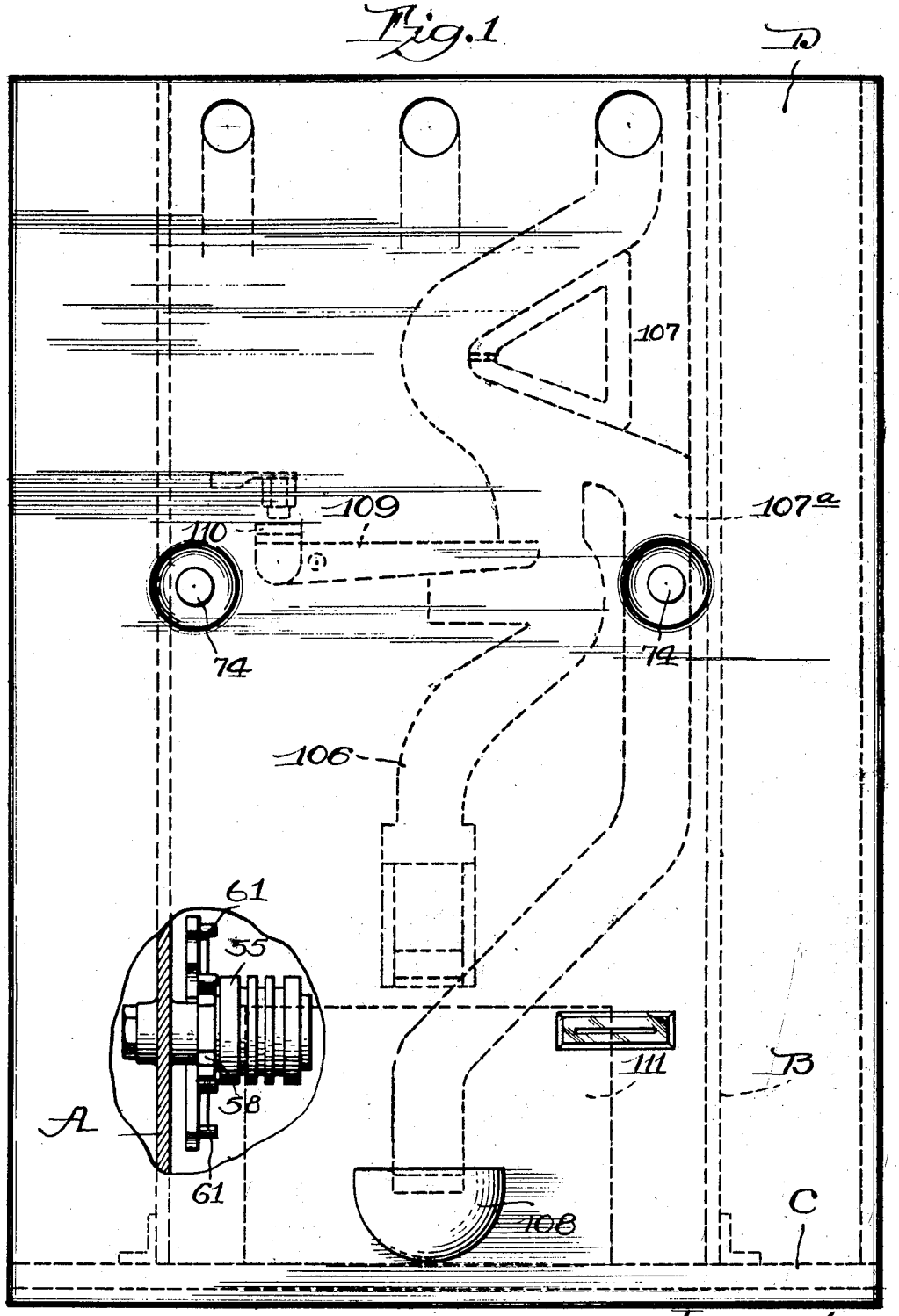
May 15, 1934. H. T. MOSFELT 1,958,763

COIN CONTROLLED VENDING MACHINE

Filed July 28, 1931 5 Sheets-Sheet 1

Fig. 1



Inventor,
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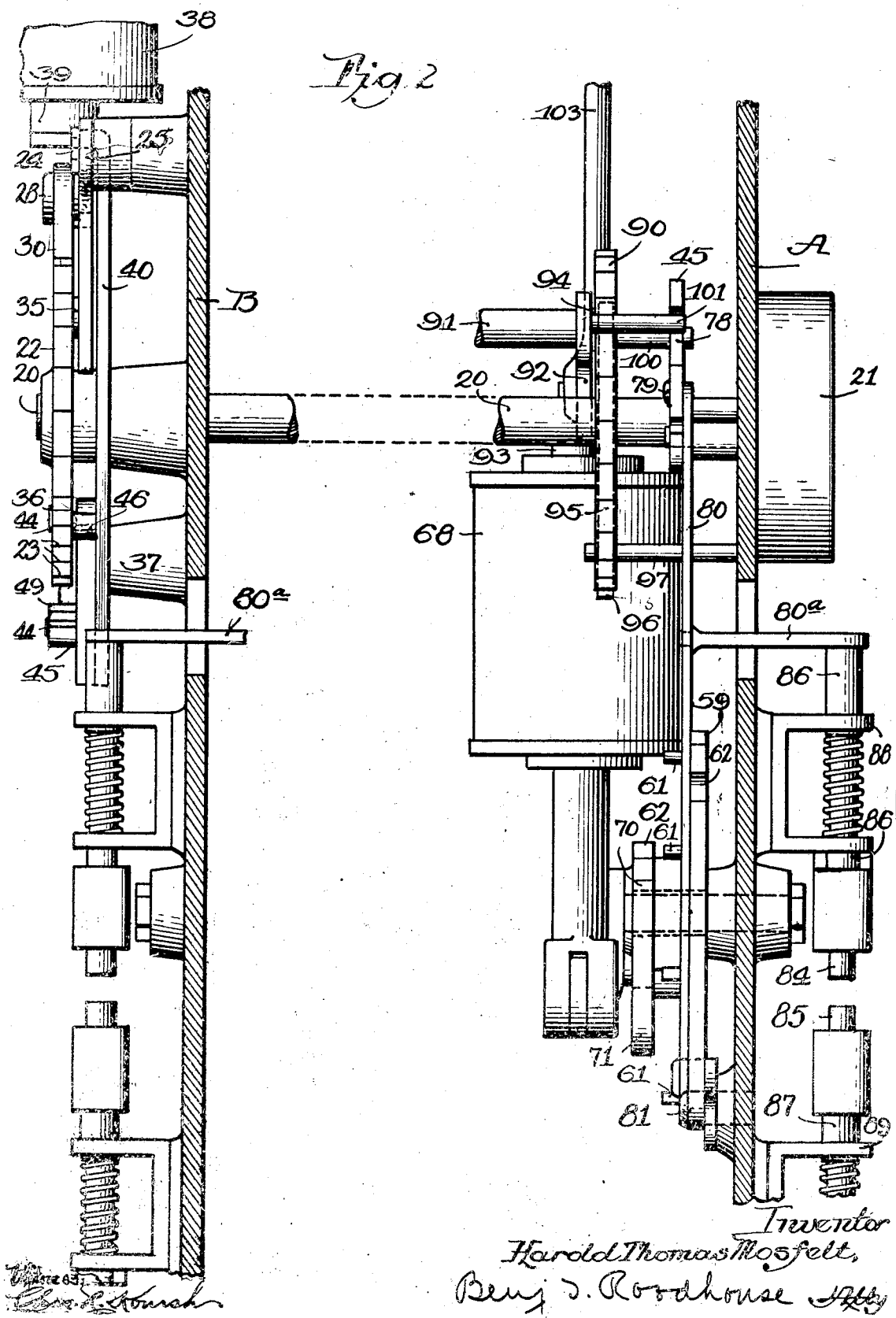
Witness:
Chas. L. Kousal

