Dec. 10, 1929. O. W. TIMM 1,739,186

AUTOMATIC SELECTIVE VENDING MACHINE

Filed Jan. 19, 1927 3 Sheets-Sheet 1

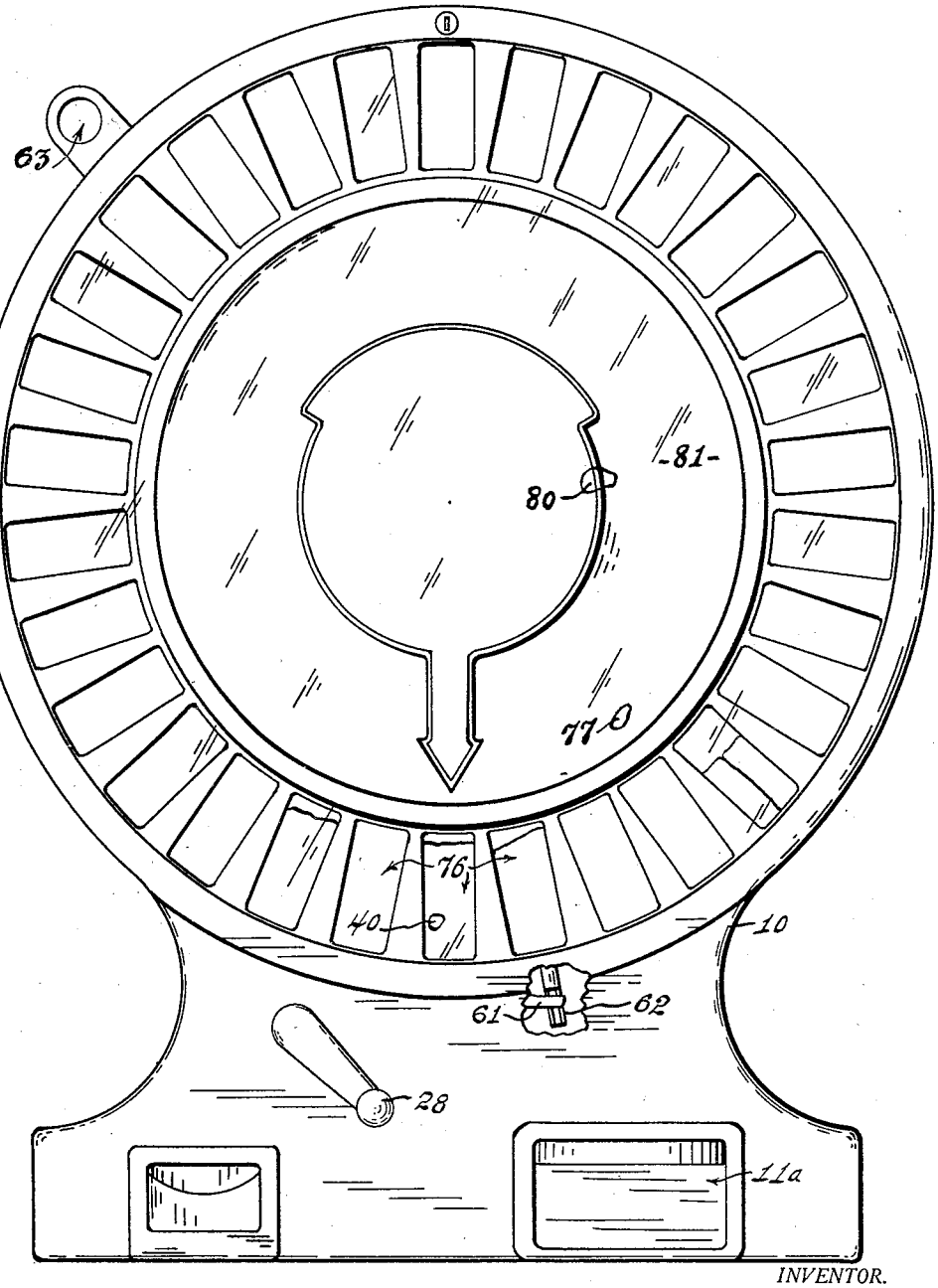



Fig. 1.

