J. BEHRENS.

VENDING MACHINE.

APPLICATION FILED MAY 3, 1917.

1,250,774.

Patented Dec. 18, 1917.

2 SHEETS—SHEET 1.

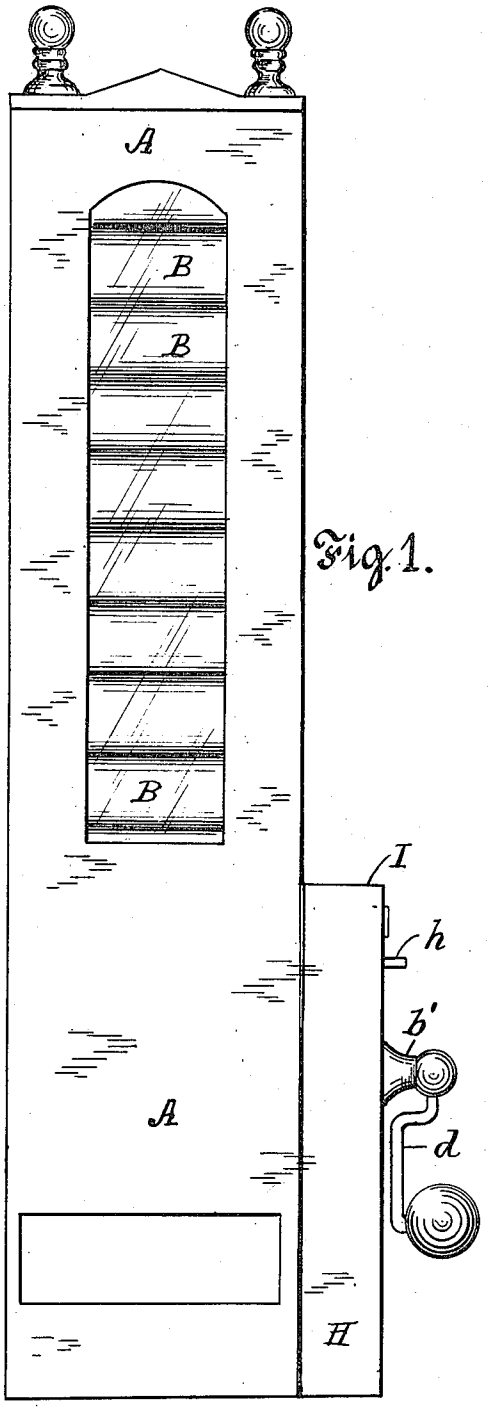


Fig. 1.

Fig. 3.

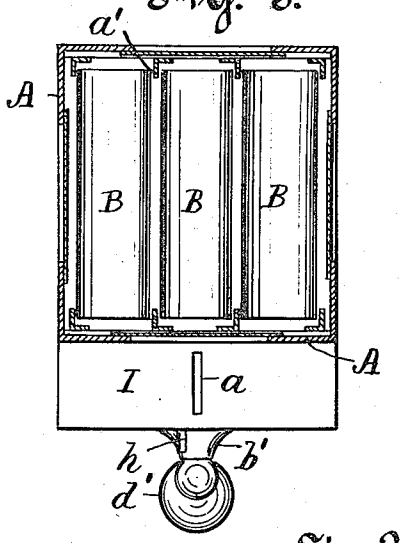
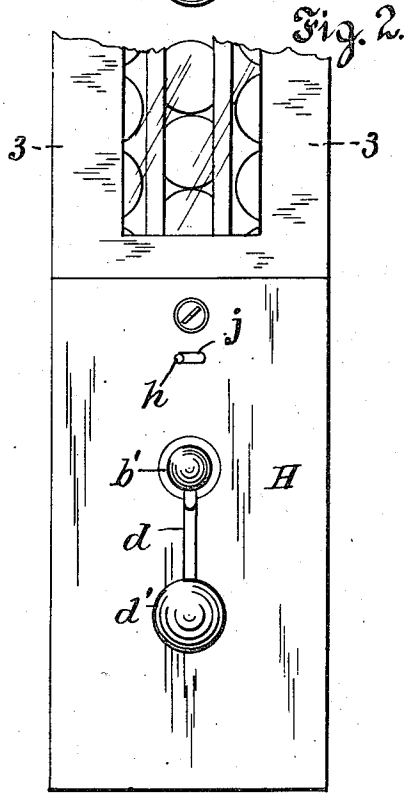


Fig. 2.



