J. A. BIRSFIELD.

VENDING MACHINE.

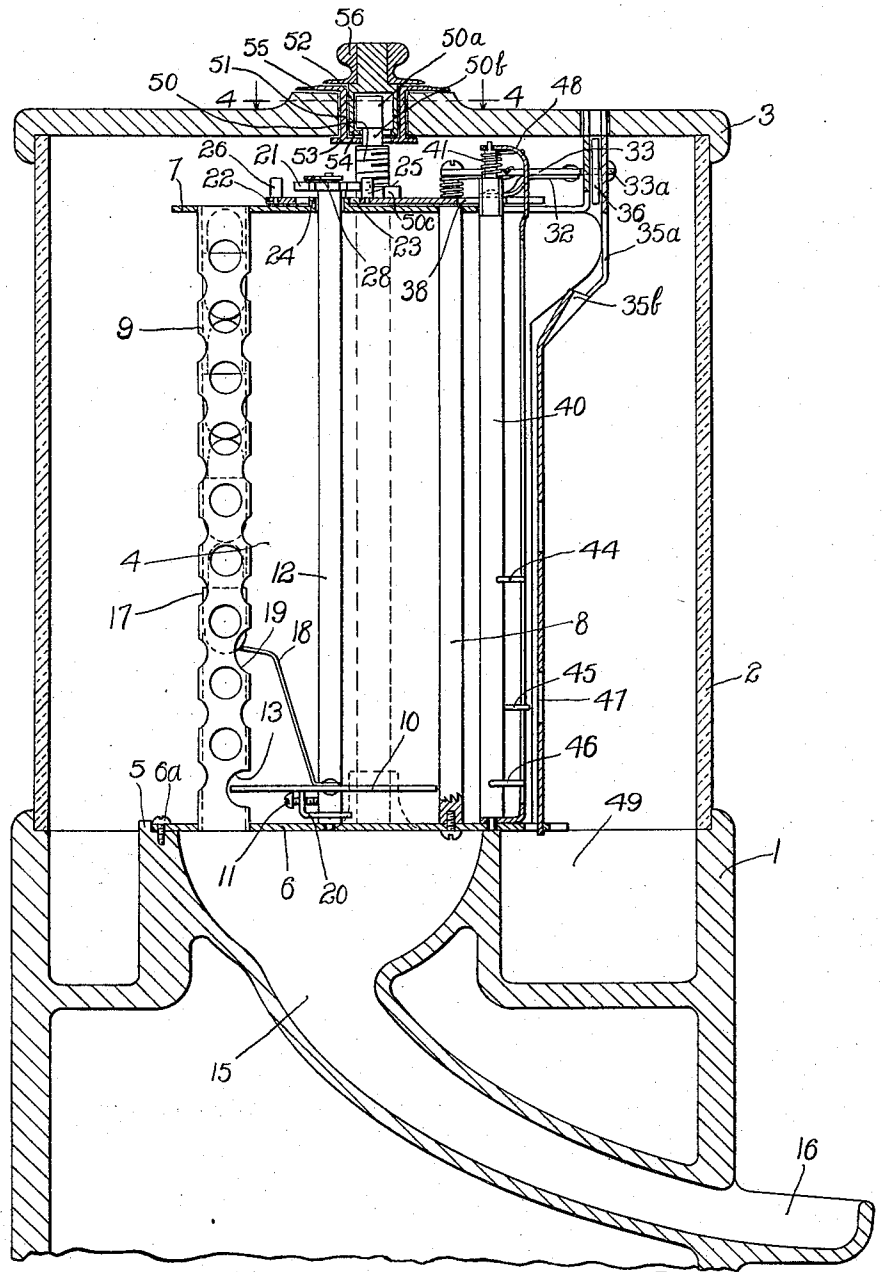
APPLICATION FILED DEC. 12, 1910.

1,149,618.

Patented Aug. 10, 1915.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 8.

