Nov. 9, 1948. M. J. AUERBACH 2,453,398

COIN-CONTROLLED DEVICE

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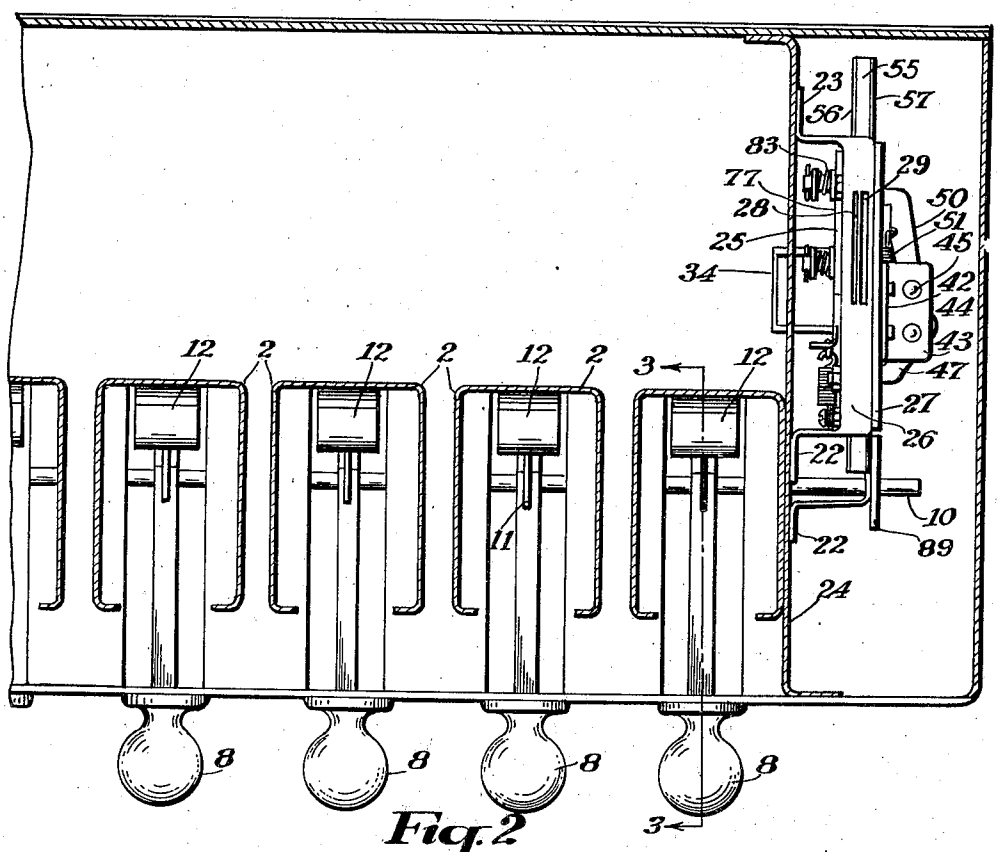