John Behrens, per
Inventor Thos. J. Crane, Atty.

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2 SHEETS—SHEET 2.

Fig. 4.

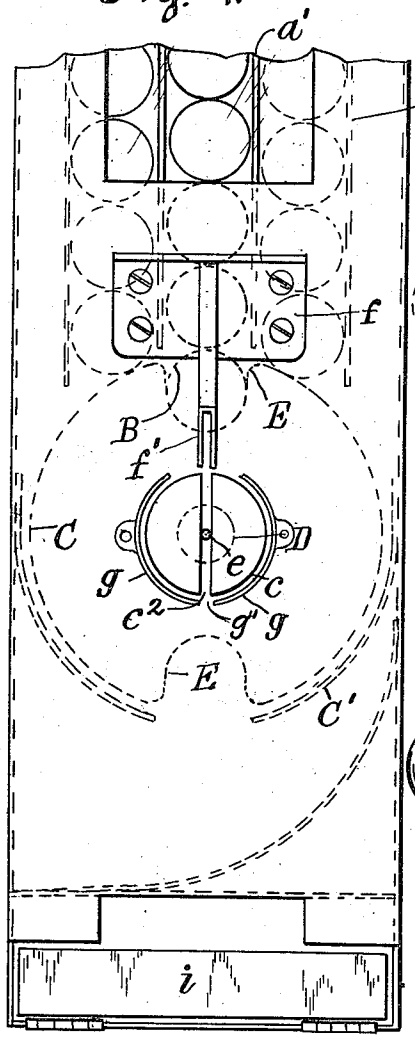


Fig. 5.

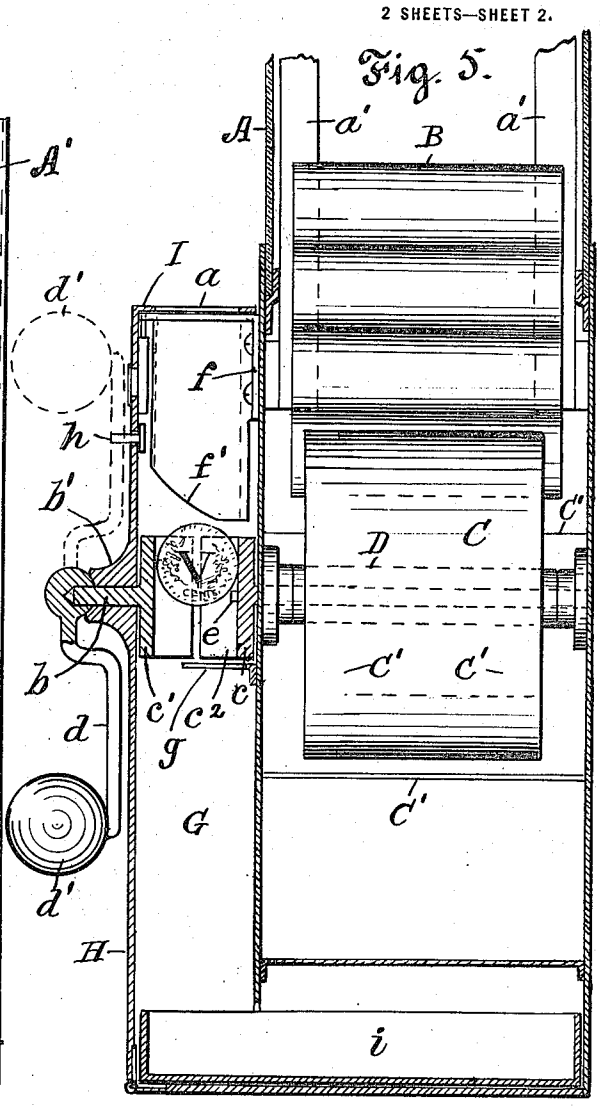


Fig. 7.