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Fig. 4.

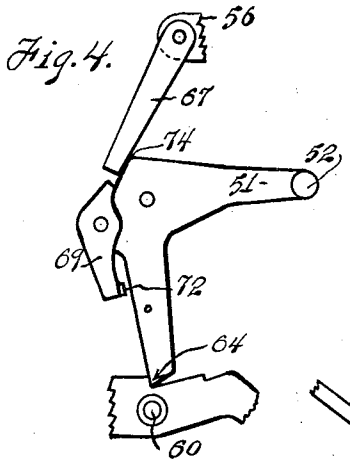



Fig. 2.




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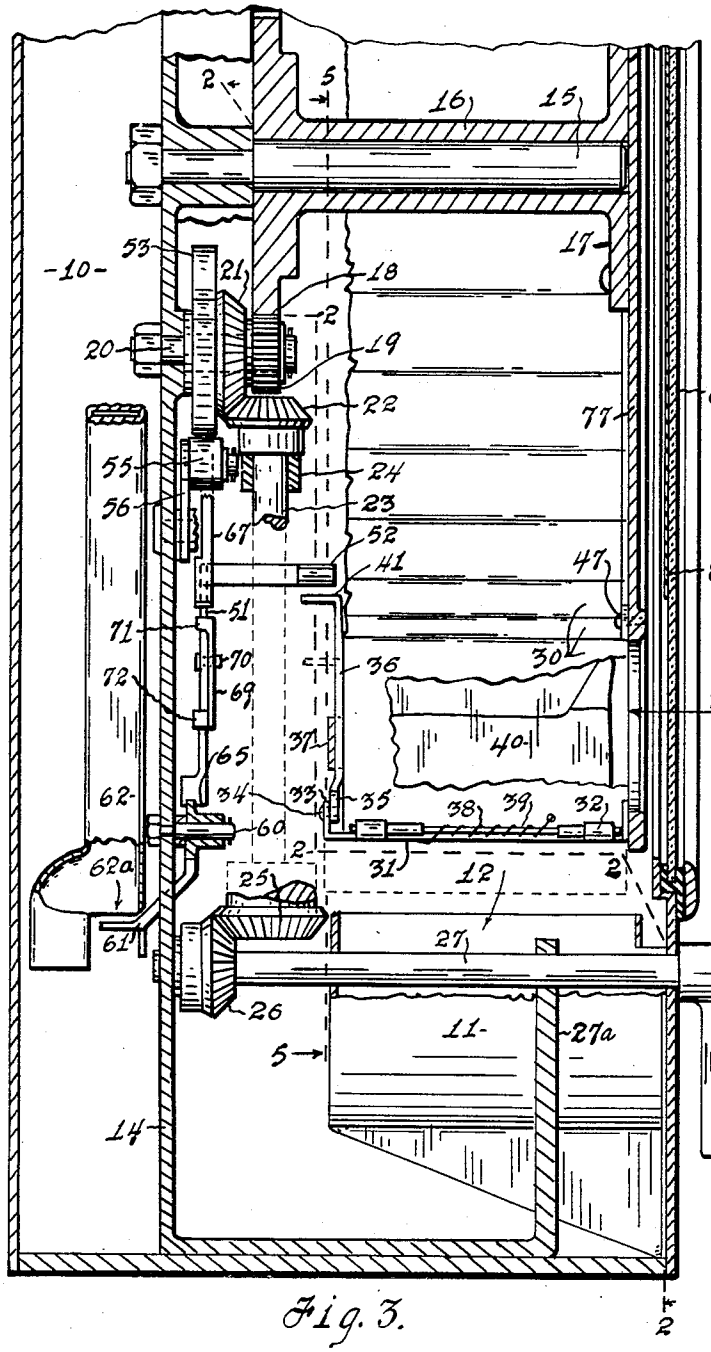



Fig. 3.

