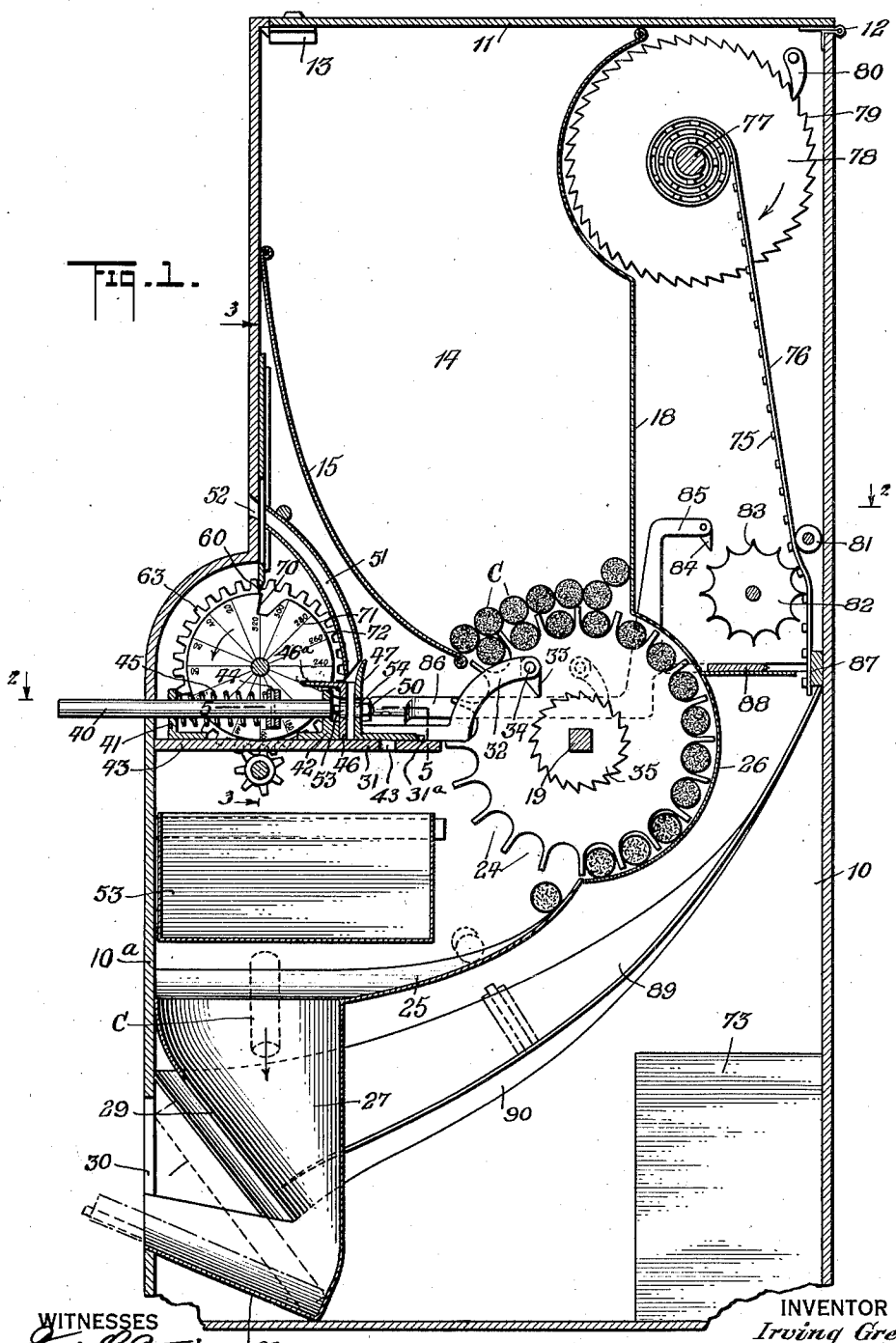
Jan. 28, 1930. I. GREEN 1,745,254

VENDING MACHINE

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Fig. 1.



WITNESSES

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VENDING MACHINE

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Fig. 2.