May 15, 1934. H. T. MOSFELT 1,958,763

COIN CONTROLLED VENDING MACHINE

Filed July 28, 1931 5 Sheets-Sheet 2

Fig. 2



Inventor

Harold Thomas Mosfelt,

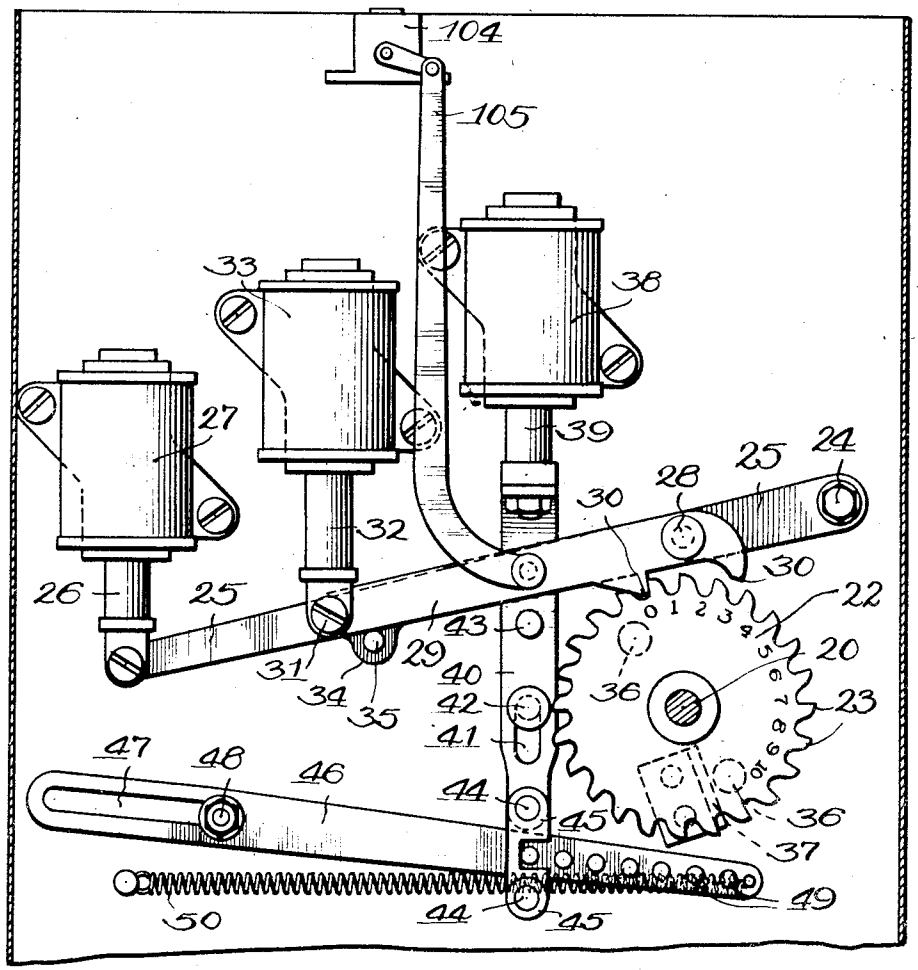
Benj. D. Roodhouse Atty

May 15, 1934. H. T. MOSFELT 1,958,763

COIN CONTROLLED VENDING MACHINE

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Fig. 3