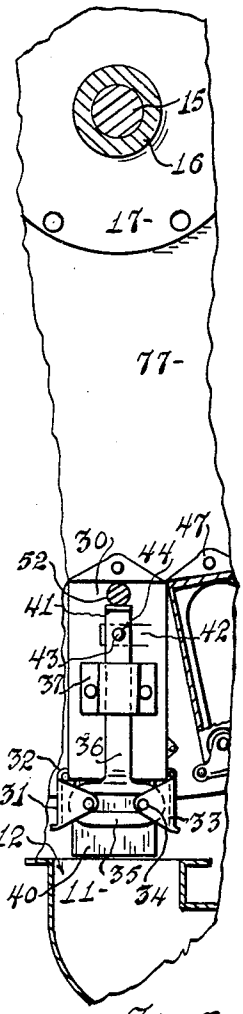



Fig. 5.

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# UNITED STATES PATENT OFFICE

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## AUTOMATIC SELECTIVE VENDING MACHINE

Application filed January 19, 1927. Serial No. 162,036.

The present invention relates to selective vending machines of the type in which there is provided a magazine movable to dispose any pre-selected contained article into registration with a coin controlled mechanism for causing the release or ejection of the pre-selected article.

In machines of such type it is usually required that the operator first move the magazine to bring the selected article into proper position, after which the coin is deposited. The article can then be obtained only by the additional operation of manipulating another control device to supply the energy necessary to release or eject the selected article.

My invention has for its principal object the provision of a machine in which any article may be pre-selected and delivered to the purchaser with less effort and fewer operations on the part of the purchaser.

Another object of the invention is to provide an automatic selective vending machine in which the desired article, when in the proper position, may be selected by the simple expedient of depositing the correct coin in a coin slot.

Another object of the invention is to provide for storing up energy for releasing and ejecting the selected article in such manner that it is not necessary for the patron to depress a lever or manipulate controls to obtain the article; it being understood that inaccurate or hesitant manipulation of such controls often results in the loss of the deposited coin without the patron receiving any article in exchange.

Another object of the invention is to provide for positive and automatic release of a pre-selected article by automatic means beyond the control, and not dependent upon the strength or dexterity, of the operator.

Another important object of the invention is to provide a fully selective vending machine with a mechanism whereby the slight blow of a falling coin, or even the weight thereof, will act to release the contents of any article holder which has been brought into proper relation with such mechanism.

Numerous other objects and advantages of my invention will appear hereinafter and will be better understood because of the order in which they appear.

I have illustrated by the accompanying drawings one practical embodiment of my invention; it being understood that the illustrations and the ensuing description will suggest to the minds of others, numerous different embodiments and mechanisms coming within the scope of my invention.

In the said drawings:—

Figure 1 is a front or face view of the said embodiment of my invention.

Figure 2 is a view in section, on a larger scale, seen on a line 2—2 of Fig. 3, showing mainly in elevation, the operating mechanism contained within the casing of the machine shown in Fig. 1.

Figure 3 is a view in section on a line 3—3 of Fig. 2, showing an article holder properly aligned with the mechanism in such position that the deposit of a coin will act to release the contents of the article holder.

Figure 4 is a fragmentary view of some of the parts shown in Fig. 2; the view showing the operating mechanism as having been released.

Figure 5 is a view on a line 5—5 of Fig. 3, showing an article holder as having just been acted upon by the automatic operating mechanism to cause release of a contained article into the discharge chute.

In carrying out my invention I employ a revoluble magazine having a plurality of radially arranged boxes or article holders, each opening radially outwardly. Each holder is provided with a suitable door or closure with spring pressed means tending to open the closure and release or eject the contents of the holder. A latch or the like is provided for each holder and upon release of the latch the closure will be allowed to open, and the said spring pressed means will be free to release or eject the contents of the holder. A selecting crank or handle is disposed exteriorly of a casing which encloses the article holders so that any pre-selected holder may be moved into operative relation with the latch releasing means. The latch releasing means is arranged to receive and store energy for its operation and is

held in inoperative position by a trigger; said trigger being arranged to be operated by a very slight force, so that a coin falling thereon will release the energy in the latch releasing means, causing it to release the latch so that the closure will open automatically.

