

March 25, 1941.

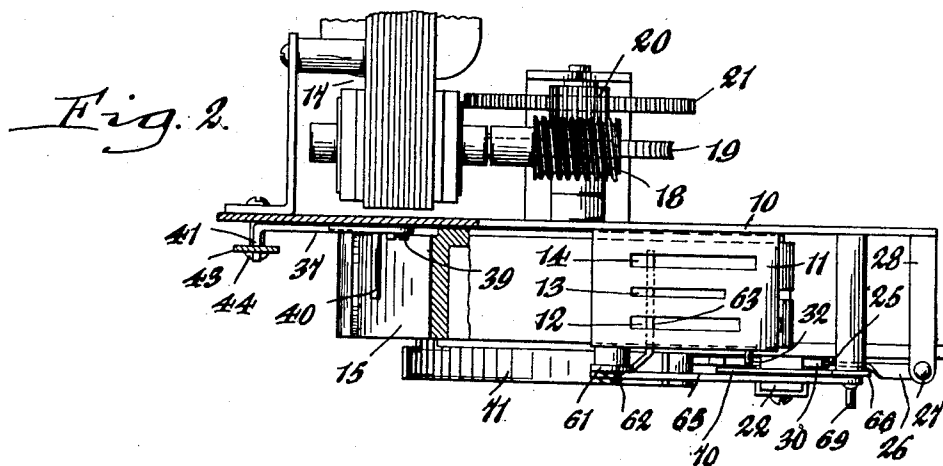
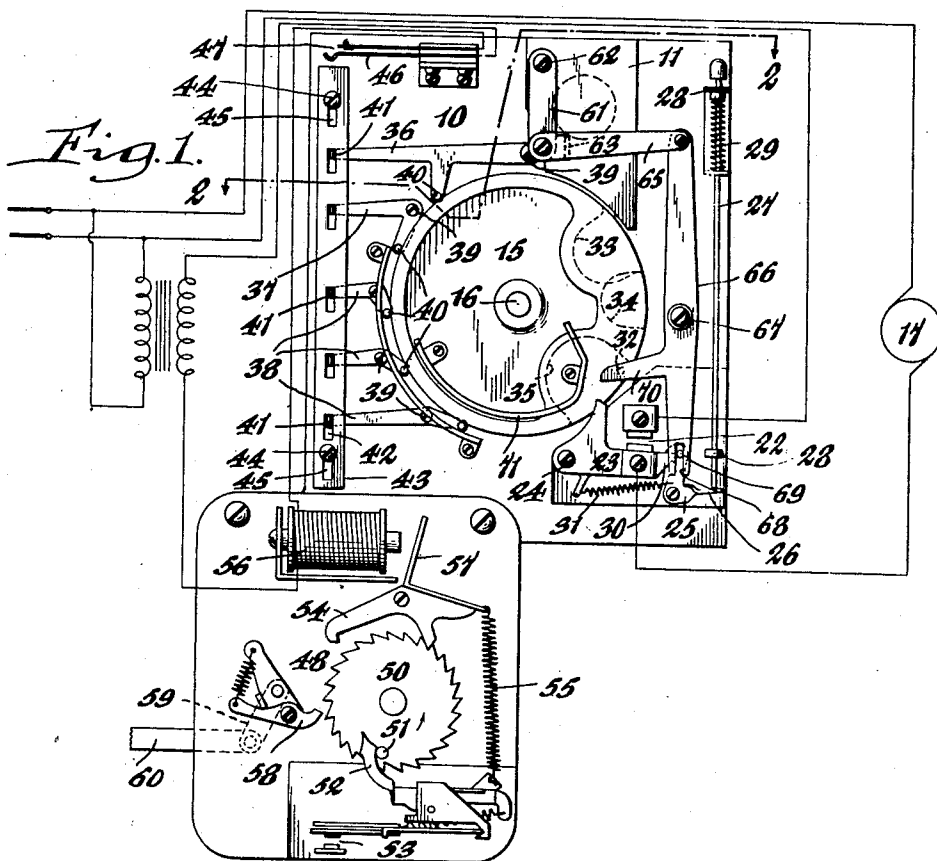
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COIN-CONTROLLED APPARATUS