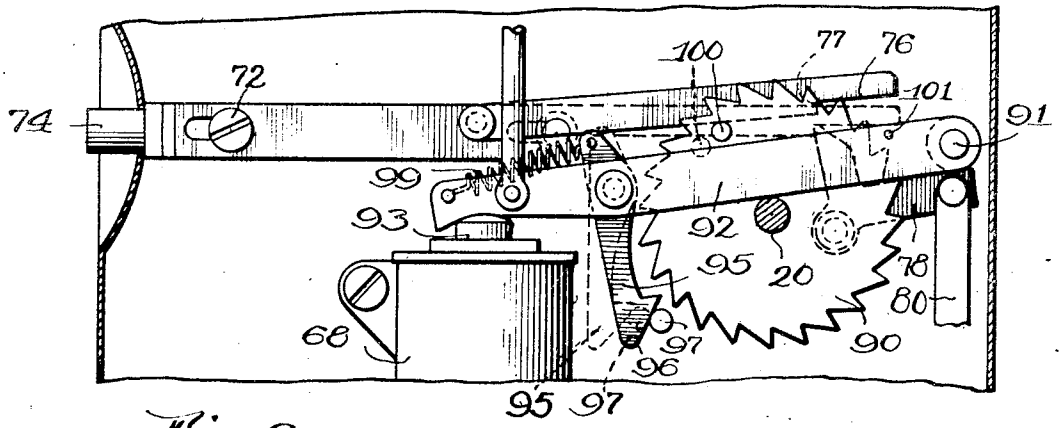


Fig. 6

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COIN CONTROLLED VENDING MACHINE

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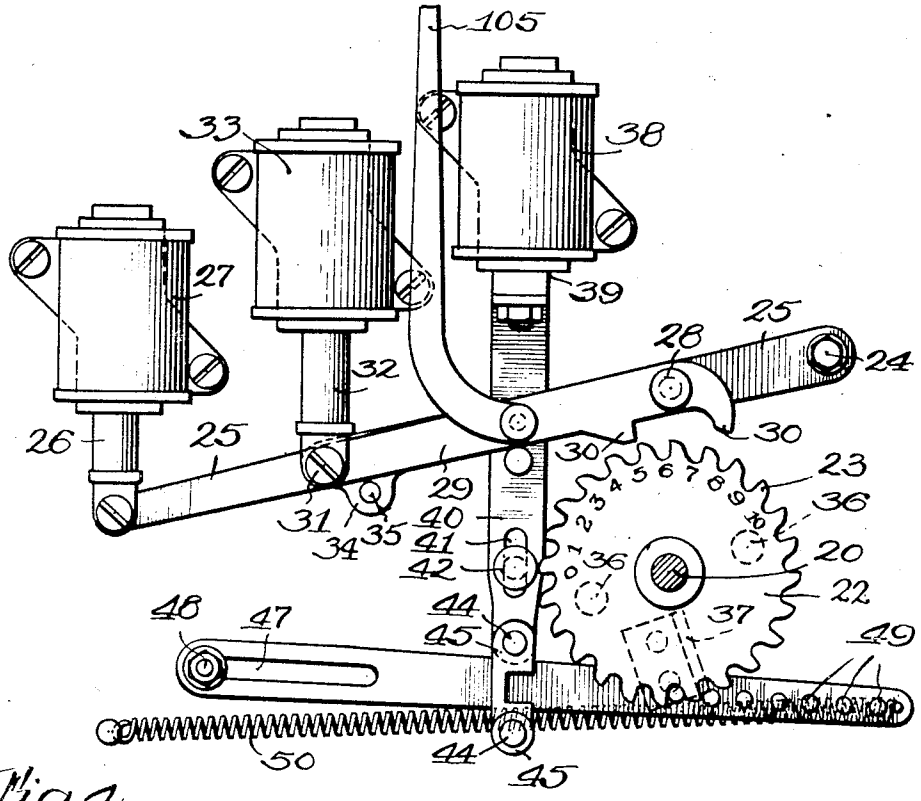


Fig. 4

Fig. 7

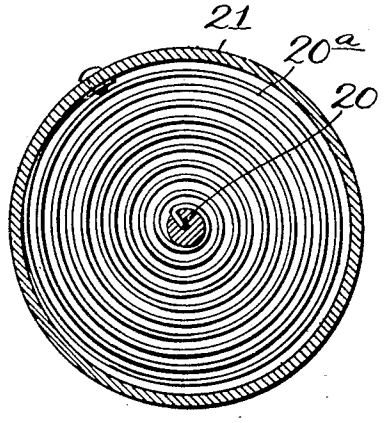
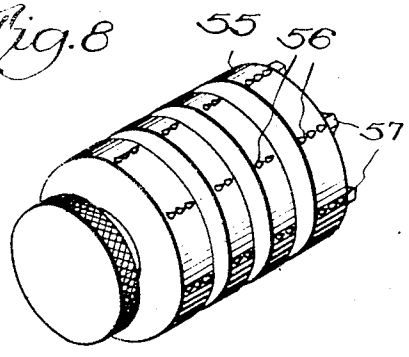