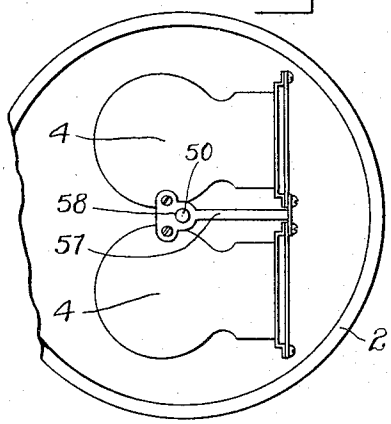


Fig. 9.

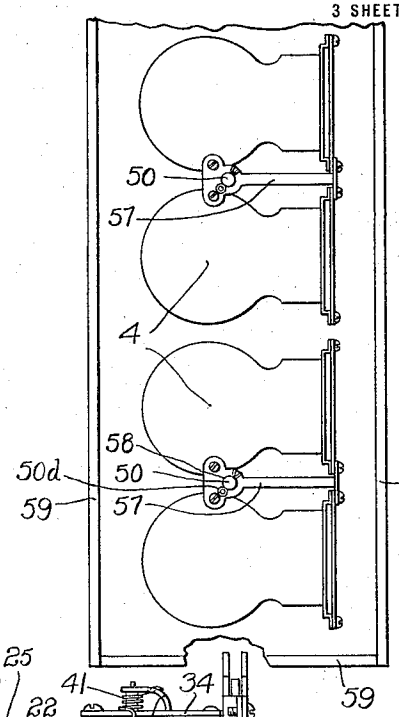
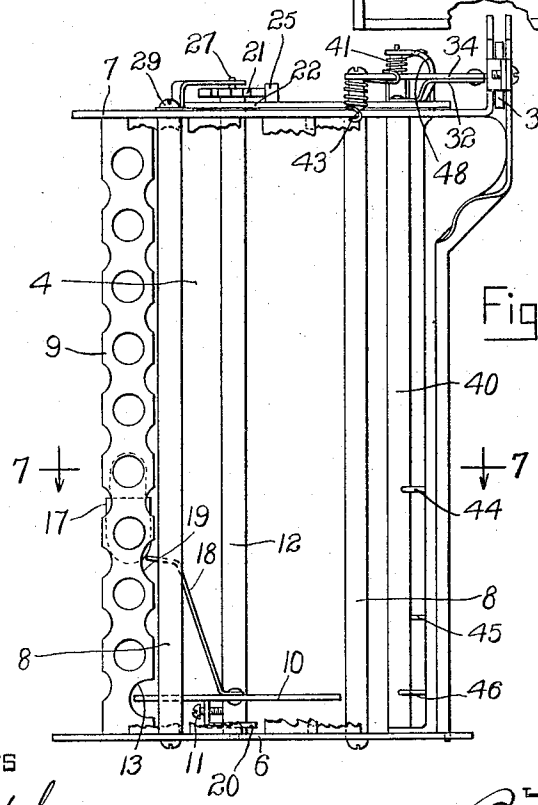


Fig. 2.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

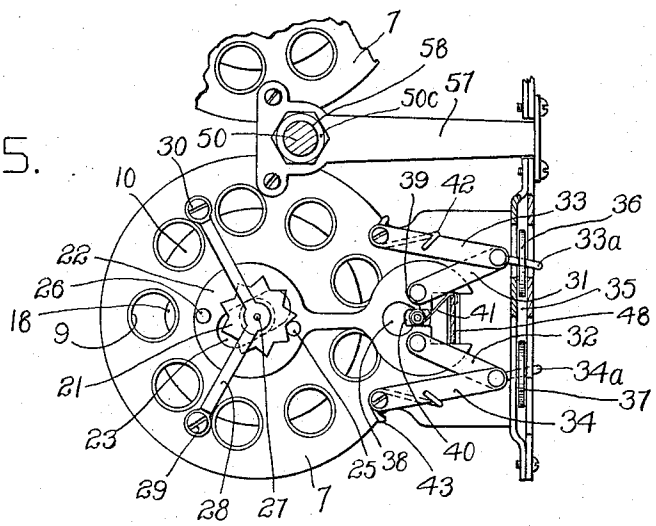
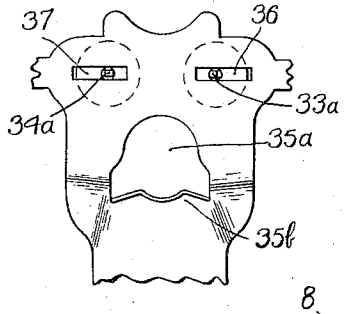


Fig. 3.