Fig. 2

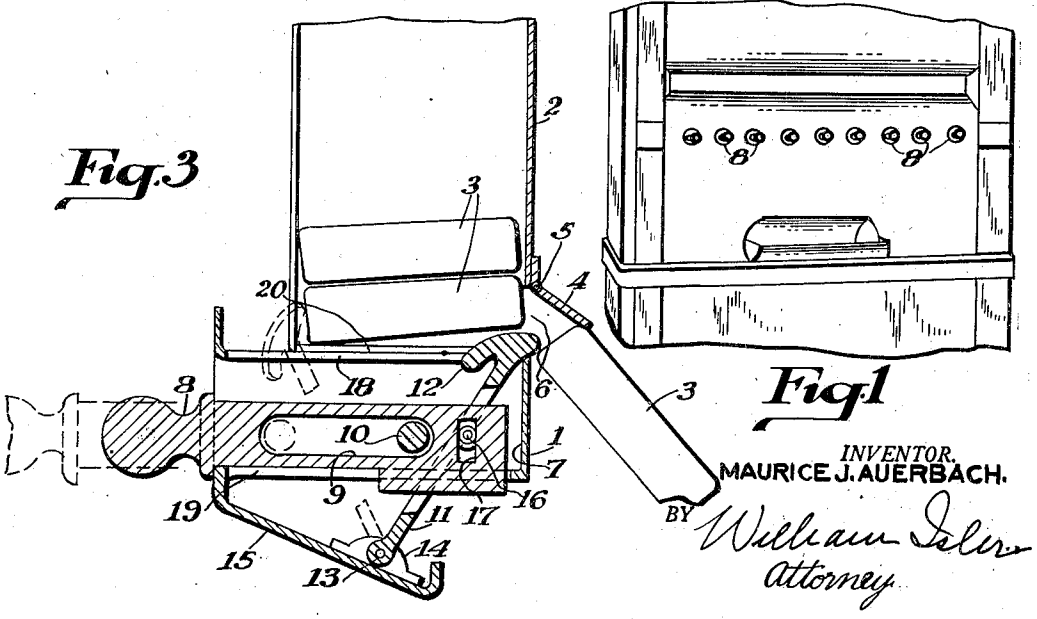


Fig. 3

Fig. 1

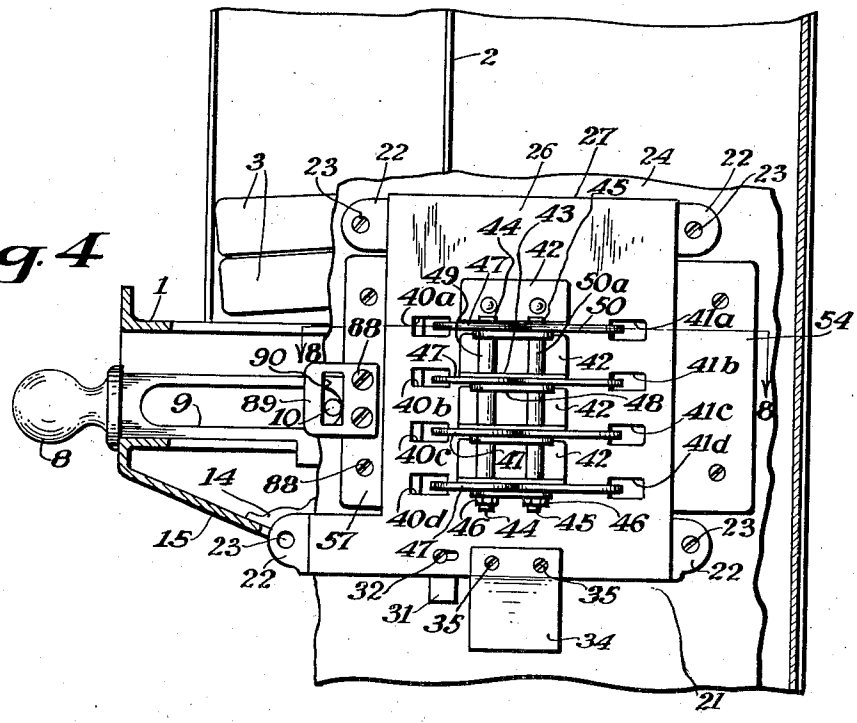
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COIN-CONTROLLED DEVICE