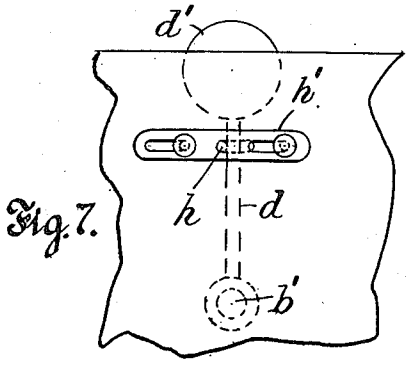
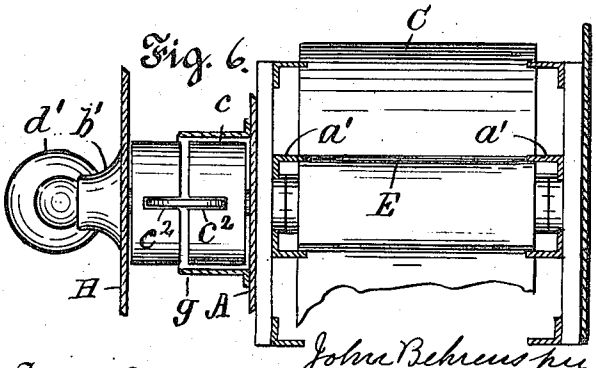


Fig. 6.



Inventor John Behrens per Thos. T. Crane, Atty.

UNITED STATES PATENT OFFICE.

JOHN BEHRENS, OF NEW YORK, N. Y.

VENDING-MACHINE.

1,250,774. Specification of Letters Patent. Patented Dec. 18, 1917.

Application filed May 3, 1917. Serial No. 166,090.

To all whom it may concern:

Be it known that I, JOHN BEHRENS, a citizen of the United States, of 11 East Fourteenth street, New York, county of New York, and State of New York, have invented certain new and useful Improvements in Vending-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to an improvement in the means for operating vending machines in which the package is delivered by a coin-controlled coupling and the coupling rotated by a crank.

Heretofore, in such machines, the movements of the crank or coin-controlled coupling, or the drum which delivers the packages, have been governed by springs or weights which are liable to deteriorate, break, or otherwise get out of order and so prevent the operation of the apparatus.

In the present invention, the mechanism is simplified in an extreme degree and so constructed that the necessary movements of all the parts are effected without the use of springs.

In the present construction, the crank after actuating the delivery-drum is restored to its initial position by a weight.

The drum which delivers the packages has grooves upon opposite sides fitted to receive the packages and is adapted, if turned in either direction, to carry a package from the hopper to the discharging point.

The crank-shaft and the drum are provided respectively with notched or slotted disks which are closely opposed to one another, and the notches are adapted to receive a coin which couples the disks together, so that the movement of the crank may turn the drum while the coin is in the slots. The crank may be turned freely in either direction to discharge a package, and is restricted to one-half a rotation by a self-adjusting stud fixed movably upon the casing. The notches in the disks are so related to the grooves in the drum that the coin and the package are discharged simultaneously, and such discharge of the coin breaks the connection between the crank-shaft and the drum, leaving the drum in position to receive another package while the crank is free to return by gravity to its initial position. Such an operation of the coin is common in coin-actuated machines, and my claims are therefore for the particular constructions by which the crank actuates the drum.

The invention consists in various combinations of the parts which will be fully described and pointed out in the claims.

In the drawing, Figure 1 is a side elevation of the casing; Fig. 2 a front view of the same with the top broken away; Fig. 3 a plan in section on line 3—3 in Fig. 2; Fig. 4 a front view of the casing with the door removed; Fig. 5 a vertical section, where hatched, on the center line of Fig. 4; Fig. 6 is a plan of the drum and its rotating means with the casing in horizontal section, where hatched, at the top of the drum; and Fig. 7 shows the inner side of the door where it carries the movable stop-pin.

A shows the upright casing containing a triple magazine A′ in which roll-packages B are contained. A drum C is mounted upon a spindle D to rotate in the bottom of the hopper. The drum is formed upon each of two opposite sides with a groove E adapted to receive a package from the hopper, and to carry it to the lower side of the drum. The grooves E are 180 degrees apart, so that when turned precisely half a revolution it carries the upper groove to the bottom to discharge the package, and simultaneously carries the lower groove precisely to the top to receive a package.