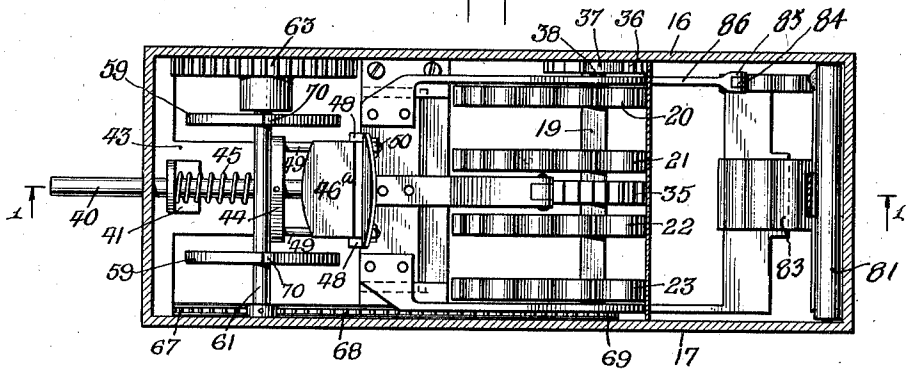


Fig. 5.

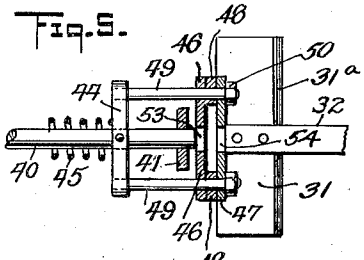


Fig. 3.

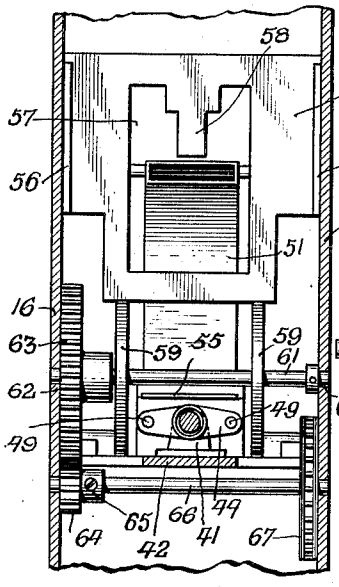


Fig. 4.

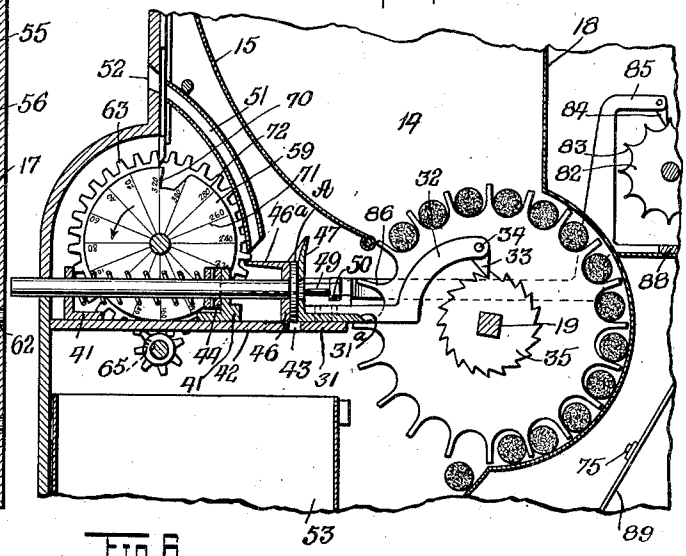
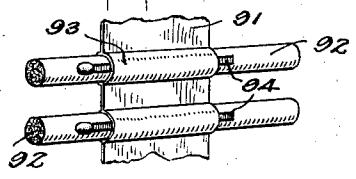


Fig. 6.



WITNESSES

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IRVING GREEN, OF NEW YORK, N. Y.

VENDING MACHINE

Application filed April 7, 1928. Serial No. 268,230.

This invention relates to vending machines, and comprehends an improved machine for vending single cigarettes. The invention aims for one of its objects to provide an improved delivery mechanism by virtue of which the cigarettes are positively fed into a delivery chute.

As a further object, the invention comprehends an improvement in the delivery chute outlet which disposes cigarettes in a partially projecting position so that the vendee's hands do not contact with the delivery chute outlet, thereby preventing the possibility of the spreading of disease by contagion.

The invention furthermore embodies an improved coin controlled mechanism for actuating the delivery mechanism. As a further feature, the invention comprehends an improved coin slot closing device including means to effect a closing of the coin slot when a predetermined number of cigarettes have been vended so as to prevent failure of delivery of the cigarette when a coin is inserted.

As a further object, the invention aims to provide means for dispensing a match with each cigarette, which mechanism is operable in conjunction with the cigarette delivery mechanism.

Other objects of the invention reside in the comparative simplicity of construction and mode of operation of the machine, the economy with which it may be produced and the general efficiency derived therefrom.

With the above recited and other objects in view, reference is had to the following description and accompanying drawings, in which there is exhibited one example or embodiment of the invention, while the claims define the actual scope of the same.

