Dec. 23, 1930. G. F. HOCHRIEM 1,786,014

COIN CONTROLLED MECHANISM

Filed April 13, 1928 3 Sheets-Sheet 1

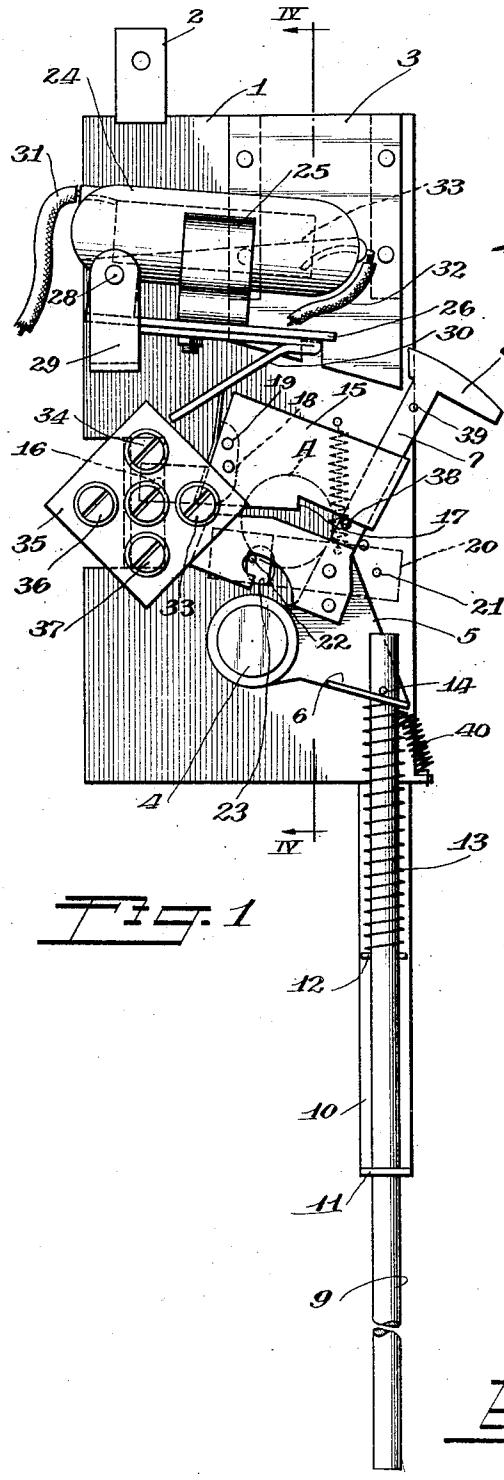


Fig. 1

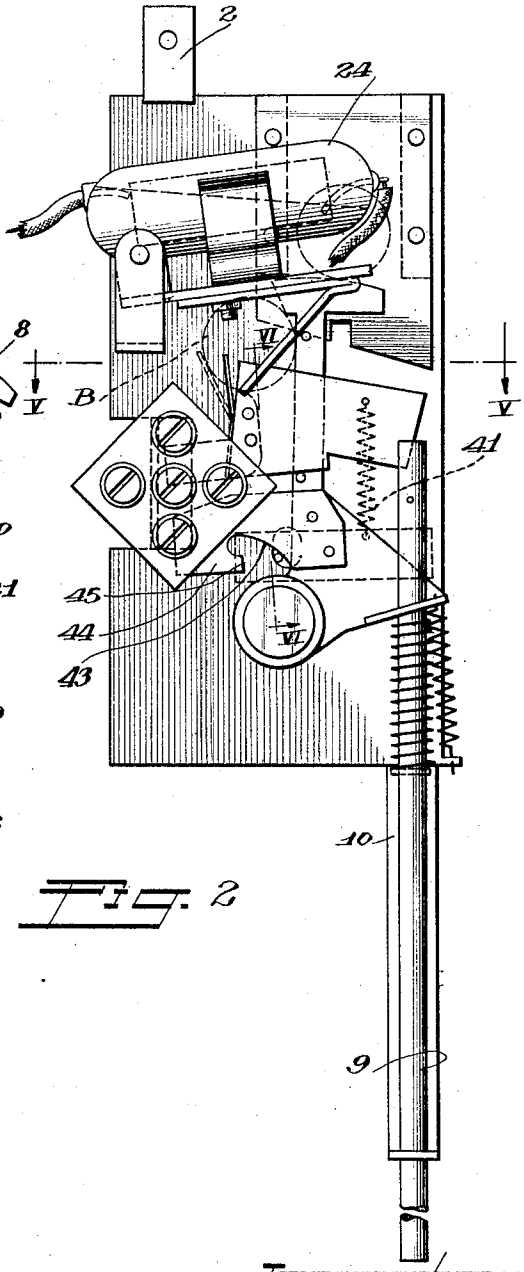


Fig. 2

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COIN CONTROLLED MECHANISM

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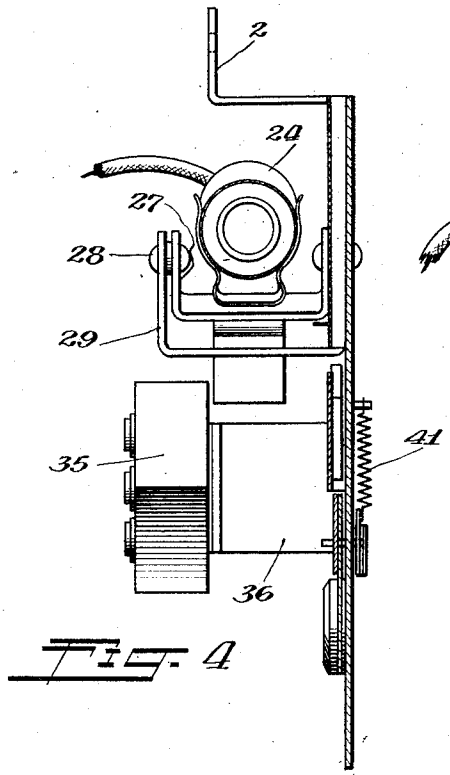