Filed Sept. 15, 1937

2 Sheets-Sheet 1



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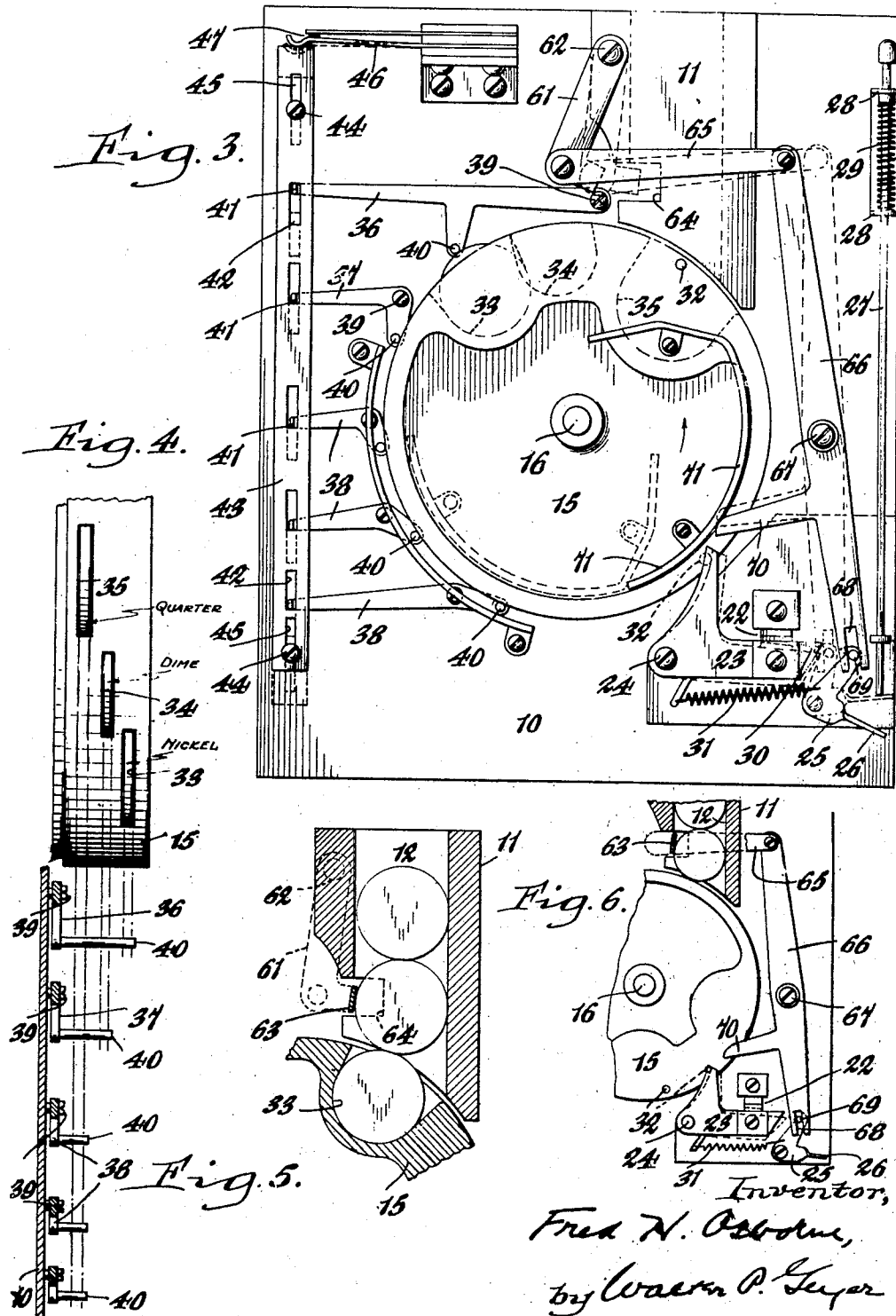
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UNITED STATES PATENT OFFICE

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COIN-CONTROLLED APPARATUS

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9 Claims. (Cl. 194—15)

This invention relates generally to coin-controlled devices but more particularly to a multiple coin device wherein a number of coins of different denominations may be deposited at one time to control the operation of a phonograph, vending machine or like apparatus.

One of its objects is to provide a multiple coin device of this character which is simple, compact and inexpensive in construction, which is positive and reliable in operation, and whose parts are not liable to get out of order.

Another object of the invention is the provision of a multiple coin device designed and constructed for operation in conjunction with a magazine switch whereby the coin value inserted in the device is accordingly registered in the magazine switch.