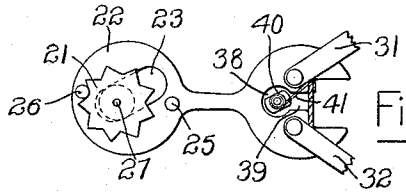


Fig. 6.

Fig. 7.

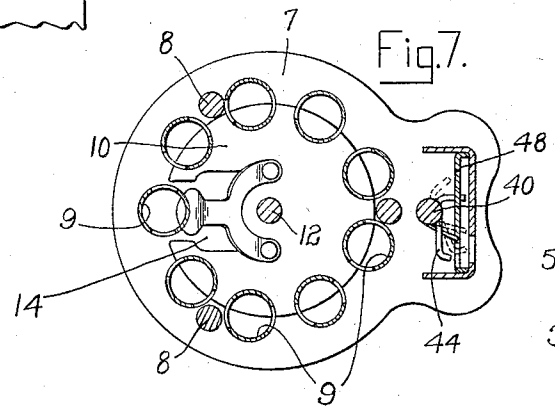
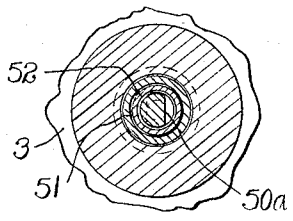


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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VENDING-MACHINE.

1,149,618. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed December 12, 1910. Serial No. 596,754.

To all whom it may concern:

Be it known that I, JULES A. BIRSFIELD, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Vending-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention pertains to vending machines in which the dispensing mechanism is actuated directly by the insertion of a coin representing the value of articles delivered by the machine, and has for its particular object to provide a machine of this class in which the mechanism used to contain the goods to be vended and the operating mechanism are assembled in separate units which are held in place in the machine only by the casing of the mechanism without additional securing means, or by securing means readily removable by the user. This provides that if for any reason it is necessary to repair the operating mechanism, the unit referred to may be removed from the machine and a duplicate unit inserted in its place without requiring that the whole machine be taken to the factory or repair shop.

Another object of my invention is to provide a vending machine in which a plurality of such units is employed either for the same class or different classes of goods.

A further feature of my invention consists in securing the casing of the vending machine together by means of a combination lock of simple construction, and the unlocking of the same to release the cover so that it may be removed from the machine to permit the removal of the units as desired.

It is a further object of my invention to provide a novel form of operating means for actuating the dispensing mechanism directly by the insertion of a deposited coin of proper value, thus eliminating the necessity of separately operating the dispensing mechanism after having released the same by the insertion of the required coin. By my invention actuating springs requiring separate winding to dispense the goods sold are also avoided.

The several drawings illustrating my invention are as follows:

Figure 1 is a vertical sectional view through the casing of the vending machine, showing the coin-receiving tube, the mechanism employed to dispense the goods, and the lock used to secure the casing together. Fig. 2 is a side view of one of the interchangeable units employed in the machine, which unit contains the goods receptacles and the operating mechanism for delivering the goods. Fig. 3 is a face view of the coin-receiving tube. Fig. 4 is a sectional view of the locking mechanism taken along the line 4—4 in Fig. 1. Fig. 5 is a top view of one of the units above mentioned, showing the mechanism used to actuate the dispensing devices, and also the means by which several units may be secured together in the same machine if desired. Fig. 6 is a detail view of the actuating mechanism in a position alternate to that shown in Fig. 5. Fig. 7 is a sectional view of the parts shown in Fig. 2 taken along the line 7—7. Fig. 8 is a diagrammatic top view showing a vending machine consisting of two dispensing units. Fig. 9 is a diagrammatic top view of a vending machine consisting of four or more dispensing units.