Fig. 4

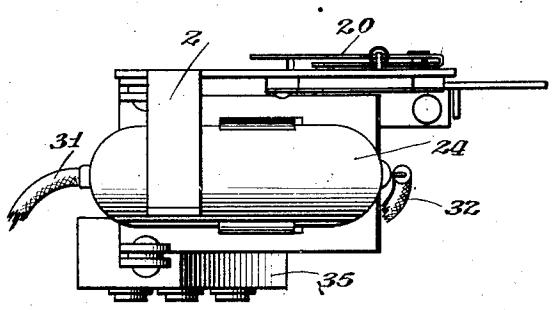


Fig. 3

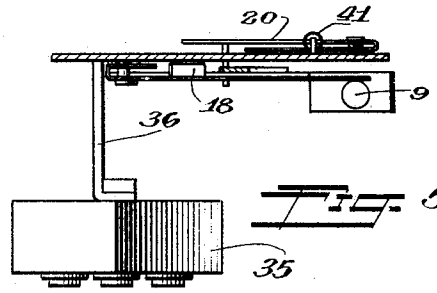


Fig. 5

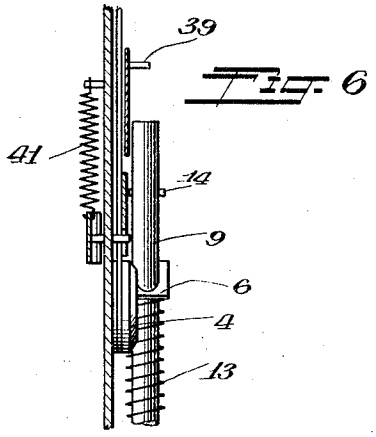


Fig. 6

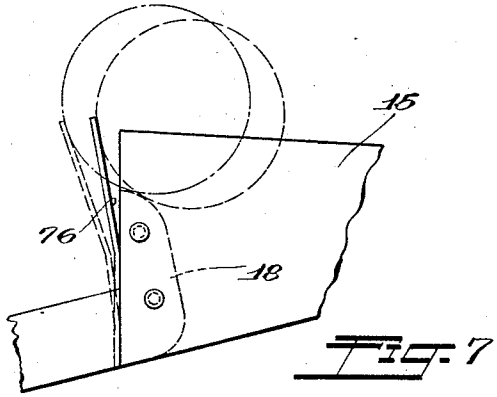


Fig. 7

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COIN CONTROLLED MECHANISM

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Fig. 8

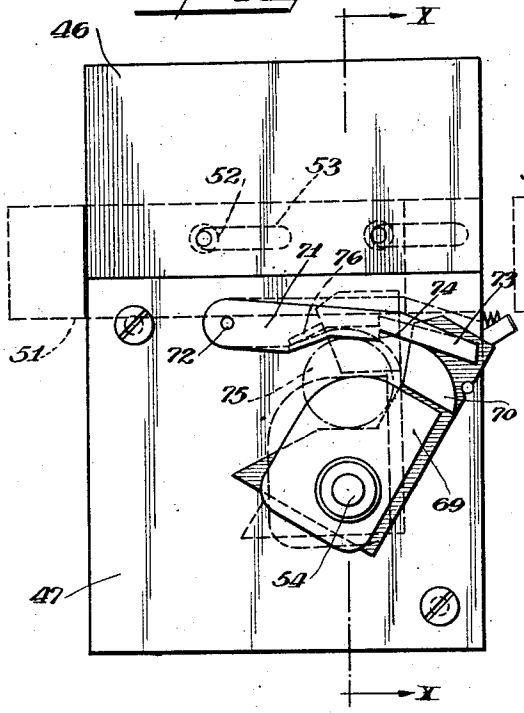


Fig. 9

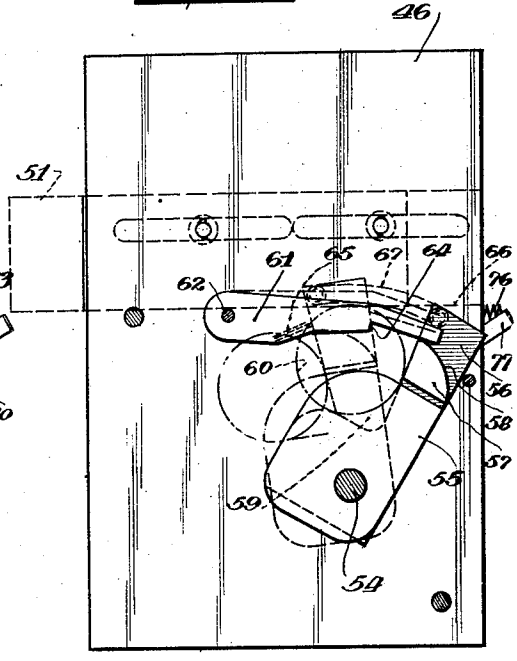


Fig. 11

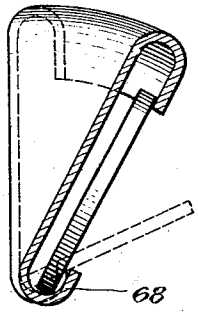
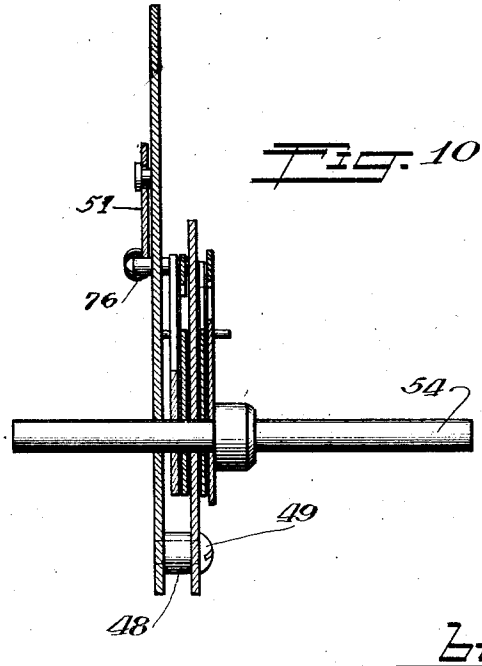


Fig. 10



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Patented Dec. 23, 1930

1,786,014

UNITED STATES PATENT OFFICE

GUSTAV F. HOCHRIEM, OF CHICAGO, ILLINOIS

COIN-CONTROLLED MECHANISM

Application filed April 13, 1928. Serial No. 269,643.

This invention relates to coin controlled mechanism.

The mechanism to which the invention particularly relates comprises a lock for a switch which controls associated mechanism. The lock is released by insertion of a coin of proper value, which coin serves as one of the elements utilized in freeing the switch for action.

An object of the invention is to provide a coin controlled mechanism which is efficient, reliable and economical to manufacture.

Another object of the invention is to provide a coin controlled mechanism which is locked against operation until a coin of proper value is inserted.