Other features of the invention reside in the construction and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a front elevation of the coin-controlled device embodying my invention showing it in connection with a magazine switch such as is employed in connection with an automatic phonograph. Figure 2 is an enlarged horizontal section taken substantially in the plane of line 2—2, Figure 1. Figure 3 is an enlarged front elevation of the multiple coin device showing the parts in an operative position and tripped by a nickel. Figure 4 is a diagrammatic view showing the operative relation of the coins in the revolving carrier with the tripping fingers. Figure 5 is an enlarged fragmentary sectional view showing the manner in which the coins are delivered to the coin-carrier. Figure 6 is a fragmentary sectional elevation showing the position of the parts for preventing the latching of the motor-switch when a coin is present in the coin chute.

Similar characters of reference indicate corresponding parts throughout the several views.

In its general organization, my invention embodies a revoluble multiple coin-carrier adapted to receive nickels, dimes and quarters from corresponding registering coin chutes, means for effecting the rotation of the carrier upon the deposit of a coin, a series of switch-tripping levers disposed in a predetermined relation in the path of the coins in the coin-carriers for effecting the closing of a switch one or more times depending on the coin value inserted in the device, the switch being tripped once by a nickel, twice by a dime and five times by a quarter, and a magazine switch included in the

circuit of the coin-actuated switch for registering therein the corresponding number of switch-closing impulses transmitted by the coins deposited in the revolving carrier.

Referring now to the drawings, 10 indicates a supporting plate or frame on which the working parts of the coin-controlled device are mounted and which may be fastened in any appropriate manner to the phonograph or other apparatus on which the device is intended to be used. At its upper end this plate is provided with a multiple coin chute 11 having a plurality of coin-slots 12, 13 and 14 disposed side by side thereon for receiving, say, nickels, dimes and quarters, respectively. Disposed below and in movable relation to the discharge end of the coin chute is the coin-carrier for receiving the coins therefrom, this carrier being preferably in the form of a revoluble drum 15 fixed on a horizontal shaft 16 journaled in the plate 10 and adapted to be driven at predetermined times, as when a coin is inserted in the chute, by an electric motor 17 connected to such shaft by a worm 18, worm wheel 19 and speed-reducing gears 20 and 21. Included in the circuit of this drum-actuating motor is a normally open switch 22 whose movable contact is applied to a vertically-swinging lever 23 pivoted at 24 to the plate 10 and normally held in its open position, shown in Figure 1, by a spring-pressed latching pawl or keeper 25 having its tail 26 in abutting contact with the lower end of a manually-actuated push rod 27 guided in lugs 28 mounted on said plate and having a spring 29 applied thereto for constantly urging it to its elevated or switch-opening position. When the push rod is depressed, after depositing a coin or coins in the chute 11, it releases the latching pawl 25 from the shouldered and beveled end 30 of the switch lever 23 and causes the pawl-spring 31, which is connected at one end to such lever and at its other end to the pawl, to be strained sufficiently to swing the lever 23 to switch-closing position, thereby starting the motor 17. Upon releasing the push rod 27, it is restored to its initial elevated position by its spring 29 and at the same time the pawl 25 is urged by its spring 31 against the beveled end of the switch lever where it is ready, after a revolving operating cycle of the carrier 15, to latch and retain such lever in open position when tripped thereto by a pin or projection 32 applied to the face of the carrier. This tripping pin is rendered operative to open the switch after the coins inserted in the chute have been transferred by the carrier to their point of discharge.

The carrier-drum is of a width to span the discharge ends of the respective coin-slots 12, 13 and 14 to normally close such slots, and formed in its periphery are coin-receiving pockets 33, 34 and 35 disposed in substantially staggered fashion or at different radially spaced points on the drum and in vertical planes for alining registration with the respective coin-slots to successively receive the coins as the drum revolves past the coin chute, it being understood that until a given pocket is alined with its companion coin-slot, the coin will rest at the bottom of the slot in contact with the drum-periphery. These pockets are of a cross-section to receive the respective coins and are shallower or of less height than the diameter of the coins, so that when seated in the pockets the coins protrude beyond the drum-periphery in the manner shown in Figure 3, the coins functioning, as will presently appear, as tappet elements, to trip one or another of a plurality of switch-controlling levers.