In the drawings:

Figure 1 is a vertical sectional view through the machine taken approximately on the line indicated at 1—1 in Figure 2.

Figure 2 is a horizontal sectional view taken approximately on the line indicated at 2—2 in Figure 1.

Figure 3 is a fragmentary vertical transverse sectional view taken approximately on the line 3—3 of Figure 1.

Figure 4 is a fragmentary view similar to Figure 1 illustrating the actuated position of the parts.

Figure 5 is a fragmentary sectional plan view taken approximately on the line 5—5 in Figure 1.

Figure 6 is a fragmentary perspective view of a cigarette and match vending strip.

Referring to the drawings by characters of reference, 10 designates the casing or cabinet which houses the machine, the same being provided with a top wall 11 which is hinged at 12 and which is locked in closed condition by a suitable lock 13. A hopper 14 is defined in the upper portion of the cabinet by a transverse front wall 15 extending between the side walls 16 and 17 and by a rear wall 18 extending between said walls. A delivery wheel including a transverse non-circular shaft 19 and axially spaced disks 20, 21, 22 and 23 is arranged in the cabinet to close the lower end of the hopper. The shaft 19 has its opposite ends journaled in the side walls 16 and 17 of the cabinet whereby the delivery wheel is mounted for rotation. The disks 20 to 23 inclusive are of substantially identical construction and each is provided with circumferentially spaced peripheral notches 24 approximately the cross sectional size or diameter of the cigarettes C which are to be vended by the machine. The corresponding notches in the several disks combine to accommodate a single cigarette and the cigarettes are gravitationally fed from the hopper into the notches. A delivery chute 25 is arranged in the lower portion of the cabinet and the upper end thereof extends to a point on the periphery of the delivery wheel in vertical alignment with the axial center. A substantially semi-circular wall section 26 extends from the upper end of the delivery chute around the periphery of the wheel to the lower end of the rear wall 18 of the hopper in order to retain the cigarettes in the notches until they reach the point of delivery onto the upper end of the chute 25. The delivery chute 25 from a point adjacent its upper end declines forwardly and downwardly and inclines laterally where it communicates with a funnel shaped trough 27.

The funnel shaped trough is provided at its lower restricted end with a forwardly and upwardly inclined tray 28 which communicates with the trough. The front wall of the trough is provided with a slot 29 overlying the tray which is open at its upper end. The tray has its forward end extending into a delivery opening 30 in the lower front panel 31ª of the cabinet. Under the construction and arrangement described, a cigarette discharged from the delivery wheel onto the upper end of the chute 25 rolls forwardly and downwardly until it reaches the upper open end of the funnel shaped trough. At this point, as indicated by dotted lines in Figure 1, the cigarette reaches a lateral inclination which causes it to slide through the trough, which trough due to its configuration effects a forward tilting of the cigarette until it drops through the slot 29 into the tray 28 where the forward end of the cigarette projects through the delivery opening 30.

In order to provide means for successively turning the delivery wheel a sufficient distance to release a single cigarette from the notches 24, a member 31 is mounted for fore and aft sliding movement in the cabinet, which member has attached thereto an arm 32 having a pawl 33 fulcrumed thereto at 34. The shaft of the delivery wheel between the intermediate disks 21 and 22 thereof has secured thereto a ratchet wheel 35 with which the pawl 33 is adapted to engage upon rearward sliding movement of the member 31. This movement is such as to effect through the engagement of the pawl 33 with the ratchet 35, turning of the delivery wheel a distance to release a single cigarette from the notch 24. The return movement of the member 31 allows the pawl 33 to freely ratchet over the teeth of the ratchet wheel 35. In order to prevent possible retrograde movement of the delivery wheel, a second ratchet wheel 36 is secured to the shaft 19, preferably between the disk 20 and the side wall 16 of the cabinet. A gravity pawl 37 fulcrumed at 38 to the cabinet wall 16 cooperates with the ratchet wheel 36 for this purpose.