Another object of the invention is to provide a coin controlled mechanism for governing the operation of a switch which operates associated mechanism in which the parts are normally locked against operation and are released on deposit of a coin of proper value, the coin serving as one of the active elements of the unlocking combination.

According to the invention, the mechanism includes a movable member, such as a switch, slide, or the like, for controlling associated mechanism, which switch is arranged to be actuated by a suitable means, such as a treadle operated push rod, an oscillating member is resiliently associated with the push rod, a part of the oscillating member serving as means for actuating the switch or slide, a lock to prevent movement of the oscillating member under normal conditions, a coin chute arranged to direct a coin against the oscillating member to release the lock and means to return the parts to normal position.

The above and other and further objects of the invention will become apparent from the following description, drawings and appended claims.

The accompanying drawings illustrate a preferred embodiment of the invention and the views thereof are as follows:

Figure 1 is a side elevation of the coin controlled mechanism, with the parts in normal or inoperative position.

Figure 2 is a view similar to Figure 1, showing the parts in operative position.

Figure 3 is a top plan view of the mechanism.

Figure 4 is a vertical sectional view on line IV—IV of Figure 1.

Figure 5 is a horizontal sectional view on line V—V of Figure 2.

Figure 6 is a sectional view on line VI—VI of Figure 2.

Figure 7 is a fragmental enlarged view of certain details of the stop, with certain parts represented diagrammatically.

Figure 8 is a side elevation of a modification, with the parts in normal or inoperative position.

Figure 9 is a view like Figure 8, showing the parts in operative position.

Figure 10 is a vertical sectional view on line X—X of Figure 8.

Figure 11 is an enlarged vertical section through a coin delivery chute.

The mechanism shown in Figures 1 to 7 comprises a base 1 having lugs 2 for supporting the base in a casing.

A coin chute 3 is arranged on the base 1 with a suitable opening for reception of a coin of proper value.

Pivoted at 4 on the plate is an oscillating member 5 which in this form of the invention has a lateral extension 6 and an upwardly extending arm 7 which arm has a head 8 at the upper end of the same.

A push rod 9 which may be operated by a treadle or any other suitable means, is supported by the base 1 in a downwardly extending guide 10 which has an inturned end 11 with a suitable aperture therein through which the rod 9 passes. A pin 12 passes through the rod above the foot 11 and a spring 13 is arranged about the rod 9 between the pin 10 and the lateral projection 6 of the oscillating member 5. Another pin 14 passes through the rod 9 above the projection 6 for limiting downward movement of the rod with respect to the oscillating member.

A stop lever 15 is pivoted at 16 to the base 1 and has a notch or shoulder 17 arranged in its lower edge.

A cam 18 is secured by rivets 19 to the stop

lever 15 on the rear side thereof as viewed in Figures 1 and 2 of the drawings.

A second lever 20 is pivoted at 21 to the rear side of the base 1 and has a pin or other projection 22 passing through opening 23 in the base 1.

The stop lever 15 is so disposed with respect to the arm 7 of the oscillating member and the coin chute 3 as to form with the base 1 a pocket for the coin A when the same is inserted through the chute 3.

The switch shown in Figures 1 to 7 is a mercury switch 24 movably arranged in a spring clip 25 which is secured to a plate 26, which plate has upturned ears 27 which are pivoted at 28 to an angle support 29 suitably secured to the base 1.

Secured to the lower side of the plate 26 is a cam 30 which in the present instance comprises an angularly disposed leg.

One conductor is shown at 31 with an end projecting a short distance into the tube 24. The other conductor 32 is arranged at the other end of the tube and has an end projecting into the tube 24.

The normal level of the mercury in the tube 24 in normal or inoperative position is shown at 33.

The conductor 31 is secured to a binding post 34 while the conductor 32 is secured to a binding post 33 arranged in a connection block 35 which block is supported on a bracket 36 secured to the base 1.

A binding post 36 and another binding post 37 are arranged in the block 35 to which may be connected conductors joined to the mechanism controlled by the switch, which in this form of the invention is a mercury switch.

The operation of the invention shown in Figures 1 to 7 is as follows.

The parts being in normal or inoperative position as shown in Figure 1 and without any coin being inserted, the push rod 9 may be actuated, but without setting up the switch 24 to close the circuit controlled by the same.