Disposed at one side of the carrier-drum 15 for operative engagement by the coins are a plurality of independent, vertically-swinging trip or coin-engaging levers 36, 37 and 38 pivoted on companion pivots 39 and disposed in vertical alinement one above another on the supporting plate 10, five of such levers being shown in the drawings, by way of example, to accommodate the quarter or largest denomination coin used in the device. Each of these levers is provided adjacent its inner end with a transversely-extending pin 40 which normally bears and rests by gravity upon the contiguous portion or face of the drum in the manner depicted in Figure 1, so as to be in the tripping path of a given coin or coins in the carrier-drum. The trip-pin of the uppermost or nickel-contacting lever 36 is longer than those of the other levers and extends practically the full width of the drum to be engaged in the moving path of a nickel, dime or quarter deposited in the carrier. The trip-pin 40 of the next-adjoining or dime-contacting lever 37 is somewhat shorter than the nickel trip-pin and is of a length to extend over that portion of the drum embracing the dime and quarter pockets 34, 35 but clears the nickel pocket 33. The trip pins of the remaining lowermost set of levers 38, three in number, are somewhat shorter than the dime trip-pin and are of a uniform length to extend over and be in the path of movement of the quarter pocket 35 but clear both the nickel and dime pockets 33 and 34, respectively. At their outer ends the respective levers 36, 37 and 38 terminate in laterally-bent lugs 41 which engage companion slots 42 in an upright shifting bar 43 guided for limited vertical movement on the plate 10 through screw and slot connections 44, 45, respectively. This bar is shifted upwardly in response to the coin-tripping movements imparted to the trip levers and its upper end engages the movable element 46 of a coin-registering switch 47 which is included in the circuit of the magazine switch mechanism indicated generally by the numeral 48. By this construction, whenever a coin in the carrier 15 trips a corresponding lever or levers 36, 37 or 38, it swings that lever, or successive levers in its path, in a direction to elevate the bar 43 one or more times to the position shown by full lines in Figure 3 and, after each tripping, momentarily close the switch 46, 47. After the closing of the switch in each instance and when the tripping coin recedes from the trip pin of a given lever, the bar 43 is again restored to its initial

position by gravity and the spring pressure inherent in the movable switch element 46, simultaneously moving the coin-engaged lever inwardly against the periphery of the coin-carrier 15 in position for successive trippings if called upon to do so by the coins contained in the carrier. From the foregoing, it will be understood that for each nickel value contained in the carrier, there is a corresponding closing of the switch 46, 47, and if a nickel, dime and quarter (forty cents) are placed in the coin slot and discharged into the corresponding carrier-pockets 33, 34 and 35, such switch is closed eight successive times and these switch-closing impulses are registered in the magazine switch mechanism 48.

While the magazine switch mechanism may be of any well known construction, that shown in the drawings consists of a ratchet wheel 50 having a pin 51 thereon engageable with a trip 52 for opening, at a predetermined time, the switch 53 connected, say, to the motor circuit of an automatic coin-controlled phonograph or other instrument. Cooperating with the ratchet wheel to advance the same one tooth in a counter-clockwise direction for each closing of the trip-lever controlled switch 46, 47, is a feed or escapement pawl 54 normally held in arresting engagement with such wheel by a spring 55 and actuated in the opposite direction about its pivot for wedge-like engagement with the inclined edge of an adjoining ratchet wheel tooth to propel the wheel one tooth by an electromagnet 56 included in the circuit of the switch 46, 47, such pawl having an extension 57 which serves as an armature. For each energizing impulse transmitted to the electromagnet by the closing of the trip-lever controlled switch and the corresponding advancement of the ratchet wheel, the switch control pin 51 recedes from the trip 52 a distance of one tooth. A pawl or detent 58 is provided for turning the ratchet wheel in the opposite or clockwise direction in step by step fashion after each record of a phonograph, for example, is played, such pawl being actuated in any appropriate manner by a moving part of the phonograph, as by a crank arm 59 and link 60 operatively connected to the phonograph so as to move the ratchet one tooth after each record-selection is rendered.