In order to provide means for operating the delivery mechanism, a manipulating plunger 40 is provided which projects through the front wall of the cabinet. The plunger extends through spaced guide bearings 41—41 which are supported on a horizontal shelf 42 arranged within the cabinet. This shelf also serves as a support for the sliding member 31, and has a transverse coin slot 43. The plunger has secured thereto a cross head 44 and a coiled contractile spring 45 is connected respectively to the cross head and to the forward guide bearing 41 for normally moving the plunger axially forward. The member 31 carries front and rear upstanding flanges 46 and 47 spaced apart a distance approximately equal to the coin which is employed for the operation of the machine and the side edges of said flanges are joined by end strips 48 which are transversely spaced apart a distance approximately the diameter of the coin. The cross head has attached thereto a pair of rearwardly projecting rods 49 which extend through openings in the flanges 46 and 47 and said rods at their rear ends are provided with abutment elements, such as nuts 50, which function to engage with the rear flange to return the member 31 and its component parts, in a forward direction with the plunger after manipulation of the machine. In the forward position of the member 31, the flanges are out of registry with the slot 43 and underlie the discharge end of a coin chute 51 which extends upwardly to a point in alignment with a coin slot 52 in the front wall of the cabinet. The flanges 46 and 47 are provided with aligned openings 53 and 54 slightly exceeding in diameter the diameter of the plunger 40 and registering with the axis of the plunger. The forward flange 46 is provided with a forwardly projecting horizontal lip 46ª which is of a length to underlie the discharge end of the coin chute at any point in the shifted position of the member 31. The purpose of the lip 46ª is to prevent discharge of the coin from the coin chute 51 at any time except when the flanges 46 and 47 are properly positioned thereunder for receiving a coin.

In operation, with the parts in the position illustrated in Figure 1, a coin inserted in the coin slot 52 will gravitate through the coin chute 51 and be discharged therefrom between the flanges 46 and 47, at which point it will rest on the upper surface of the shelf 43. The vendee pushing inwardly on the plunger 40 will cause the rear end of the plunger to be projected through the opening 53 of the flange 46 where it engages with the coin A and impinges the same against the rear flange 47 causing the member 31 to be moved rearwardly with the plunger for actuating the delivery wheel to deliver the cigarette. It is obvious that the rearward movement of the member 31 carries the coin to a point where it is in registry with the transverse slot 43, and as soon as the plunger is released by the vendee the spring 45 functions to return the plunger to its normal forwardly projected position. It is also to be observed that in the rearmost position of the plunger and member 31 under the pressure exerted on the plunger by the vendee, that the abutment heads or nuts 50 are slightly spaced from the rear flange 47 so that they are out of engagement therewith. It thus follows that the initial forward movement of the plunger under the action of its spring causes the rear end of the plunger to separate from the coin to release the same and insure its dropping from between the flanges 46 and

47 through the transverse slot 43 into a suitable coin box or receptacle 53. After the release of the coin, the abutment elements or nuts 50 engage with the rear flange to cause the return forward movement of the member 31 with the plunger through the medium of the cross head and rods 49. It is also apparent that with the parts in the position illustrated in Figure 1, inward movement of the plunger without the insertion of a coin will fail to actuate the delivery mechanism due to the fact that the rear end of the plunger will be merely projected through the front and rear openings 53 and 54 in the flanges 46 and 47. In order to lock and prevent the possibility of the delivery wheel turning more than the distance to release a single cigarette, the rear beveled edge 31ª of the member 31 when said member is moved rearwardly, projects into the path of movement of the delivery wheel, immediately preceding the completion of the movement of the delivery wheel when actuated by the pawl and ratchet connection 33 and 35. This positively precludes any possibility of delivery of more than a single cigarette due to the rapid manipulation of the plunger in consequence of the momentum of the delivery wheel.

In order to provide means for closing the coin slot 52 to prevent the insertion of a coin when the machine is empty, a gravity plate 55 is mounted for vertical movement in rear of the front wall of the cabinet in suitable guides 56. The gravity plate is provided with an opening 57 in line with the coin slot 52 and upper end of the coin chute 51 and the plate is provided with a depending coin slot obstructing tongue 58 which is designed to obstruct the insertion of the coin through the slot into the chute when the plate is in a lowered position. The gravity plate 55 is maintained in a normal elevated position with the tongue 58 in a non-obstructing position by a pair of disks 59, the peripheries of which engage the lower knife edge 60 of the plate. The disks 59 are secured to a transverse shaft 61 which is journaled at its opposite ends in bearing openings 62 in the side walls 16 and 17 of the cabinet. The shaft 61 has secured thereto a gear 63 meshing with a pinion 64 secured by a set screw 65 to a counter shaft 66. The counter shaft 66 has secured thereto a sprocket wheel 67 which is operatively connected by a sprocket chain 68 to a sprocket wheel 69 secured to the delivery wheel shaft 19. The sprocket wheels 67 and 69 and the pinion 64 and gear 63 bear a predetermined ratio by virtue of which the disks 59 will be turned a predetermined distance upon each operation of the machine. The disks 59 are provided at a predetermined point in their peripheries with aligned notches 70, which notches are adapted to permit of gravitational movements of the plate 55 to obstruct the insertion of the coin when the notches register with the lower knife edge 60 of the gravity plate.