Similar numerals refer to similar parts throughout the several views.

As shown in Figs. 1 to 4, inclusive, the machine consists of a base 1, upon which a glass cylinder 2 is disposed in a suitable recess formed therefor in the base 1. The cylinder 2 is provided with a cover 3 having a downwardly extending flange around the upper end of such cylinder. Within the cylinder 2 the dispensing unit 4 is located, being held in place by a suitable flange 5 carried by the base, which partly surrounds the lower plate 6 of the dispensing unit. The dispensing unit consists of the lower plate 6 and an upper plate 7 secured together by posts 8 and screws, as indicated. Extending between the plates 6 and 7 a plurality of tubes 9 is disposed, adapted to contain the articles to be vended. The tubes 9 have openings punched in them at frequent intervals so that the condition of the contents of the tubes may be readily seen from outside the machine, and these tubes extend through the plates 6 and 7 so that the articles to be vended may be deposited in the tubes at their upper ends and delivered from the tubes at their lower ends. The tubes 9 are disposed in circular arrangement, as indicated in Fig. 7, and the goods contained therein, which are preferably inclosed in gelatin capsules to facilitate handling the same, are normally prevented from be-

ing delivered from the lower ends of the tubes by means of a disk 10 secured by a set screw 11 to a centrally-disposed rod 12, which extends through openings 13 into all of the tubes 9. The disk 10 has an opening 14 formed in its edge at one point, so that when this opening is brought into alinement with one of the tubes 9 the goods contained therein are delivered from the tube into a chute 15 formed in the base 1, by which they are conducted to the delivery opening 16 to be removed by the purchaser. A means is provided in connection with the disk 10 for permitting the delivery through the opening 14 of only a predetermined number of capsules 17, which means consists in an arm 18 secured to the disk 10 and extending upward above the opening 14 so as to extend into the tube 9 through an opening 19, with which tube the opening 14 is in registry. The arm 18 thus serves to engage the capsules in the tube 9 located above such arm at the same time that the opening 14 releases the capsules contained in the tube 9 below such arm. Thus, by disposing the arm 18 at any desired height, one or more capsules may be delivered for each coin deposited, as desired. The opening 14 is formed in the disk 10 by means of punching dies, and the piece removed from the opening is bent under the disk 10, as shown at 20, to receive the set screw 11 and engage the rod 12 to brace such disk. Thus, the rod 12 and the parts carried thereby constitute the dispensing mechanism, and are operated as follows: The rod 12 carries at its upper end an escapement wheel 21, as shown in Fig. 5. A reciprocable member 22 is disposed beneath the wheel 21, and is provided with a slot 23 to permit such member to be moved back and forth upon the rod 12. An opening for the rod 12 is formed in the upper plate 7 by turning upwardly a flange 24, and the slot 23 formed in the member 22 rests against this flange to direct the motion of the left-hand end of the member 22. The slot 23 is slightly inclined to the horizontal, as shown in Fig. 5, so as to impart a proper motion to the pallets 25 and 26 as the member 22 is reciprocated, so that such pallets will engage the wheel 21 to cause its step-by-step advance. The upper end of the rod 12 is reduced in diameter, as indicated at 27, and is supported by a bearing bracket 28 secured to the plate 7 at 29 and 30. The right-hand end of the member 22 has pivotally connected to it the links 31 and 32, the other ends of which are pivoted to the levers 33 and 34. The right-hand ends of the levers 33 and 34 are of reduced cross-section, as shown at 33^a and 34^a, and project across the coin tube 35. The portions 33^a and 34^a of the levers 33 and 34 carry rollers 36 and 37 in the coin tube 35, which are normally at such a distance apart as to be engaged by the insertion of a coin of proper value, as, for example, a 5-cent nickel.