In order to insure the switch 22 being maintained closed after depressing the push rod 27, when there is more than one coin initially inserted in any one or more of the coin slots 12, 13 or 14, and to assure the continued operation of the coin-carrier 15 and the patrons receiving the proper value for the coins deposited, I provide an automatic means rendered operative by the presence of more than one coin in any one of the chute-slots, for maintaining the switch-latching pawl 25 out of operative engagement with the switch lever 23, so that when the latter is automatically tripped by the carrier-pin 32 to an open position it will immediately return to switch-closing position by the spring 31, thereby maintaining the circuit of the motor 17 and propelling the coin-carrier 15 continuously until the coin chute is clear. This means, by preference, consists of a vertically-swinging rock lever 61 pivoted at 62 to the coin chute 11 and having an offset coin-engaging or feeler arm 63 at its lower end which is adapted for projection into and out of contact with the peripheral edge of the coin, as shown in Figures 3, 5 and 6. This offset feeler arm is free to move into and out of coin-engagement in a notch or recess 64

formed at the lower side edge of the chute as seen in Figures 3 and 5. The rock lever 61 is connected by a link 65 to the upper end of a vertically-swinging lever 66 pivoted intermediate its ends at 67 to the plate 10 at one side of the coin-carrier 15 and has a slot 68 in its lower end engaging a pin 69 on the switch-latching pawl 25. When the push-rod 27 is depressed to effect the closing of the switch 22 and start the motor 17 to revolve the carrier 15, the coupling pin 69 on the pawl 25 causes the lever 66 to be swung therewith from the dotted line position to the full line position shown in Figure 3, thereby rocking the feeler arm 63 outwardly or in a direction to disengage it from contact with the lowermost coins in the coin chute and permitting such coins to drop by gravity into the respective pockets of the coin-carrier. When the discharge cycle of the coin-carrier has been completed, assuming, first, that there was a minimum of one coin in each coin slot, the trip pin 32 on the carrier encounters the switch lever 23 and restores the switch 22 to its open position, at the same time causing the latching pawl 25 to move into latching engagement with the beveled end of the switch lever and returning the lever 66 to its initial position to again bring the coin-contacting arm 61 into position for feeling contact with additional coins inserted in the coin chute. Assume now, that there is more than one coin in any one or more of the coin slots 12, 13 or 14. It then becomes necessary to automatically maintain the switch 22 closed until such time as the last coins remaining in the slots have been discharged from the carrier and their proper value registered in the magazine switch 46. This is automatically effected by the feeler-arm 63, which, by contact with a coin in the coin chute, maintains the lever 66 in a position to retain the latching pawl 25 from engagement with the switch lever 23 or sufficiently remote therefrom so that when the trip pin 32 on the coin-carrier 15 trips such switch lever to an open position, it returns immediately to closed position by its spring 31.

The lever 66 has a finger 70 projecting therefrom toward the coin-carrier 15 which is adapted, at a predetermined time in the movement of such carrier, to contact an arcuate cam or segment 71 applied to the carrier to rock the lever 66 in a direction to temporarily withdraw the feeler-arm 63 from contact with any coin or coins present in the coin chute. Before the carrier comes to the end of its revolving cycle, however, the finger 70 drops off the cam to allow the feeler-arm to return to its coin-contacting position.

Referring to Figure 1 wherein the parts are shown in switch-opening position, it will be noted that the rock lever 61 with its feeler arm 63 is disposed in the position wherein the feeler arm extends so as to intercept an initial coin or coins inserted therein and supports the coin above the carrier 15 until such time as the push rod 27 is depressed to effect the closing of the switch 22 and the retraction of the feeler arm from beneath the coin or coins in the coin chute and permit them to then drop by gravity onto the peripheral surface of the coin-carrier.

I claim as my invention:

1. A coin-controlled device of the character described, comprising a movable coin-carrier having pockets therein disposed in staggered fashion for receiving coins of different denominations, said pockets being shallower than the

respective coins whereby the latter protrude beyond the surface of the carrier, coin-engaging means normally disposed in surface contact with said carrier and correlated with the respective coin-pockets for bridging relation with one or more of them and for independent operation to a tripping position when encountered by the respective coins borne by the carrier, and a member operatively connected to said coin-engaging means for actuation thereby when moved to a tripping position.

2. A coin-controlled device of the character described, comprising a movable coin-carrier having pockets therein disposed in staggered fashion for receiving coins of different denominations, said pockets being shallower than the respective coins whereby the latter protrude beyond the surface of the carrier, coin-engaging means normally disposed in surface contact with said carrier and rendered operative to a tripping position when encountered by the coins borne by the carrier, said means including a plurality of independently movable members pivoted in a row adjacent the periphery and substantially in the plane of the carrier and having portions in bridging relation with one or more of said carrier-pockets and arranged to successively operatively engage one or more of the respective coins contained in the carrier, and a member common to and operatively connected to each of said independently movable members for actuation thereby in response to their trip movements.