When the treadle is actuated, parts are locked against actuation by the switch as the push rod will operate the member 5 in counter clockwise direction until the pin 38 on the arm 7 strikes the shoulder 17 of the stop plate. By reason of the spring 13 interposed between the pin 12 in the rod 9 and the lateral projection 6 on the oscillating member, the push rod may be moved to the limit of its travel without further movement of the switch controlled mechanism.

When a coin of proper value is inserted in the chute 3, the same falls to the position A in Figure 1 whereupon the push rod may be actuated.

With the coin A in position as shown in Figure 1, actuation of the push rod 9 will oscillate the member 5 in counter clockwise direction, moving the coin on the pin 22 of the second lever 20, rolling the coin about said pin until the same contacts the cam 18 on the rear side of the stop plate 15. Continued movement of the arm 7 will force the coin against the cam 18, thus raising the stop lever 15 sufficient so that the shoulder 17 thereof is out of the path of movement of the pin 38 on the arm 7.

When the coin A engages the cam 18 its movement in that direction will be stopped and thereupon the coin will bear downwardly on the pin moving the lever 20 until the pin 22 is against the lower side of the opening 23 through the base. When in this position, there is enough space between the cam 18 and pin 22 to allow the coin to fall into a proper receptacle for the same.

When the parts have been moved to the position just described, the pin 39 on the arm 7 will have engaged the cam 30 attached to the plate 26 of the switch and when the member 5 has been oscillated to the end of its counterclockwise movement, the parts will be as shown in Figure 2.

The head 8 of the arm 7 underlies the mouth of the chute 3, thus stopping any coin which may have subsequently, to the initiation of the operating movement of the apparatus, been inserted in the chute. Such coin is shown in dotted lines in Figure 2.

When the switch 24 is moved by the arm 7 bearing against the cam 30, circuit is made between the conductors 31 and 32 and thus closes the circuit, controlled thereby for proper actuation of any associated mechanism.

When pressure on the treadle is released, the push rod 9 returns to normal position as shown in Figure 1 and the other parts of the mechanism also return to normal position.

A spring 40 is connected to the oscillating member 5 and the base 1 to return the oscillating member to normal position, which is that shown in Figure 1.

A spring 41 is connected at one end to a pin 42 on the rear side of the base 1 and at the other end to lever 20 to return this lever 20 to normal position, which is that shown in Figure 1.

The opening 23 through the base 1 for the pin 22 on the lever 20 is shown as substantially elliptical. To compensate for movement between the pin 22 and the oscillating member 3, an arcuate curve 43 is formed on the underside of an extension 44 of the oscillating member. This curve terminates in a shoulder 45 to prevent disengagement of the parts.

The form of the invention shown in Figures 8 to 11 comprises a base 46 and a subbase 47, the latter being spaced from the former by spacers 48 surrounding screws 49 which hold the two bases in operative position.

The switch of this form of the invention comprises a sliding plate 51 arranged on the

rear side of the base 46 and secured thereto by pins 52 passing through elongated openings 53 in said plate.

A shaft 54 passes through registering openings in the bases 46 and 47.

This form of the invention is arranged to receive two coins, such as a dime and a nickel, before actuation of the mechanism may be effected.

Figure 9 shows the arrangement of parts between the base 46 and the sub-base 47. The sub-base 47 is removed in this figure of the drawings.

An oscillating member 55 is secured to the shaft 54 and consists of an arm 56 having a shoulder 57 thereon which has an arcuate surface 58. Part of the member 55 is cut away at 59 to form a pocket for the reception of a coin 60, which coin is delivered thereto through a suitable coin chute, not shown.

A stop lever 61 is pivoted at 62 and has an extension 63 resting against the shoulder 57 of the oscillating member 55. A stop shoulder 64 is provided in this lever for normally contacting the shoulder 57 when the member 55 is oscillated without a coin in position. A cam 65 is arranged on the rear side of the lever 61 in position to be engaged by the coin 60 when the mechanism is operated.

The upper end of the oscillating member 55 has a pin 66 projecting through an arcuate slot 67 in the base 46, which pin engages the sliding plate or switch 51.

The mechanism illustrated in Figure 9 is arranged between the base plates 46 and 47.

Arranged so as to receive the coin 60 as the same is discharged from the oscillating member 55, is a chute 68 having one closed side and one open side. The width of the opening is slightly less than the diameter of the coin which will actuate the mechanism so that any coin smaller than that necessary will pass out of the machine through the open side of the chute and into a proper return chute for delivery to the person inserting the wrong coin. Any coin smaller than that necessary to actuate this part of the mechanism will, of course, be insufficient to engage the cam 65 on the stop lever 61.