More specifically, in carrying out my invention in the present embodiment, I employ a casing 10, having a discharge opening, and a discharge chute 11 leading to the said opening. The discharge chute 11 is provided interiorly of the casing with an open article receiving end 12. Any suitable design of chute may be employed for this purpose, and in my copending application, Serial No. 169,729 I have shown and described a chute which is particularly suited for such purpose.

Within the casing there is provided a vertical frame 14, from which there extends a rigid horizontal shaft 15. Upon this shaft there is provided a revoluble sleeve 16 having an integral disc 17. The sleeve is also provided with a gear 18 which meshes with a gear 19; the latter being revoluble on another shaft 20 carried by the frame. Integral with gear 19 is a bevel gear 21 meshing with another bevel gear 22. The latter is fixed to a shaft 23 which ranges downwardly of the casing and which is revolubly carried by the frame in bearings 24. Adjacent the lower end of the shaft 23 there is provided another bevel gear 25 meshing with still another gear 26. Gear 26 is fixed to a horizontal lower shaft 27 which extends forwardly of the casing to terminate in a selective crank 28. By turning crank 28 the disc is revolved at a slower rate, such as five turns on the part of the crank being required to effect one revolution of the disc.

The disc carries a plurality of radially arranged outwardly opening boxes or article holders 30. Each box is provided with a closure in the form of two doors or flaps 31, each hinged to the box, as at 32. Each door is provided with ears 33, contiguous with the front of the box, and by means of pins 34, each door is connected with a slotted yoke 35. The yoke 35 is provided with a vertically rising portion or bolt 36, which passes under a guide 37 so that the yoke is guided in vertical movement. Springs 38, coiled around the hinge pins 39, serve to hold the closure in closed position so that they are capable of supporting a contained article, such as 40, against all normally encountered forces. The bolt is extended upwardly above the box to terminate in a bent end 41, which projects horizontally forwardly of the box. Depression of the bolt will force the doors open in the position in which they are shown in Fig. 4, and will allow the contents to gravitate from the box freely, particularly since the doors may be moved outwardly to a vertical position beyond the plane of the sides of the box. A small cut-away spring portion 42, of the front wall of the box, is formed with a protruding button 43, which coacts with the margin of a hole 44 in the bolt, to hold the closures open once they are moved to open position.

In a copending application I have illustrated and described a coin return mechanism, which may be employed in conjunction with the machine now being described, for the purpose of causing the depressed end 41 of a bolt to actuate the coin return means so that if a coin is introduced to the machine when an open box is aligned with the discharge chute, the coin will be returned without operating the machine. Hence this is the reason for causing a box, once opened, to remain open until it is properly refilled.

The boxes are each attached to the disc, as at 47, 47, etc. It will be apparent now that by turning the selecting handle, the closure end of any article holder may be brought in direct alignment with the discharge chute; the latter being spaced downwardly sufficiently to permit of free opening of the doors. The assembly of boxes with the disc and sleeve is hereinafter known as the magazine.

Pivoted to the frame, as at 50, I provide a lever 51, having a projecting pin 52 disposed immediately above the bolt of the immediately underlying holder. Downward movement of the pin, by reason of the lever pivoting on its pivot, will result in the pin 52 striking the bolt of the underlying article holder to release the contents thereof. The lever 51 and the pin 52 are hereinafter known as the ejector.

Integral with the gear 21 there is provided a star wheel 53. Said star wheel is provided with depression 54 in which works a roller 55 carried by a spring controlled arm 56. The arm is pivoted to the frame, as at 57, and is held by a spring $57^a$ so that the roller coacts with the star wheel to center the magazine. Thus, when ever the selecting handle is released, the tension of the spring $57^a$ will act to move the magazine slightly so that the article holder then nearest the chute will be properly aligned therewith and with the pin 52; the latter being practically in vertical alignment with the receiving end of the discharge chute.