3. A coin-controlled device of the character described, comprising a movable coin-carrier having pockets therein disposed in staggered fashion for receiving coins of different denominations, said pockets being shallower than the respective coins whereby the latter protrude beyond the surface of the carrier, a plurality of independently movable coin-actuated levers disposed in surface contact therewith and rendered operative to a tripping position when encountered by the coins borne by said carrier, some of said levers having portions disposed for operative bridging engagement with one or more of the respective coins contained in the carrier and others having portions disposed for operative engagement with but one of the respective coins, and a member operatively connected to each of said independently movable levers for actuation thereby in response to their trip movements.

4. A coin-controlled device of the character described, comprising a movable coin-carrier having pockets therein disposed in staggered fashion for receiving coins of different denominations, said pockets being shallower than the respective coins whereby the latter protrude beyond the surface of the carrier, means for initiating the movement of said carrier, means for arresting its movement at a predetermined time, coin-engaging means normally disposed in surface contact with the carrier for operation during its movement and correlated with the respective coin-pockets for bridging relation with one or more of them and for independent operation to a tripping position when encountered by the respective coins borne by the carrier, and a member operatively connected to said coin-engaging means for actuation thereby in response to their trip movements.

5. A coin-controlled device of the character described, comprising a revoluble coin-carrier having pockets in its periphery disposed in sub-

stantially staggered fashion for receiving coins of different denominations with the coins protruding beyond the carrier-periphery, a plurality of levers disposed in adjoining relation to the carrier and having portions overlying its periphery for selective bridging engagement with certain of said coins, respectively, certain of said lever portions bridging one of the coin-pockets and others bridging two or more of the coin-pockets, whereby to operatively trip said levers, and a member operatively connected to said levers and actuated in response to their trip movements.

6. A coin-controlled device of the character described, comprising a revoluble coin-carrier having pockets in its periphery disposed in substantially staggered fashion for receiving coins of different denominations with the coins protruding beyond the carrier-periphery, a plurality of levers disposed in adjoining relation to the carrier and having portions overlying its periphery for selective engagement with certain of said coins, respectively, whereby to operatively trip said levers, a member operatively connected to said levers and actuated in response to their trip movements, an electric circuit, and a normally open switch in said circuit movable successively to alternately closed and opened positions in response to the coin-tripping movements of said member.

7. A coin-controlled device of the character described, comprising a revoluble coin-carrier having pockets in its periphery disposed in a definite predetermined relation for receiving coins of different denominations with the coins protruding beyond the carrier, means disposed in operative relation with said carrier for bridging relation with one or more of its pockets and adapted to be successively tripped by the coins contained therein, a member operatively connected to said means and actuated in response to their trip movements, an electric motor for revolving said carrier and including a switch for controlling the same, means for closing said switch to operate the motor, and means for effecting the automatic opening of said switch after a predetermined travel of the carrier.

8. A coin-controlled device of the character described, comprising a revoluble coin-carrier

having pockets in its periphery disposed in a definite predetermined relation for receiving coins of different denominations with the coins protruding beyond the carrier, means disposed in operative relation with said carrier and adapted to be successively tripped by the coins contained therein, a member operatively connected to said means and actuated in response to their tripping movements, an electric motor for revolving said carrier and including a switch for controlling the same, means for closing said switch to operate the motor, means for effecting the automatic opening of said switch after a predetermined travel of the carrier, means for latching the switch in open position, a multiple-slot coin chute for guiding the coins to the respective carrier-pockets, and means operatively connected to said switch-latching means and rendered operative when there is more than one coin in any chute-slot to maintain said latching means out of engagement with the switch.

9. A coin-controlled device of the character described, comprising a revoluble coin-carrier having pockets in its periphery disposed in a definite predetermined relation for receiving coins of different denominations with the coins protruding beyond the carrier, means disposed in operative relation with said carrier and adapted to be successively tripped by the coins contained therein, an electric motor for revolving said carrier and including a switch for controlling the same, a latch for releasably retaining said switch in its open position, means for releasing said latch to effect the closing of said switch, means for effecting the automatic opening of said switch and its engagement with said latch after a predetermined travel of the carrier, a multiple-slot coin chute for guiding the coins to the respective carrier-pockets, and means rendered operative when there is more than one coin in any chute-slot to prevent the latching of said switch in an open position, said preventing means including a coin-engaging element projectable into and out of the coin chute and having an operative connection to said latch for maintaining it out of latching engagement with the switch under the aforesaid condition.

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