Figure 8 shows a similar arrangement of that described with respect to Figure 9 and is in addition thereto for the reception of another coin which with the first coin is necessary to permit the actuation of the device.

An oscillating arm 69 is secured to shaft 54 and has a shoulder 70 similar to shoulder 57 on arm 55. A stop lever 71 is pivoted at 72 and has an end 73 which rests on the shoulder 70 of the oscillating member. The stop lever has a shoulder 74 which normally contacts the shoulder 70 on the oscillating arm for preventing complete oscillation thereof in the absence of a coin of proper value.

The oscillating member 69 is provided with a pocket for receiving a coin 75, which coin bears against a cam 76 on the rear side of the lever 71 when the shaft 54 is oscillated.

A spring 76 is connected to an extension 77 on the base 46 and at the other end to the pin 66 of the inner oscillating arm 55 so as to return the switch 51 to normal or inoperative position whenever pressure is released on the shaft 54.

The shaft 54 may be oscillated by a push rod similar to that described with respect to the arrangement shown in Figures 1 to 7, or it may be actuated in any other desirable manner.

The operation of the mechanism shown in Figures 8 to 11 is as follows.

Two coin chutes, not shown, are provided, one for delivering the coin to the inner oscillating member 55 and the other for delivering a coin of different value to the outer oscillating member 69.

As shown, a nickel is the coin for the inner oscillating arm, while a dime is the proper coin for the outer oscillating arm.

The nickel slot, being larger of course than the dime slot, might have inserted therein a dime or a penny, but each of these being smaller than a nickel, would not contact the cam 65 to release the stop lever 61, even though a dime be inserted in the oscillating member 69 thus releasing the stop lever 71 of this part of the mechanism. Such coin of improper value would, therefore, pass into the chute 68 and fall out of the same for return through a suitable aperture to the person inserting the same.

When a nickel and a dime have been inserted, oscillation of the shaft 54 will bring each of these coins against its respective stop lever, releasing the same and permit full oscillation of the oscillating members 55 and 69 in counter clockwise direction to move the switch or slide 51 outwardly, thereby actuating any mechanism connected to this switch.

It sometimes happens that a person desiring to use the mechanism controlled by the mechanism of this invention, inserts two coins in the coin chute. To prevent clogging of the machine, there is arranged in the machine means for keeping the said second coin out of position to clog the machine.

The stop lever or plate 15 has a latch spring 76 (Figure 7) suitably secured to the plate 15 or the cam 18 thereon.

The second coin would necessarily rest above the first coin A. As the arm 7 is oscillated in counter-clockwise direction, the second coin would be moved upwardly into position B of Figure 2, thus moving outwardly the spring 76 with the coin resting near the top of the cam 18. The front edge of the coin would rest against the arm 7 and be held in position B of Figure 2 until the parts were released, whereupon this coin

would fall into position A to permit actuation of the device.

Instead of having the above noted arrangement for discharging extra coins positioned in the chute 3, I may dispense with the spring 76 and shorten the cam 18, in which event a second coin deposited in the chute 3 would rest on top of coin A, as seen in Fig. 1, and then when the lower member or tumbler 5 were oscillated, the second coin would be carried along on top of the coin A and discharged from the machine by being passed over the coin A.

The lower member or tumbler 5 is arranged with the cam 43 thereof in contact with the pin 22 projecting through the opening 23 in the plate 1, which pin is carried by the lever 20 pivoted to the rear side of said plate.

The pin 22 serves as the lower support for an inserted coin A. Figure 1 shows the coin A supported on the pin 22 and against the front side of the arm 7.

The tumbler 5 is oscillated as above described, thereby moving the coin A above the pin 22 until the coin strikes the cam 18, thereupon the coin becomes wedged, so to speak, between the cam 18 and the arm 7, forcing downwardly the pin 22 and forcing upwardly the cam 18, thereby raising the upper tumbler 15 so that the shoulder 17 thereof will escape from pin 38 on the arm 7, thus permitting actuation of the switch by the arm 7.

The coin A has served its purpose when it has raised the tumbler 15 so as to permit the passage of the shoulder of the tumbler by the pin 38 on the arm 7. Consequently, the coin is now ready to be discharged into the coin box (not shown).