Fig. 8



Inventor,
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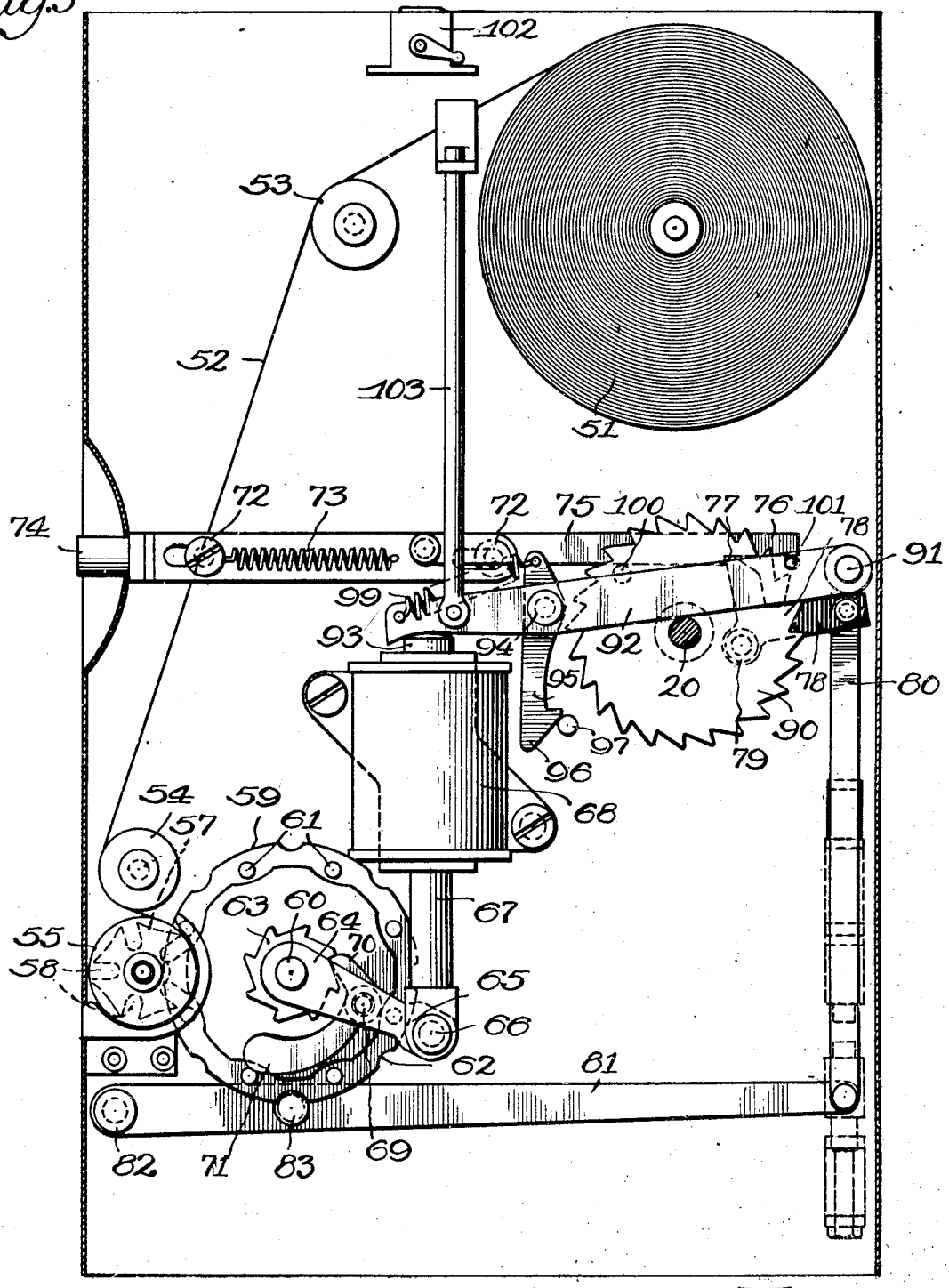
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COIN CONTROLLED VENDING MACHINE

Filed July 28, 1931 5 Sheets-Sheet 5

Fig. 5



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UNITED STATES PATENT OFFICE

1,958,763

COIN CONTROLLED VENDING MACHINE

Harold Thomas Mosfelt, Chicago, Ill., assignor to Ross J. Beatty, Chicago, Ill.

Application July 28, 1931, Serial No. 553,593

15 Claims. (Cl. 194—10)

My present invention relates to improvements in coin controlled vending machines, and has for its object the provision of a mechanism of simple construction and positive and dependable operation. I have also provided a mechanism which will permit of the use of coins of different denominations in making up the aggregate of the purchase desired, and will permit the purchaser to selectively receive from the mechanism articles of merchandise of different values to the aggregate value of the deposit which he has made.

My mechanism is peculiarly suitable for the automatic vending of tickets or postage stamps. As will hereafter be seen, I have illustrated my invention in connection with a machine designed to receive pennies and five and ten cent pieces, and from which may be withdrawn, at the purchaser's option, one and two cent stamps of an aggregate value equal to the aggregate of the deposit made.