It is to be noted that the end of the coin tube 35 extends through the cover 30, thus serving to in part retain the unit 4 in proper position, and the rollers 36 and 37 are disposed immediately below the cover 3, as a result of which when the coin is inserted into the upper end of the tube 35 upon being pressed into the tube properly the rollers 36 and 37 are separated, thus moving the levers 33 and 34 upon their pivots and moving the member 22 to the right, thus advancing the wheel 21 by means of the pallet 26. The right-hand end of the member 22 has a circular opening 38 formed therein, from the right-hand side of which a somewhat narrower slot 39 extends to normally engage the flattened upper end of a rod 40. A spring 41 is secured to the rod 40 in such a manner as to tend to rotate the rod around to the left, as shown in Figs. 5 and 6, and thus when the member 22 is moved to the right, as described above, the rod 40 enters the clearance opening 38, and under the action of the spring 41 is rotated to the position indicated in Fig. 6, in which position such rod locks the member 22 and prevents the operation of the springs 42 and 43, which tend to return the member 22 and the parts connected therewith to the position indicated in Fig. 5. The parts are retained in the position indicated in Fig. 6 until released by motion of the rod 40 to its normal position, which is accomplished as follows: The rod 40 carries a pin 44, which is thrown into the lower part of the coin tube 35 when such rod is moved to the position indicated in Fig. 6. As a result, after the coin has passed the rollers 36 and 37 and moved the member 22 to the position indicated in Fig. 6, it drops down through the coin tube 35 and strikes the pin 44, thus rotating the rod 40 around to the right against the action of the spring 41, at which time the springs 42 and 43 return the member 22 and the parts connected therewith to the position indicated in Fig. 5, the pallet 25 at this time serving to complete the advance of the wheel 21 and the rod 12 to bring the opening 14 into alinement with the next tube 9 from that with which it was in alinement before the coin was deposited in the tube 35. The rod 40 also carries below the pin 44 a plurality of pins 45 and 46 to retain deposited coins in the tube 35 so that the last deposited coins may be observed through a sight opening or openings 47 formed in front of the coin tube 35. The pins 45 and 46 are so arranged that they alternately engage the coins for the two positions of the rod 40 above referred to. The rod 40 is supported in proper position at its upper end by a bearing bracket 48 extending upward from the rear wall of the coin tube, while the

lower end of such rod is pivoted in the plate 6, as indicated in Fig. 1.

The coins delivered from the tube 35 after passing the pin 46 are deposited into a coin receptacle 49 formed in the base 1, which is in view of the customer as well as the owner of the machine, as a result of which the coins deposited may readily be observed at any time.

Immediately below the rollers 36 and 37 the coin tube 35 is bent rearwardly, and in the bent portion an opening 35^a is formed, which is smaller than the diameter of a proper coin to operate the machine—for example, a 5-cent nickel—but large enough to permit the passage through the opening of smaller coins, as, for example, a 10-cent dime or a penny. A lip 35^b is provided immediately below the opening 35^a to engage the lower edge of a proper coin and turn it over into the lower portion of the coin tube 35; whereas, for coins of smaller diameter the lip 35^b engages the lower edges of such coins and prevents their passage into the lower portion of the coin tube, directing them down in front of the coin tube into the receptacle 49.

The cover 3 is secured to the base 1 by means of a rod 50 fastened in the base, such rod having a flattened upper end 50^a, immediately below which a groove 50^b is formed. The cover 3 carries, centrally disposed therein, two tubes 51 and 52, to the lower ends of which are secured the disks 53 and 54, which disks have formed in them openings of a conformation similar to the upper end portion 50^a of the rod 50. The tube 51 has secured to its upper end a disk 55, while the tube 52 has secured to its upper end a knob 56. The disk 55 and the flange formed on the lower portion of the knob 56 are suitably marked so that by means of them the disks 53 and 54 may be brought into a position to aline the openings in them with the upper flattened portion 50^a of the rod 50, for which position the cover 3 may readily be removed from the machine, as may the cylinder 2 and the unit 4. The tubes 51 and 52 thus constitute a combination lock of simple construction by which all of the parts are securely held together.