A trigger 59 is pivoted to the frame, as at 60, and has an extension 61 reaching downwardly and rearwardly to terminate below the open end $62^a$ of a coin chute 62. The coin chute leads from a coin slot 63 exteriorly of the casing. A coin having reached the open end of the chute will strike the trigger. Intermediately of the pivot point and the end of the trigger there is provided a notch 64, in which a pointed end 65 of lever 51 rests when allowed to do so. The lever 51 is provided with a strong spring 66, which acts to hold the lever 51 in engagement with the

trigger. Obviously depression of the trigger will result in the notched portion being moved downwardly so that the lower end 65 of lever 51 is free to swing away while the spring actuated lever 51 and its attached pin, is descending toward the discharge chute. The rear end of the trigger, beyond the pivot thereof, is provided with an integral weight 60', which at all times tends to raise the forward end of the trigger and to cause engagement of the end 65 of lever 51 with the notch 64.

A pawl 67 is pivoted, as at 68, to the free end of the arm 56. Lever 51 is provided with a ratchet member 69, so disposed as to be engaged by pawl 67 when the lever 51 has been released by the trigger 59. Said ratchet member is pivoted to lever 51, as at 70, and is provided at each end with stops 71 and 72, respectively, which limit movement of said ratchet member. The upper stop 71 is so positioned that when the parts are in the position shown in Fig. 5, downward movement of lever 51 will result in pawl 67 striking the ratchet member and moving its upper end outwardly from the lever, whereupon the lower stop 72 strikes the lever 51 and rocks its end 65 over into position where it may engage notch 64.

Lever 51 is provided with a rounded surface 74 on which pawl 67 rests. When the lever is disposed in the position shown in Fig. 2, this surface holds the pawl in such position that it cannot engage the ratchet member. When the lever 51 has swung downwardly into the position shown in Fig. 5, the surface 74 is so disposed as to allow the pawl to engage the ratchet member when arm 56 is moved downwardly by reason of the roller thereof riding over a raised part of the star wheel.

The operation of the machine as a whole will be understood from the following:— When the selecting handle is turned, the magazine is driven through the gears so that any desired article holder may be moved into registration with the discharge chute. An arrow 80 on the front glass covering 81 serves to indicate the position into which the desired article must be moved. When the machine is loaded and first placed in use, the parts are in the position shown in Fig. 2, with the lever 51 held in position by reason of the trigger engaging it. As the magazine is revolved, the roller on arm 56 rides on the perimeter of the star wheel, but the motion imparted thereby, to the pawl, has no effect upon the lever 51, or on the ratchet member, because of the fact that the pawl cannot then engage the ratchet member, as previously explained. The star wheel is so adjusted that the arm 56 is in lowermost position when the roller thereof rides on the highest part of the star wheel, and when in such position, no article holder is directly aligned with the discharge chute. A small projection 82, on the arm 56 coacts with means (not shown) whereby a coin inserted in the coin slot will be returned. When an article holder is in correct discharging relation to the discharge chute, the roller on arm 56 is in a depression of the star wheel and the machine is ready to receive a coin and discharge the contents of the selected article holder. A coin is inserted in the coin chute and sliding through the chute strikes the trigger and releases it. Thus the energy of the spring controlling the lever 51 is released, and the pin 52 is thereby moved forcibly downwardly, striking the protruding end of the bolt of the article holder and opening the closures to release the contained article. The parts are then in the position shown in Fig. 5, and remain so until another article is to be selected. By other means, also shown in the said copending application, the machine is incapable of receiving and retaining a coin until the magazine is moved to bring a loaded holder into discharging position. Therefore the machine cannot be operated until the magazine is again moved. The first movement which takes place on the part of the magazine results in the star wheel forcing the free end of the arm 56 downwardly. The pawl thereby is forced downwardly striking the ratchet member. The ratchet member, or rather its lower stop, abuts the lever 51 and causes its lower end to be rocked outwardly against the tension of the spring. Thus, first turning movement of the magazine "cocks" the machine by storing up energy in the spring. As the lower end 65, of the lever, rides over the margin 64, the weighted end of the trigger raises the trigger and causes the notch and the end 65 of the lever to engage. Thus the parts are locked in the position shown in Fig. 2, awaiting the insertion of another coin. By the means referred to, such coin cannot find its way to the trigger until a loaded article holder is in position to discharge into the chute. Of course, when the machine is "cocked", the magazine can be turned indefinitely without effecting the position of the lever 51 and the trigger 59. When another coin does find its way to the trigger, the operation of releasing the contents by the energy stored in the spring, is again repeated.

