or way 49, into which drops, preferably by gravity, the lower end of a dog 50, which is loosely mounted on a transverse shaft 51 within the pusher. This dog is provided with an inclined upward projection 52, which is so disposed that when a box or boxes rest thereon the dog is tilted up above the groove. By this construction it will be seen that so long as the magazine contains a box or boxes the dog during the reciprocation of the pusher will move idly above the stud 44 on the underlying arm; but when the last box is being discharged from the magazine (and no box is imposed on the pusher) the dog occupies its normal or depending position, and therefore engages the opposed stud and pushes it and the underlying arm forward sufficiently to disengage the pivoted arm from the stop. Hence when the pusher is retracted rearwardly of the magazine the turn-table is permitted to revolve until the next succeeding arm abuts against the stop, in which case another filled magazine is retained in the path of the pusher. When all the boxes have been discharged from this latter magazine, the trip-arm therefor is actuated similarly to that of the other magazine, as just described, and so on the turn-table is intermittently revolved until all the magazines have been emptied.

It will be obvious that immediately upon the disengagement of a trip-arm from the stop a slight rotary movement of the turn-table occurs, so as to prevent the nose of the arm from rebounding in front of the stud, which movement is afforded by the provision of sufficient clearance between the edges of the pusher and the walls of the magazine.

The turn-table is preferably provided on its under side with a stud 54, which, abutting against a suitably-disposed stop 55 on the floor-plate, determines the final movement of the magazines.

While I have herein shown and described a simple and efficient embodiment of my invention, it is to be understood that the same may be modified in various respects without departing from the fair spirit of my inven-

tion. I therefore do not confine myself to the specific construction hereinbefore set forth.

I claim—

1. In a vending-machine, the combination with a casing, of a plurality of magazines each of which is adapted to contain superposed articles, means for automatically advancing said magazines successively to a discharging position, mechanism for temporarily locking said magazines successively in such position, means for discharging successively the contents of each magazine thus positioned, and means under the influence of the contents of the magazines for automatically releasing said mechanism to permit the advancement of the magazines upon and only upon the discharge of the last article contained in a magazine.

2. In a vending-machine, the combination with a casing, of a plurality of magazines having a common axis of rotation, each of said magazines being adapted to contain superposed articles, means for automatically rotating said magazines, mechanism for temporarily locking said magazines successively at a discharging-station, means for successively discharging the contents of each magazine at such station, and means under the influence of the contents of the magazines for automatically releasing said mechanism to permit the partial rotation of the magazines immediately upon and only upon the discharge of the last article contained in a magazine.

3. In a vending-machine, the combination with a casing, of a turn-table, a series of vertical magazines thereon, each adapted to contain superposed articles, means for automatically rotating said table, means for temporarily locking said magazines successively at a discharging-station, means for discharging the contents of each magazine at such station, and means under the influence of the contents of the magazines for automatically releasing said mechanism to permit the partial rotation of the turn-table immediately upon and only upon the discharge of the last article contained in a magazine.

4. In a vending-machine, the combination with a casing, of a plurality of magazines thereon adapted to contain superposed articles, means for automatically advancing the said magazines successively to a discharging position, mechanism for temporarily locking the magazines successively in such position, a device for discharging the contents of the successive magazines, and a movable trip between said device and the locking mechanism, said trip being maintained in idle position by the pressure thereon of the contents of the adjacent magazine and being rendered active by the removal of such pressure.

5. In a vending-machine, the combination with a casing, of a plurality of magazines thereon adapted to contain superposed articles, means for automatically advancing the said magazines to a discharging position, mechanism for temporarily locking the magazines successively in such position, a device for discharging the contents of the successive magazines, and a vibratory dog on said device arranged to trip said mechanism, said dog being maintained normally in active position by the pressure thereon of the contents of the adjacent magazine and being rendered active by the removal of such pressure.

6. In a vending-machine, the combination with a casing, of a turn-table, and a series of vertical magazines thereon, said table having slots opening into the respective magazines, means for advancing said magazines, successively, to a discharging position, locking mechanism for the magazines located beneath the turn-table and provided with portions extending into the respective slots in the latter, a device for discharging the contents of the successive magazines, and a trip on said device to coact periodically with said portions.

7. In a vending-machine, the combination with a casing, of a turn-table, and a series of vertical magazines thereon, said table having slots opening into the respective magazines, means for advancing said magazines successively to a discharging position, a series of pivoted arms on the under side of the turn-table provided with studs extending through said slots, springs to maintain said arms in a normal position, a stationary stop in the normal path of the arms, means for discharging the contents of the successive magazines, and means for engaging said studs to disengage the arms from the stop at predetermined intervals.

8. In a vending-machine, the combination of a casing, including a basal portion, a fixed stud extending up through the latter, a turn-table provided with a boss rotatable about said stud and depending below said basal portion, a turning-spring connected with said boss, a series of magazines rising from the said table, locking and releasing mechanism for said table, and means for discharging the contents of the respective magazines.

9. In a vending-machine, the combination with a magazine, and means for moving the same, of a locking mechanism for said magazine, a discharge device therefor, and a normally active trip to release the said mechanism, said trip being maintained inactive by the weight thereon of the contents of the magazine.

10. In a vending-machine, the combination with a magazine, and means for moving the same, of a locking mechanism for said magazine, a slide for expelling the contents of the magazine, means for operating said slide, and a normally active trip on said slide to release the said mechanism, said trip being

maintained inactive by the weight thereon of the contents of the magazine.

11. In a vending-machine, the combination with a magazine, and means for rotating the same, of a locking mechanism for said magazine, a discharge-slide having a pivoted dog under the control of the contents of the magazine to release said mechanism, and means for reciprocating said slide.

12. In a vending-machine, the combination with a vertical magazine, of a slide for successively discharging the contents of said magazine, and mechanism for reciprocating the slide having cam means to impart an abrupt back stroke to said slide.

13. In a vending-machine, the combination with a vertical magazine, of a discharge-slide, and actuating mechanism therefor, including a vibratory lever and a cam connection therewith having an abrupt portion whereby a quick return movement is given to the slide.

14. In a vending-machine, the combination with a magazine, of a discharge-slide, a clock mechanism, a crank thereon, a pivoted lever connected with said slide and provided with a cam portion engaged by the said crank, such portion being formed to cause a quick back movement of the lever.

15. In a vending-machine, the combination of a casing, a table therein with a series of vertical magazines, a central stud on which said table is mounted to rotate, a fixed plate or support on said stud, a slide reciprocable on said support into and from the magazines, and means on said support for reciprocating said slide.

Signed at New York, in the county of New York and State of New York, this 30th day of December, A. D. 1903.

MARCUS O. ANTHONY.

Witnesses:

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M. G. HAYES.