I have accomplished the above mentioned objects and results by means of the mechanism illustrated in the accompanying drawings, in which—

Fig. 1 is an elevation of the front of a case in which my mechanism may be enclosed, partially broken away to exhibit the delivery cylinder and with the base and vertical plates upon which the mechanism is mounted and coin openings with the channels associated with one of said openings being shown in dotted lines.

Fig. 2 is a rear elevation showing generally how the mechanism is arranged on the vertical plates except that a duplication of the delivery mechanism for either one or two cent stamps, as the case may be, on the left hand plate has been omitted to obviate confusion.

Fig. 3 is a schematic elevation of the portion of the coin control which permits the use of different coins in making a purchase.

Fig. 4 is a view similar to that shown in Fig. 3 near the completion of an operation after a five cent piece has been received.

Fig. 5 is a schematic elevation of the delivery mechanism and its co-ordination with the coin control mechanism.

Fig. 6 is a detail of the co-ordination between the coin receiving and delivery mechanism showing the differences necessary in units for delivering one and two cent stamps.

Fig. 7 is a section through the spring and spring drum.

Fig. 8 is a perspective detail of the delivery cylinder.

Similar reference characters have been employed for designating similar parts throughout the respective views. I have illustrated my invention in connection with a stamp vending machine for selling one and two cent stamps and permitting the use of dimes, nickels and pennies in making the purchase. However, portions of the mechanism may be used to advantage in a machine for receiving coins of a single denomination and the same principles of operation may be employed for machines for receiving more than three coins and different coins from those employed in the illustrated mechanism. The mechanism hereinafter described may all be conveniently mounted upon and between two vertical frame plates A and B secured in spaced relation upon a base plate C and enclosed within a cabinet D of any desired pattern, as most clearly shown in Figs. 1 and 2.

To properly limit the operation of the delivery mechanism to the delivery of merchandise only to the aggregate value of the deposit made, I provide a shaft 20, which I actuate in an anti-clockwise direction by a clock spring, 20*a*, mounted in a barrel 21, the barrel being secured to the framework of the machine and one end of the enclosed spring being secured to the barrel and the other end of the spring being secured to the shaft 20. Mounted on the shaft 20 is a ratchet and escapement wheel 22 of a suitable size, but with at least as many teeth 23 thereon as the value of the largest coin to be used in the machine in terms of the smallest coin employed. In the mechanism illustrated the largest coin employed is a ten cent piece and the escapement wheel has provided thereon twenty-four teeth 23. The aggregate number of teeth on the wheel 22 may be varied except that they should at no time be less than ten. Pivoted at 24, to assume a tangential relation with the wheel 22, is a lever arm 25. Pivoted to the opposite end of the lever arm 25 is a movable core 26 of a solenoid 27, the circuit of which is closed by a mechanism hereafter to be described when a ten cent piece or dime is introduced into the machine. Pivoted at 28 to the lever 25 is a lever escapement 29 having the escapement teeth 30. To the end of the lever escapement 29, which is opposite to that provided with the teeth 30, is pivoted at 31 a movable core 32 of a solenoid 33, the circuit whereof is closed when a penny is inserted into the machine.

Adjacent the end of the lever escapement 29, to which the core 32 is pivoted, is provided upon the lever 25 a lateral extension 34 carrying a pin 35 passing below the lever 29 so that when the lever

25 is operated by the core 26, or by the nickel core hereafter to be described, it will raise lever 29 and the teeth 30 carried thereby at the same time and release the wheel 22.

It will be seen from the above description, taken in connection with the drawings, that the operation of the lever escapement 29 by the core 32 will permit the spring 20*a* in the barrel 21 to turn the wheel 22 one tooth in an anti-clockwise direction for each penny introduced.

I provide, extending laterally from the escapement wheel 22, stop pins 36 which are so located in connection with a stop bracket 37, attached to the framework of the apparatus as to permit the escapement wheel 22 to rotate ten teeth only in an anti-clockwise direction when the lever 25 is moved upwardly by the core 26, as the movement of the lever 25 carries with it, as heretofore described, the lever escapement 29 and entirely releases the escapement wheel 22 from co-operation with the teeth 30.

For permitting the use of a nickel or five cent piece, as well as the use of pennies and a dime, I provide a solenoid 38, the circuit of which is closed by the introduction of a nickel into the machine. The solenoid 38 is provided with a movable core 39 to which is attached and from which depends an operating link 40. The operating link 40 is slotted, as at 41, to co-operate with a guide pin 42 mounted in the framework of the machine. Extending laterally from the operating link 40 is a pin 43 to co-operate with the lever 25 and the lever escapement 29 to raise these parts when the movable core 39 is retracted into the solenoid.

Adjacent the lower end of the operating link 40 are spaced pins 44 provided with anti-friction bushings 45. Extending between the anti-friction bushings 45 is a link 46 slotted at one end, as at 47, for co-operation with a pin 48 fixed in the framework of the machine so as to permit a pivotal and a longitudinally reciprocatory movement of the link 46. Extending laterally from the sides of the link 46 at the end opposite to that provided with the slot 47 are pins 49 spaced to co-operate with the teeth 23 of the escapement wheel 22. A coil spring 50 is provided to retract the link 46 into a proper predetermined position when the pins 49 are disengaged from the teeth 23.