Guards C′ project from the casing around the sides of the drum to hold the package in the groove E until it reaches the exact lower part of the drum. A chamber G is formed upon the front of the casing by a hinged cover H having a slot-plate I in which a slot *a* is formed to receive the coin. The crank-shaft *b* is mounted in a bearing *b′* upon the outside of the cover in line with the spindle D of the drum, and the crank-arm *d* is provided at its end with a weight *d′* which holds the crank normally below the shaft, as shown in Figs. 2 and 5.

Notched disks *c*, *c′* are secured in opposition to one another within the chamber G upon the ends of the spindle D and shaft *b* respectively, the slots coinciding when the crank is below the shaft *b*, so that a coin may be dropped into the notches c^2 and couple the disks together so that the crank may rotate the drum a half rotation.

A guide-holder *f* is projected from the front of the casing under the plate I, and a guide *f′* is extended downward therefrom

to lead a coin from the slot *a* into the notches of the disks.

The two notches form a slot adapted to admit the coin, the slotted disks and the coin therein operating as the coupling device to rotate the drum by the movement of the crank.

To receive the coin it is essential that the notches c^2 in the two disks shall stand normally in a vertical position when the crank is below its shaft *b* and when one of the grooves in the drum is directly upon the top. The crank is therefore weighted to hold the crank normally below the shaft when the coin-slot in the crank-disk is vertical, and means is provided to limit the rotation of the crank to an arc of exactly 180 degrees, so that each time the drum is turned the bottom groove will be brought exactly to the top, and the coin-slot in the drum-disk will be left in a vertical position. When the crank is thus turned 180 degrees the coin drops through the notch *g'* in its guard, which uncouples the crank from the drum-spindle and permits the crank to be carried by the weight *d'* back to its initial position shown in Fig. 5, without any movement of the drum.

The coin-slots are thus normally always in readiness to receive a coin, as a five cent nickel, from the guide *f'*, and the coin-slot in the drum-disk is provided with a stop *e* at the middle of its length, which is projected into the slot sufficiently to hold the nickel therein, but not to interfere with the passage of a cent if such coin be dropped into the guide instead of a nickel. This prevents the actuation of the vending machine by the use of any coin smaller than a nickel.

The stop *e* is placed at the middle of the slot's length so as to retain the nickel equally in an operative relation to the disks, whichever end of the coin-slot happens to be uppermost.

To limit the movement of the crank to an arc of 180 degrees, when turned in either direction, a gage-stud *h* is projected from the cover H above the spindle *b* and is constructed to move laterally a space just equal to the thickness of the crank-arm *d*; so that when the crank contacts with it upon either side, it moves sufficiently to set the arm *d* exactly over the spindle *b*.

The gage-stud *h* is attached to a slotted plate *h'* secured movably upon the inner side of the cover H and projects outward through a slot *j* in the cover, which slot is made of the length required to permit a proper movement of the stud *h* when pressed by the crank upon either side. This limited movement of the stud permits it to adjust itself sufficiently to permit exactly half a rotation of the crank.

An annular guard *g* protects the sides of one of the notched disks to keep the coin from falling out of the slot until the disk is turned exactly a half rotation.

The guard has a notch *g'* in the bottom with which the notches c^2 coincide as shown in Fig. 4 when the crank is turned against the gage-stud *h*. The guard C' performs the same function for the package as the guard *g* for the coin, and both are thus discharged simultaneously when the crank is turned a half rotation, and the delivery of the package cannot be effected before the disks deliver the coin to the drawer *i*.

The gage-stud *h* causes the semi-rotation of the crank to leave the drum in the exact position required to receive another package, after the coin has escaped from the notched disk; and any movement of the crank thereafter has no effect upon the drum.

It will be understood from the the above description that the crank is returned by the weight *d'* to its initial position after each actuation, but that the drum C does not turn backward to its initial position but remains after each actuation with a groove exactly upon the top in readiness to receive a package; while the slot in the attached drum-disk *c* is also left in a vertical position so that the coin-slots coincide with one another when the crank is at rest in its normal position.

No mechanism is thus required for turning or retaining the drum in its required position, excepting that afforded by the crank.

Such construction of the parts avoids any liability to derangement, and secures the proper position of the drum and the coincidence of the coin-slots after each actuation by the crank, and avoids the necessity of any weight or spring to actuate the drum.

It is obvious that the movement of the drum when turned by the crank stops as soon as the coin falls from the slotted disks, and if the coin should escape from the disk before the drum has made a half rotation the drum would not be turned into a suitable position to receive another package.