Should the oscillation of the member 5 up to the point of engagement of the arm 7 with its associated switch be insufficient to discharge the coin, further movement of the member 5 to its limit of travel in counter-clockwise direction would cause the cam 43 to depress the pin 22 to its lowermost position in the slot 23, thereupon releasing the coin A so that the same may fall into the coin box.

It is within the scope of my invention to so arrange the size and position of the tumbler 15 as to permit the use of coins of several sizes in the same device or to limit the actuation of the device to a single coin.

Should it be desirable to arrange the parts for actuation by a dime, nickel or cent say, then the cam 18 on the tumbler 15 would be so positioned with respect to the pin 22 that the deposit of any one of these coins would move the tumbler upwardly to permit actuation of the switch by the arm 7.

Where the mechanism is arranged to be operated by any one of several coins, then, of course, the smallest coin would depress the pin 22 the least amount while the largest coin would depress it the most.

Figures 8 and 9 show an arrangement of tumblers, levers and the like to be associated on a single shaft 54 where it is desired to use the mechanism with a vending machine requiring a deposit of more than ten cents, say, to actuate the same.

It is within the contemplation of my invention in such an arrangement to use the levers, tumblers and the like, as shown in said Figures 8 and 9, or to use the tumblers, levers and the like shown in Figures 1 and 2 and arranged in flights or a series disposed axially along the shaft 54. With the latter arrangement there would be the upper tumblers 15 and lower tumblers 5 and the pins 22.

In this form of the invention, the upper tumblers may be changed to permit any combination of coins being used to actuate the device.

Any number of such sets of tumblers may be arranged axially along the shaft 54 to receive any amount of deposited coins.

The pin 22 serves as the bottom support for the coin and is so associated with respect to the tumblers 5 and 15 as to enter into the active combination which unlocks the arm 7 up to a certain point in the travel thereof, whereupon the coin is discharged into the coin box.

Every coin chute 3 has a feeder or slot directed thereto and arranged to receive only the proper size coin intended for such chute.

Figure 11 is a transverse section of such slot. Assuming that the slot member shown in Figure 11 is arranged to receive a nickel, in that event the distance between the inturned ends of said slot member would be slightly less than the diameter of a nickel. Should a penny or a dime be deposited in this slot member, then the same would fall out through the lateral opening and be returned to the customer in a box on the outside of the machine. The opening in the slot member would preclude the insertion of any coin larger than a nickel.

A slot arranged to receive a penny would, of course, receive a dime, but the slot member would be arranged to cast out the dime if inserted. Any other coin than a nickel, dime or penny as just described may be employed in this machine provided with a slot member of proper size.

The form of switch 51 shown in Figures 8 and 9 is useful in vending machines for vending merchandise such as gum, candy and the like, while the mercury switch shown in Figures 1 and 2 is useful in a coin controlled mechanism for operation of electrical devices such as pianos, music boxes and the like.

The term switch has been used herein to refer to the mercury switch 24 of the form of the invention shown in Figures 1 to 7 and also to refer to the sliding plate 51 shown in

Figures 8 to 11, is used in its broad sense and is intended to cover any suitable mechanism or part for setting in motion associated mechanism or ejecting vendable articles after having been actuated by the coin controlled mechanism herein disclosed and described.

I am aware that changes may be made and details of construction may be varied and substitution of equivalents may be employed, all without departing from the principles of this invention and I therefore do not purpose to limit the invention to the forms herein shown and described.

I claim as my invention:

1. A coin controlled mechanism comprising a base, an oscillating arm on said base, a rod arranged to move said arm in one direction, a spring to move said arm in opposite direction, a stop for said arm comprising a plate pivoted to said base, said plate having a notch therein, a pin on said arm arranged to engage said notch, a cam on said plate, a lever pivoted to the back side of said base having a pin thereon projecting through an aperture in said base, a spring secured to said lever to maintain same in normal position, a coin chute arranged to deposit a coin on said arm and said pin, said arm on oscillation arranged to move said coin against the cam on the plate to raise the stop out of the path of the pin on said arm and depress said pin and lever for escape of said coin, a head on said arm arranged to close said coin chute when said arm is moved by said rod, and yielding connections between the rod and the oscillating arm.