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Fig. 4



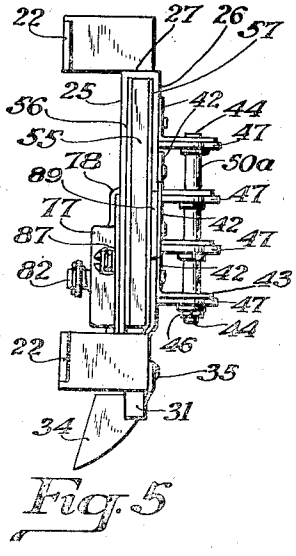


Fig. 5

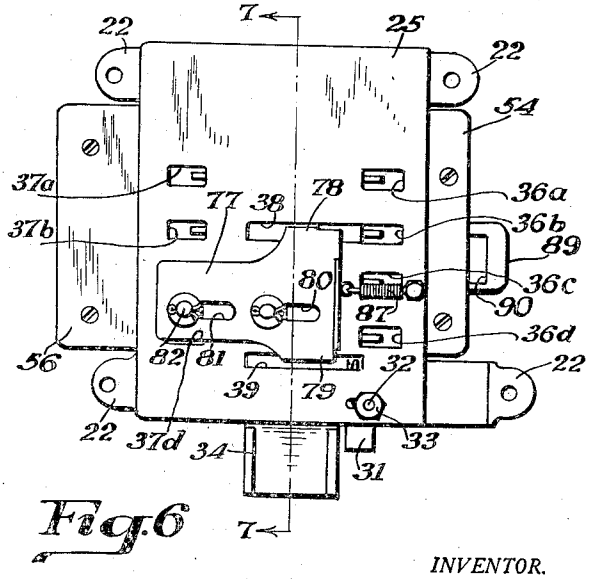


Fig. 6

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COIN-CONTROLLED DEVICE

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Fig. 7

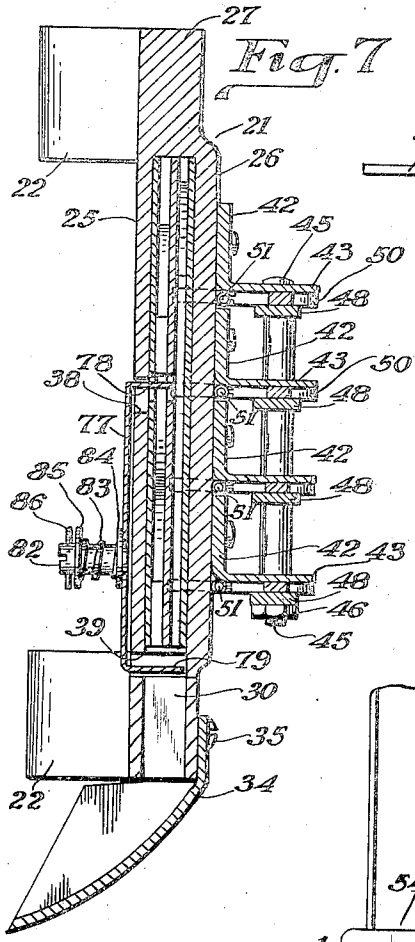
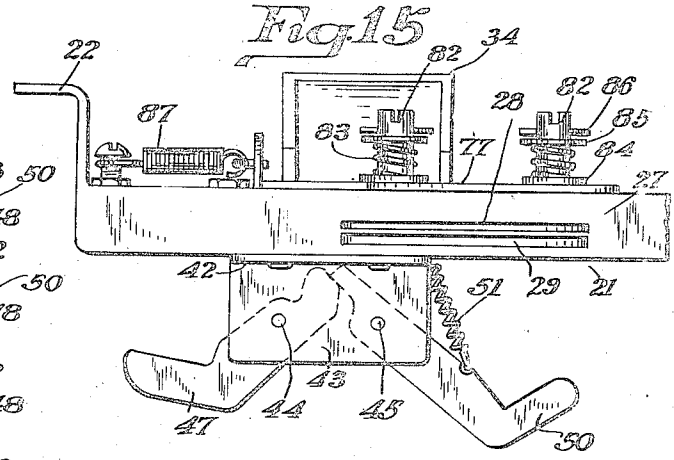