In order to guide the vendor in setting the control disks 59 when filling the machine, one or both of the disks are provided with radial graduations 71 and indicia 72 relating thereto. For example, in filling the machine, it is necessary after placing a predetermined number of cigarettes in the hopper, to operate the delivery mechanism until cigarettes are in all of the notches extending clockwise from the hopper to a point adjacent the upper end of the delivery chute so that the next operation will discharge a cigarette from the notches onto the delivery chute. The vendor then loosens the retaining screw 65 which secures the pin 64 to the shaft 66 and axially slides the pinion on the shaft 66 to a point where it is disengaged from the gear 63. The shaft 61 is now turned to a point where one of the graduations 71 registers with the knife edge 60, it being understood, of course, that this graduation has the indicia number corresponding to the number of cigarettes which are actually placed in the hopper. The pinion 64 is now moved into engagement with the gear 63 and the set screw 65 tightened so that the machine is ready for operation. To gain access to the coin box 53 and to the mechanism for the purpose of disengaging the pinion 64 from the gear 63, a lower front panel 10ª is removable and may be suitably locked in position. If desired, a suitable humidifying device 73 may be arranged in the cabinet for maintaining the cigarettes in a fresh condition.

If desired, suitable mechanism operable by and in conjunction with the cigarette vending mechanism may be installed in the cabinet for dispensing a match with each cigarette. Preferably, the matches 75 will be arranged in transverse parallel spaced relation on a strip 76. The strip will be wound on a spool 77 suitably supported within the cabinet for rotation. One of the spool flanges 78 is formed with peripheral ratchet teeth 79 which are engaged by a gravity pawl 80 for limiting the spool to turning movement in a clockwise direction, as illustrated in Figure 1. From the spool the strip is trained over a guide roller 81 and thence into engagement with a feeding roller 82 having peripheral corrugations or teeth 83. The feeding roller is designed to be turned by a pawl 84 on an arm 85 which is carried by one of the legs 86 of a yoke attached to the sliding member 31 of the cigarette delivery mechanism. The arm 85 and its pawl 84 are designed upon each operation of the machine to feed the match strip over the face of the connecting block 87. A shearing knife 88 also carried by the yoke is adapted to likewise be reciprocated upon each operation of the machine to sever the match strip between the endmost and next adjacent match on the strip. A match de-

livery chute 89 has its upper end disposed directly below the connecting block and the same leads therefrom downwardly to a point directly above the tray 28. The match delivery chute 89 inclines laterally from a point adjacent its upper end to its lower end and is provided with a flange 90 at its lowermost edge which prevents the match from leaving the delivery chute until it reaches its outlet point above the tray 28. The match is delivered with an end projecting similar to the manner in which the cigarette is delivered.

In the modification illustrated in Figure 6 of the invention, 91 is a strip of material which carries a plurality of spaced parallel transversely arranged cigarettes 92 in suitable pockets 93, in which pockets a match 94 is also arranged. This affords means for simultaneously vending a single match and cigarette by the same delivery mechanism such as that illustrated for dispensing the matches, it being understood that the strip 91 will be severed by a suitable cutting means between each adjacent pocket as the strip is fed through the mechanism.

What is claimed is:

1. In a machine for vending single cigarettes, a delivery chute extending from a delivering mechanism to a delivery opening in the vending machine cabinet and means at the lower end of the chute for causing the cigarette to be partially projected through the delivery opening, said means consisting of a funnel shaped trough at the lower end of the delivery chute and communicating therewith, an upwardly and outwardly inclined tray communicating with the lower end of the trough and a slotted portion in the wall of the trough.

2. In a machine for simultaneously vending singly a cigarette and a match, a hopper for containing a supply of cigarettes, rotatory means for singly releasing the same, a match carrying strip arranged in transverse parallel spaced relation thereon, rotatory means engageable with the matches for feeding the strip, a common reciprocatory element operable to actuate the cigarette releasing means and the match strip feeding means and means carried by said element for severing the match strip between the endmost pair of adjacent matches.

3. In a machine for simultaneously vending a cigarette and a match singly, a hopper for containing a supply of cigarettes, rotatory means for singly releasing the same, a match carrying strip arranged transversely thereon in longitudinally spaced relation, rotatory means engageable with the matches for feeding the strip, a reciprocatory element, coacting means provided respectively on said element and on the cigarette releasing means and the match strip feeding means for releasing a cigarette from the hopper and for feeding the match strip and coacting means on said element adjacent the match strip for severing said strip.

Signed at New York, in the county of New York and State of New York, this 5th day of April A. D. 1928.

IRVING GREEN.