For this reason, the guards *g* and C' are provided beneath the disks and the drum respectively to hold the coin and package in engagement with their respective carriers until they reach the same point; which effects the discharge of the coin and the package simultaneously while it locates a groove in the drum in the position to receive another package.

To secure such simultaneous discharge, the diametrical notch in the disk *c* is made parallel with a line joining the two grooves in the drum which are disposed at the opposite ends of a diametrical line.

The stop *e* in one of the notched disks is located midway in the notch, thus permitting a coin to fall into the notched disks from either side and retaining the coin therein until the crank is turned to rotate the drum.

It is obvious that the weight *d'* for turning the crank-shaft and its disk *c'* automatically need not necessarily be attached to the crank, but may be located inside the cover, if arranged in a suitable manner to turn the crank downward as required.

The drum will deliver a package if turned in either direction, and the crank is left free to be turned by the operator to the right or the left until it encounters the gage-stud *h*, which regulates the turning of the drum in the desired manner.

Many articles of merchandise are now made into flat or rectangular packages, and it is obvious that the mechanism of this invention would operate the same if the drum were provided with grooves adapted to receive rectangular packages instead of the cylindrical packages B shown in the drawing. The shape of the grooves is therefore immaterial. In fact, a drum with rectangular grooves will operate equally well with either round or rectangular packages of the same size.

This machine may be cheaply constructed, and is effective and reliable in operation.

Having thus set forth the nature of the invention what is claimed herein is:

1. In a vending machine, the combination, with a magazine for containing packages to be dispensed, of a spindle transverse to the magazine with drum having package grooves thereon 180 degrees apart, a crank-shaft journaled in line with the spindle the said shaft and spindle being provided with similar opposed disks and similar diametrical coin-slots in the disks, a coin-guide to direct a coin into the slots, a weight operating upon the crank-shaft to hold the crank-disk with its slot vertical, the crank-shaft being free to turn in either direction with a movement limited to 180 degrees, and such limited movement operating to turn the groove upon the bottom of the drum exactly to the top thereof and leave the slot of the disk upon the spindle in a vertical position, and means for retaining the coin in the two coin-slots until the drum is thus turned.

2. In a vending machine, the combination, with a magazine for containing packages to be dispensed, of a drum having opposite grooves to receive the packages, a crank for turning the drum, and disks connected respectively with the crank and drum and having opposed diametrical coin-slots, a crank having a weight to hold the crank normally below the crank-shaft, and a self-adjusting gage-stud mounted above the crank-shaft to confine the crank to a semi-rotation.

3. In a vending machine, the combination, with a magazine for containing packages to be dispensed, of a drum having opposite grooves to receive the packages, a crank shaft and crank-arm for turning the drum, a crank-disk and drum-disk connected respectively with the crank shaft and drum and having opposed diametrical coin-slots, a weight operating upon the crank-shaft to hold the crank normally below the crank-shaft, a gage-stud mounted movably upon the casing above the crank-shaft and its movement limited to the thickness of the crank-arm, by which construction the crank-arm can be moved from its lowest position in either direction and arrested by the gage-stud 180 degrees from its lower position, thus insuring a movement of 180 degrees for the drum and the coin-slots.

4. In a vending machine, the combination, with a magazine for containing packages to be dispensed, of a spindle transverse to the magazine, a drum secured to said spindle and having package grooves thereon 180 degrees apart, a crank-shaft journaled in line with the spindle the said shaft and spindle being provided respectively with similar opposed crank and drum-disks having similar diametrical coin-slots, a coin-guide to direct a coin into the slots, a weight operating upon the crank-shaft to hold the crank-disk with its slot vertical, the crank-shaft being free to turn in either direction with a movement limited to 180 degrees, and such limited movement operating to turn the groove upon the bottom of the drum exactly to the top thereof and leave the coin-slot of the drum-disk in a vertical position, and the coin-slot in the drum-disk having a pin projected in the middle of its length to sustain the coin in either end of the slot which may be uppermost but permit the free passage of a smaller coin, and a guard for retaining the coin in the two coin-slots until the drum is turned 180 degrees.

In testimony whereof I have hereunto set my hand.

JOHN BEHRENS.