Fig. 15



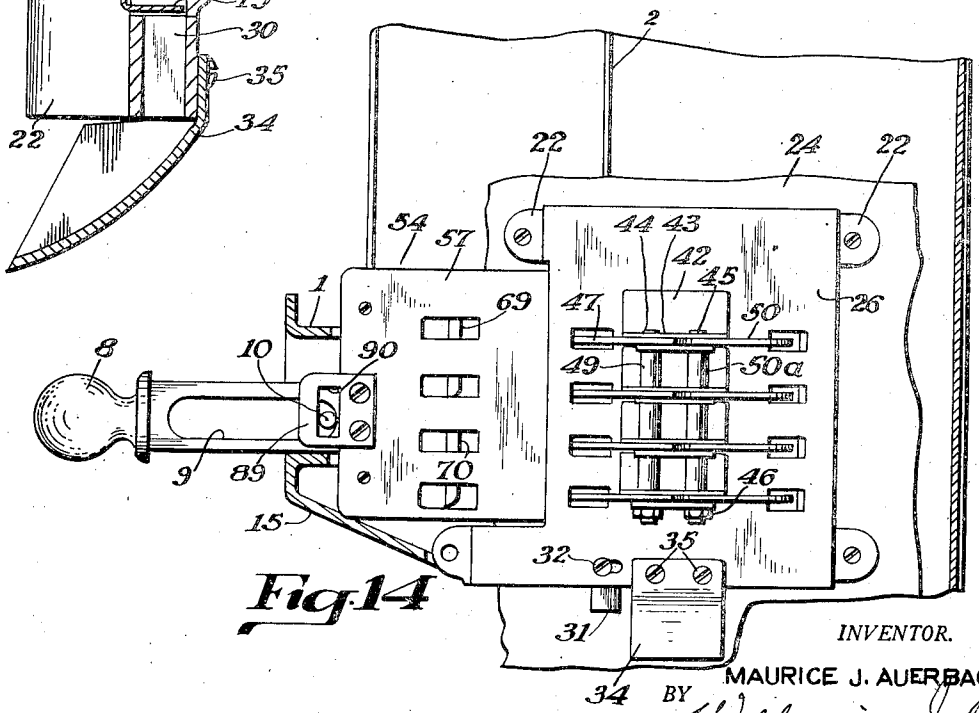


Fig. 14

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COIN-CONTROLLED DEVICE

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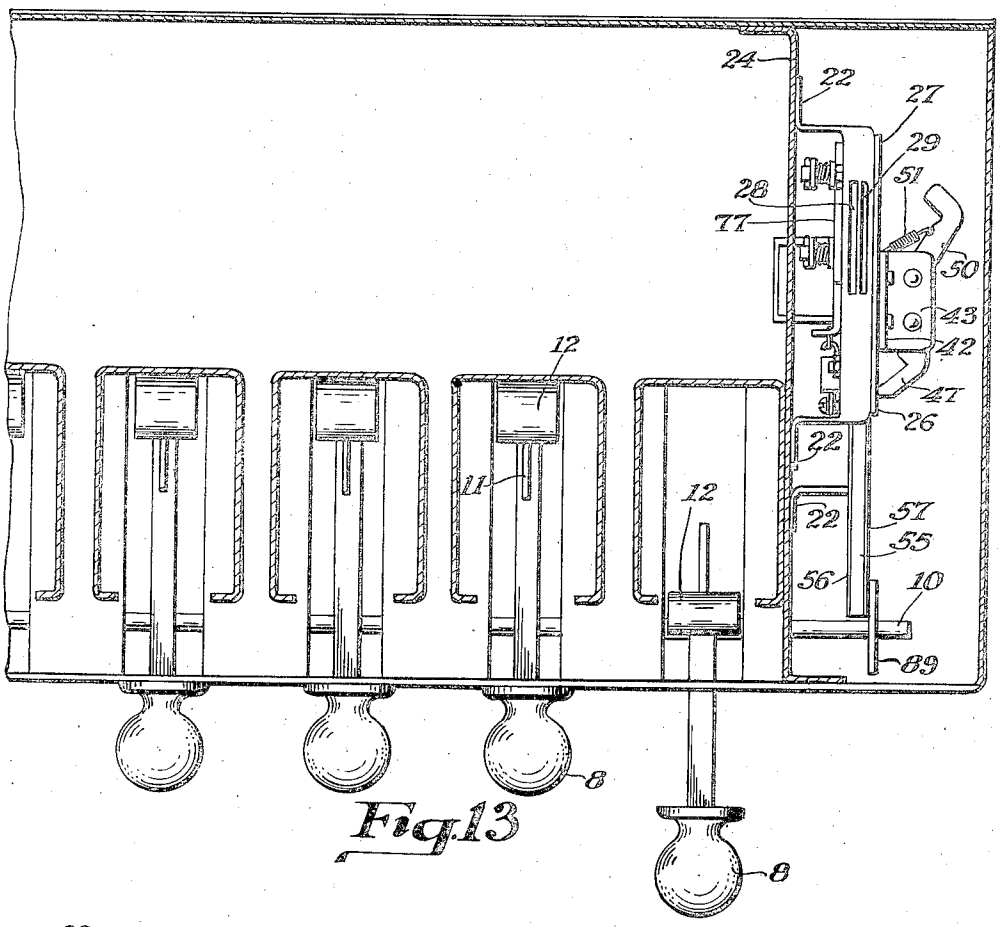