In the machine illustrated in which this mechanism is provided for taking care of the introduction of the five cent piece into the machine, the number of pins 49 on the link 46 are sufficient to permit the wheel 22 to rotate in an anti-clockwise direction a distance of five of the teeth 23. The pins 43 and 44 on the operating link 40 are so spaced as to cause the engagement of the pins 49 with the teeth 23 before the escapement teeth 30 disengage therefrom. The reversal of this movement will, of course, secure the engagement of the teeth 30 with the teeth 23 before the pins 49 disengage.

The slot 47 is so proportioned that after the pins 49 have been engaged with the teeth 23 and the teeth 30 disengaged from the teeth 23 by the action of the solenoid 38 the spring 20*a* in the barrel 21 rotates the wheel 22 the distance of five of the teeth 23 in an anti-clockwise direction before the rotation of the wheel 22 is brought to a stop by the engagement of the pin 48 with the left hand end of the slot 47, as shown in Fig. 4 just before the teeth 30 have engaged and the pins 49 have disengaged the teeth 23. In this way pennies or nickels or a dime may be employed in making a purchase.

The delivery of the stamps is secured in the following manner: Reels 51, each for a single denomination of stamp, are respectively provided for a convenient number, say one thousand, of one and two cent stamps arranged end to end in ribbons, separated by the usual perforations. Each stamp ribbon 52 is passed over guide rollers 53 and 54 and around a pin or sprocket roller 55, as most clearly shown in Fig. 5. Five rows of pins 56, properly spaced to engage the perforations between stamps, are equally spaced about the roller 55 and the roller 55 is made of sufficient circumference to accommodate a stamp between the respective rows of pins 56. Fixed to the end of the roller 55 is a star wheel 57 of a Geneva movement provided with radial slots 58, which are of the same number as the number of rows of pins 56 so that the rotation of the star wheel 57 through an arc of a certain number of degrees will secure the rotation of the feed roller 55 through an arc of the same extent.

To rotate the wheel 55 I locate in co-operative relation with the star wheel 57 a disk 59 rotatably mounted upon a shaft 60. Extending from one face of the disk 59 are pins 61 co-operating with the slots in the star wheel 57. The edge of the disk 59 is provided with spaced recesses 62 for securing a result to be hereafter described, and to the face of the disk 59 is secured a ratchet wheel 63. Journaled upon the shaft 60 is a link 64, the outer end of which is provided with an elongated opening 65 through which extends a pin 66 which secures the outer end of link 64 to a movable core 67 of a solenoid 68. Secured to the link 64 intermediate its ends by a pin 69 is the dog or detent 70 co-operating with the ratchet wheel 63. The dog or detent 70 is provided with an extension 71, the weight of which keeps the detent in engagement with the teeth of the ratchet wheel 63.

It will now be understood that when the solenoid 68 is energized and the movable core 67 retracted, the outer end of the link 64 will be moved upwardly, thereby through the engagement of the detent 70 with the ratchet wheel 63, rotating the disk 69, thereby through the co-operation of a pin 61 with a slot 58 causing the rotation of the sprocket roller 55. Any means for closing the circuit through the solenoid 68 will secure delivery as above described, but in order to render more certain the completion of the cycle of delivery operations I prefer to employ the circuit closing mechanism now to be described.

Fixed to a vertical plate of the frame of the machines by headed pins 72 is a slotted link 73 on one end whereof is a push button 74. Pivoted to the link 73 is a linklike detent 75, the free end of which is cut out, as at 76, to provide a shoulder 77. The shoulder 77 engages one arm of a bell crank or angle lever 78 pivoted to a vertical plate of the frame of the machine at 79. To the other arm of the bell crank lever 78 is pivoted a link 80, to the other end of which link 80 is pivoted a lever 81, the opposite end of which is pivoted at 82 so as to extend tangentially with the disk 59. A pin and roller 83 is provided on lever 81 co-operating with the indentations 62 in the disk 59, whereby, when the pin and roller 83 is removed from a recess 62 by the operation of the push button 74, it cannot return to its former position until it comes opposite another recess or depression 62, whereby the opening of the circuit is prevented until the completion of a cycle of delivery operations.

The circuit closing instrumentalities which I have associated with the foregoing operating

means are most clearly shown in Fig. 2 and comprise contacts 84 and 85 carried upon spring pressed plungers 86 and 87 movably mounted in brackets 88 and 89. The brackets 88 and 89 are secured to a vertical plate of the frame of the machine and the upper plunger 86 is secured to the link 80 by the strap 80*a*.

The means I employ for relating and co-ordinating the coin receiving mechanism with the delivery mechanism most clearly shown in Figs. 5 and 6, is as follows:

To the shaft 20 to which is secured the ratchet and escapement wheel 22 is fixedly secured a ratchet wheel 90 of the same number of teeth as the ratchet and escapement wheel 22, and pivoted upon a pin 91 to extend across the ratchet wheel 90 and above the movable core 67 of the solenoid 68 is a lever 92. The movable core 67 is provided with an upward extension 93 of non-magnetic material, which forces the end of the lever 92 upwardly as the lower end of the movable core 67 operates the delivery mechanism. Pivoted at 94 upon the lever 92 is a pawl or detent 95 with an oblique or inclined end 96, which oblique or inclined end co-operates with a stop pin 97 to secure the disengagement of the detent 95 from the teeth of the ratchet wheel 90. A coil spring 99 serves to yieldingly impel the detent 95 into engagement with the teeth of the ratchet wheel 90.