Where two units are employed in the same vending machine it is sometimes desirable to secure them together at their upper ends by means of a bracket plate 57, as indicated in Fig. 5, in which event it is convenient to provide a hole 58 through the bracket plate 57 to receive the rod 50 used to secure the parts of the machine together. It is not essential, however, that such bracket plate 57 be used, as the units 4 may be securely held in position without it.

While the vending units have been described above as loosely supported upon the base 1, they may, if preferred, be secured thereto by devices readily removable by the user. For example: The upper end of the rod 50 may be threaded and the nut 50^c may be employed to engage the top of the bracket 57 through which the rod 50 extends. The nut 50^c may be readily removed when the cover 3 has been taken off of the machine and the vending units may be then removed from the base 1. Or, if desired, instead of the nut 50^c a split cotter pin 50^d may be inserted through the rod 50 just above the bracket 57, as indicated in Fig. 9, the removal of the cotter pin permitting the ready removal of the vending units from the base 1.

If it is preferred to secure the base plate 6 of the vending unit to the base 1 instead of employing the securing means in connection with rod 50, screws 6^a may be used, as shown in Fig. 1, said screws being readily accessible to the user of the machine so that he may remove the vending units if for any reason it is necessary to replace them with others. The latter means of securing the vending units to the base 1 is preferable when for any reason it is not desirable to use the brackets 57. In this manner any degree of removability of the vending units may be secured that is desired.

In the modification shown in Fig. 8 a 2-unit construction is indicated using a bracket plate 57 and contained within a cylindrical casing, while in the modification shown in Fig. 9 a construction is indicated for use with four or more units, in which construction the case is preferably rectangular in form, the sides 59 being preferably made of plate glass. In the latter construction two or more rods 50 may be employed to secure the parts together if desired.

While I have referred throughout this specification to coins as the means by which the mechanism is actuated, I do not wish to be understood as restricting the use of the machine to money of any particular coinage, since the machine obviously may be used with circular metallic disks however they may be marked as long as the disks are of a proper size to actuate the mechanism.

While I have shown my invention in the particular embodiment herein described I do not, however, limit myself to this construction but desire to claim any equivalent that may suggest itself to those skilled in the art.

What I claim is:

1. In combination a rotatable driven member, reciprocable escapement mechanism for actuating such rotatable driven member, levers projecting into the path of deposited coins to be operated thereby, rollers carried by the levers to be engaged by the coins, and links connecting the levers with the escapement mechanism.

2. In combination a rotatable driven member, an escape wheel secured to such rota-

table driven member, pallets for operating such wheel, a reciprocable member carrying the pallets, pivoted levers, rollers carried by the levers in the path of a deposited coin, and links connecting the reciprocable member and the levers.

3. In combination a driven member, escapement mechanism for actuating said driven member, levers projecting into the path of deposited coins to be operated thereby, rollers carried by the levers to be engaged by the coins, and links connecting the levers with the escapement mechanism.

4. In combination a rotatable driven member, reciprocable escapement mechanism for actuating such rotatable driven member, levers projecting into the path of deposited coins to be operated thereby and links connecting the levers with the escapement mechanism.

5. In combination a driven member, escapement mechanism for actuating said driven member, levers projecting into path of deposited coins to be operated thereby and links connecting the levers with the escapement mechanism.

6. In combination a rotatable driven member, an escape wheel secured to such rotatable driven member, pallets for operating such wheel, a reciprocable member carrying the pallets, pivoted levers projecting into the path of deposited coins to be operated thereby and links connecting the reciprocable member and said levers.

In witness whereof, I hereunto subscribe my name this 7th day of December, A. D., 1910.

JULES A. BIRSFIELD.

Witnesses:
GEORGE F. HAUSER,
BASIL I. PETERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."