It will be apparent now that the machine is quite automatic, and to purchase any of the contained articles, it is only necessary to move the magazine to properly position the desired article, and then inserting the coin, the energy stored by first movement of the magazine, serving to do all the rest, and the usual operating lever common to selective vending machines is dispensed with. At any time a person steps up to a machine and sees the desired article aligned with the indicating arrow, the only operation necessary upon his part is the insertion of the correct coin in the

coin slot; gravity and stored energy accomplishes the rest.

While I have shown and described a specific embodiment of my invention, I do not limit myself thereto, and I may employ any construction or arrangement of parts, without departing from the spirit of my invention as set forth in the appended claims.

I claim:—

1. In a selective vending machine, a casing provided with a discharge chute, a revoluble magazine provided with a plurality of article holding pockets; said magazine being revoluble to dispose any selected pocket in registration with said chute, a star wheel revoluble with and driven by said magazine, a roller riding on said star wheel, an arm holding said roller against said star wheel to center said magazine, a spring pressed lever movable to operative and inoperative positions respectively, ratchet means connected with said arm and operative upon said lever to move same to inoperative position, means for releasing the contents of an article holder aligned with said chute; said lever operating said releasing means when moved from inoperative position to operative position, and a trigger normally locking said lever in inoperative position.

2. In a selective vending machine, a casing provided with a discharge chute, a revoluble magazine provided with a plurality of article holding pockets and movable to dispose any selected article holding pocket in discharging registration with said chute, a hinged closure for each article holder, a projecting member attached to each closure and movable to open the attached closure, a pivoted lever movable to operative and inoperative positions respectively and disposed to strike such projecting member when moving from inoperative to operative position to effect opening of the closure then aligned with said chute, a spring urging said lever from inoperative to operative position, a trigger automatically engageable with said lever when said lever is moving from operative to inoperative position; said trigger disposed to normally prevent return of said lever to operative position, and means operable upon turning movement of said magazine to move said lever from operative to inoperative position.

3. In a selective vending machine, a casing provided with a discharge chute, a revoluble magazine provided with a plurality of article holding pockets and movable to dispose any selected article holding pocket in discharging registration with said chute, a hinged closure for each article holder, a projecting member attached to each closure and movable to open the attached closure, a pivoted lever movable to operative and inoperative positions respectively and disposed to strike such projecting member when moving from inoperative to operative position to effect opening of the closure then aligned with said chute, a spring urging said lever from inoperative to operative position, a trigger automatically engageable with said lever when said lever is moving from operative to inoperative position; said trigger disposed to normally prevent return of said lever to operative position, a star wheel carried by a revoluble magazine, a spring pressed arm adjacent said star wheel and actuated thereby, whereby said spring pressed arm tends to center said magazine to hold an article holder in discharging registration with said chute, a pawl carried by said arm, a ratchet member carried by the said lever and engageable by said pawl to move the lever to inoperative position when such lever is in operative position.

4. In a selective vending machine, a magazine embodying a plurality of article holders, closures; one for each article holder, an ejector movable through a fixed path to open the closure of an article holder aligned therewith; said magazine movable to dispose a selected article holder in registration with said ejector, a ratchet driven by said magazine to move said ejector to retracted position, a spring urging said ejector from retracted position to advanced position through said path, and a trigger locking said ejector in retracted position against the urge of said spring.

5. In a selective vending machine, a movable magazine embodying a plurality of article holders, closures; one for each holder, bolts; one for each closure and movable to open a closure, an ejector movable through a given path from retracted position to advanced position, a spring urging said ejector from retracted position to advanced position, a ratchet moved by said magazine to move said ejector from advanced position to retracted position, and a trigger holding said ejector in retracted position against the urge of said spring; said magazine movable to dispose the bolt of a selected holder in the path of advance movement of said ejector.

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