When the movable core 67 is retracted into the solenoid 68 for effecting a delivery the upward extension 93 of the movable core 67 raises the lever 92 and when the detent 95 is free from engagement with the stop pin 97 it engages a tooth of the ratchet wheel 90 and rotates the shaft 20 in a clockwise direction against the action of the spring in the barrel 21 and forces the teeth 23 by the escapement teeth 30.

It will be seen that further delivery operations will be blocked when the stop pin 36 carried by the ratchet and escapement wheel 22 comes in contact with the stop bracket 37, but in order to prevent the possibility of an electrical contact as well as delivery, I secure to the wheel 90 a pin 100, which, when merchandise to the aggregate value of the deposit has been delivered from the machine, will raise the unattached end of the linklike detent 75 out of engagement with the arm of the bell crank lever 78. I further provide upon the lever 92 a pin 101 which engages the cut away portion 76 of the detent 75 to also lift the linklike detent 75 out of engagement with the bell crank lever 78 when the lever 92 is swung upwardly, thereby requiring a separate pushing of the push button 74 to secure a delivery from the machine, and thereby making it impossible to keep the circuit closed through the solenoid 68 by a failure to release the push button 74.

The only differences that are required in the mechanisms for deliverying one and two cent stamps are two:—the positioning of the pins 97 and 100, which are most clearly shown in Fig. 6. In the mechanism for delivering one cent stamps the pin 97, shown in dotted lines in Fig. 6, is positioned so that it releases the detent 95 after the lever 92 has partially risen and will engage and move a single tooth of the ratchet wheel 90, whereas with mechanism for delivering two cent stamps the stop pin 97, shown in full lines in Fig. 6, is positioned to the right so that it will be released from the stop pin earlier and in time to engage and move the ratchet wheel 90 a distance of two teeth. With mechanism for delivering two cent stamps the stop pin 100, shown in full lines in Fig. 6, is positioned one tooth to the right of the position shown in dotted lines in Fig. 6 which it would occupy in the mechanism for delivering one cent stamps upon the ratchet wheel 90 so that the linklike detent 75 is disengaged from the bell crank lever 78 when but a single unexpended penny will remain in the machine.

It will be seen that as the shaft 20 is or may be made common to two or any number of repetitions of the delivery mechanism, a single money receiving mechanism may be associated with a plurality of delivery mechanisms.

If desired, delivery meters 102 may be associated with each organized delivery unit through the operation of the link 103 secured to the lever arm 92. Also a coin receiving meter 104 may be associated with the coin receiving mechanism by means of the link 105 connected with the escapement lever 29.

I have schematically illustrated in Fig. 1 instrumentalities which will secure the closing of the circuits of the solenoids 27, 33 and 38 when a coin is inserted in the proper slot. The slots have co-operating therewith coin raceways or tracks 106 which are preferably angled to discourage the insertion of a tool therein.

In the curve of the coin raceway 106 I have illustrated a conventional means of eliminating iron slugs consisting of a permanent magnet 107, the raceway below the magnet being divided to provide a by-pass guideway 107*a* into which the magnet directs the iron slug, which guideway 107*a* terminates in a cup 108 on the exterior of the casing of the machine. The coin raceway 106 is continued beyond the divergence, and extending into this raceway is a lever arm 109 upon the opposite end of which is a contact 110, whereby the weight of the coin passing through the coin raceway 106 will close the contact. The coin raceway 106 terminates above a coin box 111.

In order to prevent confusion I have omitted the showing of all but one of the coin guideways in Fig. 1 and the duplication of delivery mechanism in Fig. 2, as well as a showing of the electric circuit employed as the electrical devices are so simple that any well known conventional circuit will be ample to secure their operation.

It will now appear from the foregoing description, taken in connection with the drawings, that I have provided in connection with coin controlled vending machines a relatively simple, sturdy and dependable mechanism for securing a delivery of the merchandise as may be required by the purchaser in connection with equally simple, sturdy and dependable mechanism permitting the receipt of coins of different value which will positively control the extent of the delivery of the merchandise.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In mechanical vending apparatus delivery actuating means comprising a rotatably mounted, radially slotted star wheel, a rotatably mounted disk, pins extending laterally therefrom co-operating with the slots in said star wheel, a ratchet wheel fixed to said disk, a link pivoted concentrically with said disk and ratchet wheel, a pawl co-operating with said ratchet wheel carried by said link, a solenoid, a movable core carried by said solenoid, said movable core being operatively connected with said link, means for closing the circuit through said solenoid, and means co-acting with said disk for keeping said circuit closed during a cycle of operations.

2. In mechanical vending apparatus delivery actuating means comprising a rotatably mounted, radially slotted star wheel, a rotatably mounted disk, pins extending laterally therefrom co-operating with the slots in said star wheel, said disk having spaced recesses in the periphery thereof, a ratchet wheel fixed to said disk, a member reciprocable about the axis of said disk and ratchet wheel, a pawl carried thereby co-operating with said ratchet wheel, a solenoid for reciprocating said member, a train of links and levers for closing the circuit to said solenoid, one of said levers being provided with a pin co-operating with the recessed edge of said disk.