2. A coin controlled mechanism comprising a base, a push rod, an oscillating member pivoted on said base and movable in one direction by said rod, a yielding connection between said rod and said member, a stop lever pivoted on said base for normally opposing movement of the oscillating member, a cam on said lever, a coin chute arranged to direct a coin against said oscillating member and in alignment with said cam whereby on actuation of said push rod said coin is moved against said cam to move said stop lever out of normal position to permit actuation of said oscillating member, and a second lever pivoted to said base and having a projection for keeping said coin against said oscillating member and which on oscillation of said member is moved away from normal position to permit the coin to drop from the oscillating member.

3. A coin controlled mechanism comprising a base, a push rod, an oscillating member pivoted on said base and movable in one direction by said rod, a stop plate pivoted on said base for normally opposing movement of the oscillating member, a cam on said plate, a coin chute arranged to direct a coin against said oscillating member and in alignment with said cam whereby on actuation of said push rod said coin is moved against said cam to move said stop plate out of normal position to permit actuation of said oscillating member, said stop plate having a spring thereon for temporarily supporting a second coin inadvertently inserted before actuation of the push rod out of engagement with the oscillating member until the parts are returned to normal position.

4. A coin controlled mechanism for vending machines comprising an oscillating tumbler and an arm thereon for actuating associated mechanisms, a second tumbler provided with a stop to normally prevent movement of said arm and a shoulder thereon remote from said stop, a pivoted lever having a pin extending into the path of an inserted coin and arranged to cooperate with said arm to support said coin against said arm, a spring attached to said lever to maintain said pin in uppermost position, said shoulder on said second tumbler arranged to be contacted by the coin and to lift the stop of said second tumbler out of the path of movement of said arm, and said pin being depressed on further actuation of said arm to permit discharge of said coin after said arm has passed a positioned determined by said second tumbler.

5. A coin controlled mechanism comprising an oscillating tumbler and an arm thereon for actuating associated mechanism, a second tumbler provided with a stop to normally prevent movement of said arm, a pivoted lever having a pin extending into the path of an inserted coin and arranged to cooperate with said arm to support said coin, a spring attached to said lever to maintain said pin in uppermost position, a shoulder on said second tumbler remote from said stop arranged to be contacted by the coin and to lift the stop of said second tumbler out of the path of movement of said arm, said pin being depressed by said coin on the further actuation of said arm to permit discharge of said coin after said arm has moved beyond its position of engagement by said second tumbler.

6. A coin controlled mechanism including a base, an oscillating arm on said base, means for moving said arm in one direction, a spring to move said arm in the opposite direction, a stop for said arm comprising a plate pivoted to said base, said plate and said arm having co-engaging elements for normally preventing oscillation of said arm in one direction, a cam on said plate, a lever pivoted to the back side of said base and having a pin thereon projecting through an aperture in said base, a spring secured to said lever to maintain the same in normal position, a coin chute arranged to deposit a coin on said arm and said pin, said arm on oscillation arranged to move said coin against the cam on the plate to depress said pin and lever and to move said

coin against the cam on the plate to raise the stop out of the path of the pin on the arm.

7. A coin controlled mechanism comprising a base, an oscillating arm on said base, a rod arranged to move said arm in one direction, a spring to move said arm in the opposite direction, a stop for said arm comprising a plate pivoted to said base, said plate having a notch therein, a pin on said arm arranged to engage said notch, a cam on said plate, a lever pivoted to the back side of said base and having a pin thereon projecting through an aperture in said base, a spring secured to said lever to maintain the same in normal position, a coin chute arranged to deposit a coin on said arm and said pin, and said arm on oscillation arranged to move said coin against the cam on the plate to depress said pin and lever and to move said coin against the cam on the plate to raise the stop out of the path of the pin on the arm.

8. A coin controlled mechanism including a base, an oscillating arm on said base, a rod arranged to move said arm in one direction, a spring to move said arm in the opposite direction, a stop for said arm including a plate pivoted to said base, yielding connections between said rod and said oscillating arm, said plate having a notch therein, a pin on said arm in the path of said notch, a cam on said plate, a lever pivoted to the back side of said base and having a pin thereon projecting through an aperture in said base, a spring secured to said lever to maintain the same in normal position, a coin chute arranged to deposit a coin on said arm and said pin, and said arm on oscillation arranged to move said coin against the cam on the plate to depress said pin and lever and to move said coin against the cam on the plate to raise the stop out of the path of the pin on the arm.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

GUSTAV F. HOCHRIEM.