3. In a coin controlled vending machine, coin receiving and controlling mechanism comprising a coin channel, means operable by the passage of a coin through said channel for closing an electric circuit, a solenoid including in said circuit, a movable core associated with said solenoid, an escapement lever actuated by said movable core, a wheel which ratchets with said escapement during rotation in one direction of its movement and in its other direction of movement is controlled by said escapement, a stop pin provided on said wheel, a stop co-operating with said pin for limiting the rotation of said wheel, a shaft to which said wheel is fixed, delivery mechanism and means operable thereby for rotating said shaft and wheel in the direction in which said wheel ratchets, and a spring for actuating said shaft in the opposite direction.

4. Coin controlled vending mechanism comprising a rotatable shaft, a spring for rotating said shaft in one direction from a stop, a ratchet and escapement wheel fixed to said shaft, a lever pivoted to extend tangentially with said wheel, an escapement lever co-operating with said wheel pivoted to said first mentioned lever, separate coin controlled elements for operating said lever and said escapement lever, delivery mechanism, an element for actuating said delivery mechanism, and means associated with said last mentioned element for rotating said shaft in the opposite direction.

5. In a coin controlled vending machine, means for receiving a plurality of coins, means co-operating with the coin receiving means for establishing a credit in accordance with the coin received, delivery mechanism, a motor for actuating said delivery mechanism, hand operated means for initiating the action of said motor, a pivoted lever arm extending across the path of movement of said motor, and means actuated by said lever arm for deducting the price of the merchandise delivered from the credit previously established.

6. In coin controlled vending machines, a rotatable shaft, a spring for rotating said shaft in one direction from a stop, delivery mechanism, means actuated thereby for rotating said shaft in the opposite direction, a ratchet and escapement wheel fixed to said shaft and a plurality of coil controlled escapements governing the spring actuated rotation of said wheel.

7. In a coin controlled vending machine, delivery mechanism, a reciprocatory element for actuating said delivery mechanism, a rotatable shaft, means actuated by said reciprocatory element for rotating said shaft in one direction, a spring for rotating said shaft in the opposite direction from a stop, an escapement wheel fixed to said shaft, a plurality of escapements associated with said wheel and a common coin controlled means for causing the engagement of one escapement and the disengagement of the other, and vice versa.

8. In a coin controlled vending machine, delivery mechanism, a reciprocatory element for actuating said delivery mechanism, a rotatable shaft, means actuated by said reciprocatory element for rotating said shaft in one direction, a spring for rotating said shaft in the opposite direction from a stop, an escapement wheel fixed to said shaft, a plurality of escapements associated with said wheel and a common coin controlled means for causing the engagement of one escapement and the disengagement of the other, and vice versa, one of said escapements comprising a slotted arm provided with pins for engaging the teeth of said escapement wheel.

9. In coin controlled vending machines separate operating means respectively controlled by the insertion of coins of different denominations, a common shaft, a spring for rotating said shaft in one direction from a stop, separate means actuated by said coin controlled means permitting the rotation of said shaft by said spring in arcs in accordance with the value of the coins introduced, delivery mechanism and means associated therewith for rotating said shaft against the action of said spring in arcs in accordance with the value of the merchandise delivered.

10. In coin controlled vending machines, coin controlling means comprising a shaft, a spring for rotating said shaft in one direction from a stop, a combined escapement and ratchet wheel fixed to said shaft, an escapement comprising a slotted arm pivoted through said slot, means upon said arm for engaging said escapement wheel, and coin controlled means for moving said slotted arm into and out of engagement with said escapement wheel and for concurrently releasing and engaging said escapement wheel.

11. In coin controlled vending machines, coin controlling means comprising a shaft, a spring for rotating said shaft in one direction, a combined escapement and ratchet wheel fixed to said shaft, an escapement for said wheel comprising a lever arm, a second escapement lever arm pivoted to said first mentioned lever arm and independent coin controlled means for operating said respective lever arms.

12. In coin controlled vending machines, coin controlling means comprising a shaft, a spring for rotating said shaft in one direction, a combined escapement and ratchet wheel fixed to said shaft, an escapement for said wheel comprising a lever arm, a second lever arm constituting an escapement pivoted to said first mentioned lever arm, a longitudinally and rotary reciprocable arm having means for engaging said escapement and ratchet wheel and independent coin controlled means for operating said respective lever arms and said longitudinally and rotary reciprocable arm.

13. In coin controlled vending machines a rotatable shaft, a combined escapement and ratchet wheel fixed thereto, spring means for rotating said shaft in one direction from a stop, coin controlled means for permitting the spring actuated rotation of said shaft in accordance with the value of the coin, a second ratchet wheel fixed to said shaft, a lever, a pawl carried thereby for engaging said second ratchet wheel and rotating the same against the action of said spring, and delivery mechanism co-operating with said last mentioned lever in accordance with the value of the merchandise delivered.

14. In coin controlled vending machines, de-

livery mechanism, a solenoid for actuating said delivery mechanism, means for closing the circuit through said solenoid, including a detent and a train of circuit closing elements, and means operable by said solenoid for moving said detent out of engagement with its train of circuit closing elements, thereby requiring a restoration of the engagement of said detent before said circuit can be again closed.

15. In coin controlled vending machines, delivery mechanism, a solenoid for actuating said delivery mechanism, a rotatable shaft, means actuated by said solenoid for rotating said shaft, means for closing the circuit through said solenoid, including a detent and a train of circuit closing elements and means actuated by the rotation of said shaft for disengaging said detent from its train of circuit closing elements, whereby said circuit cannot be closed at a predetermined position of said shaft.

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