Fig. 13

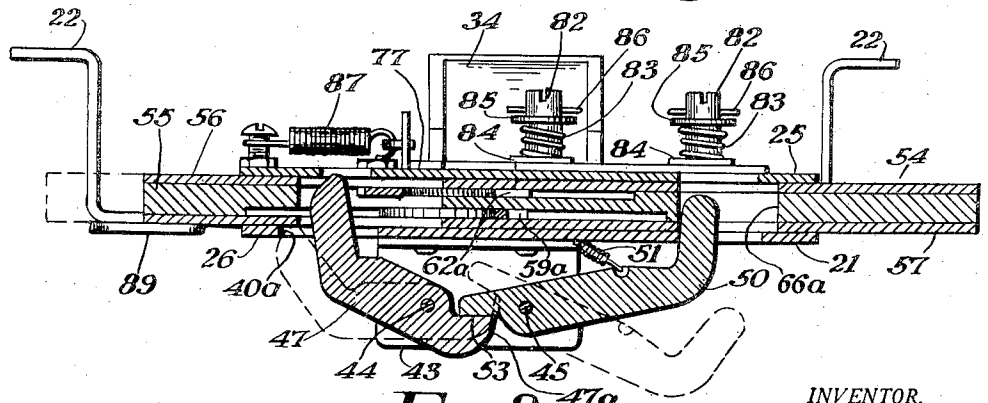


Fig. 8

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COIN-CONTROLLED DEVICE

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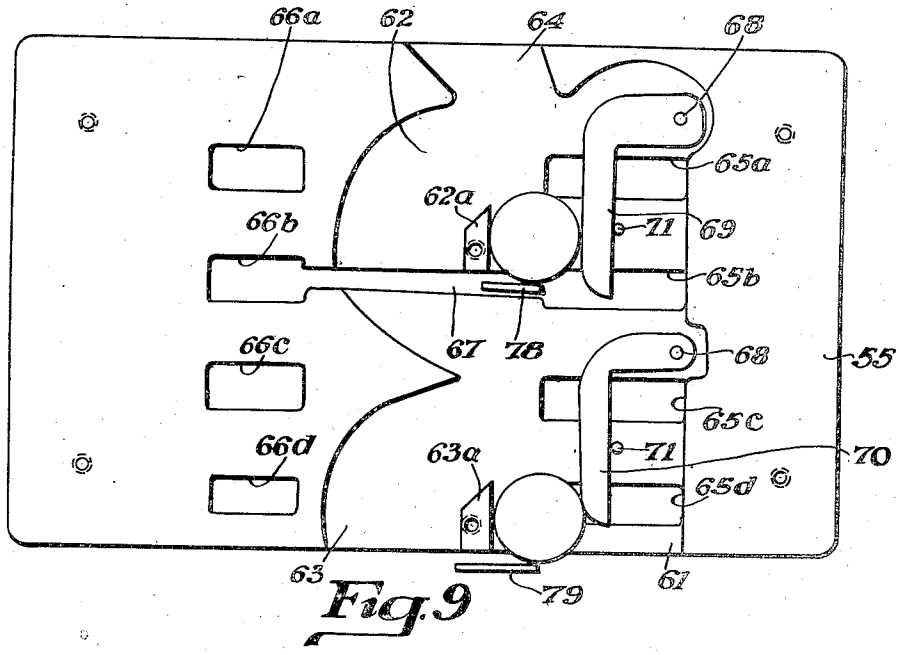


Fig. 9

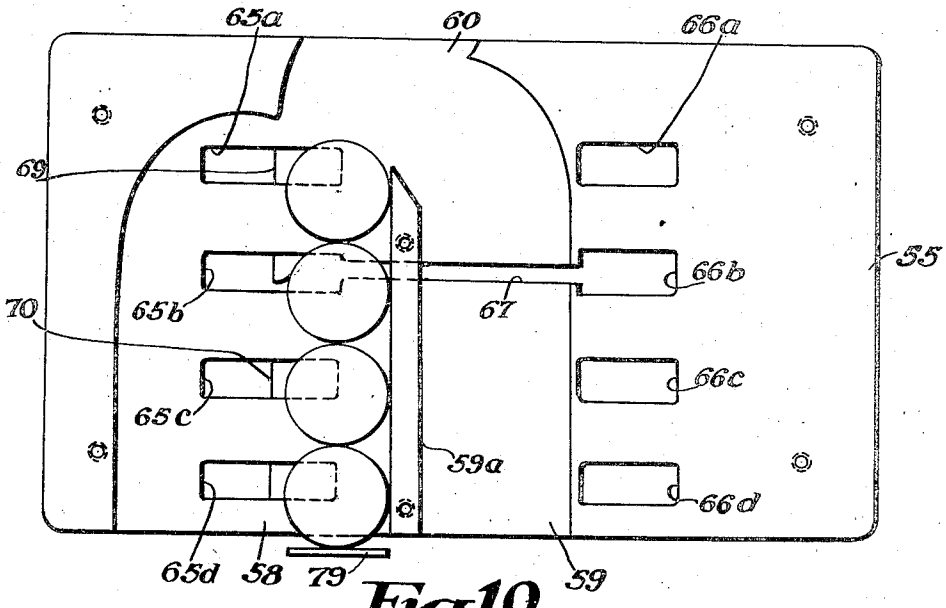


Fig. 10

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COIN-CONTROLLED DEVICE

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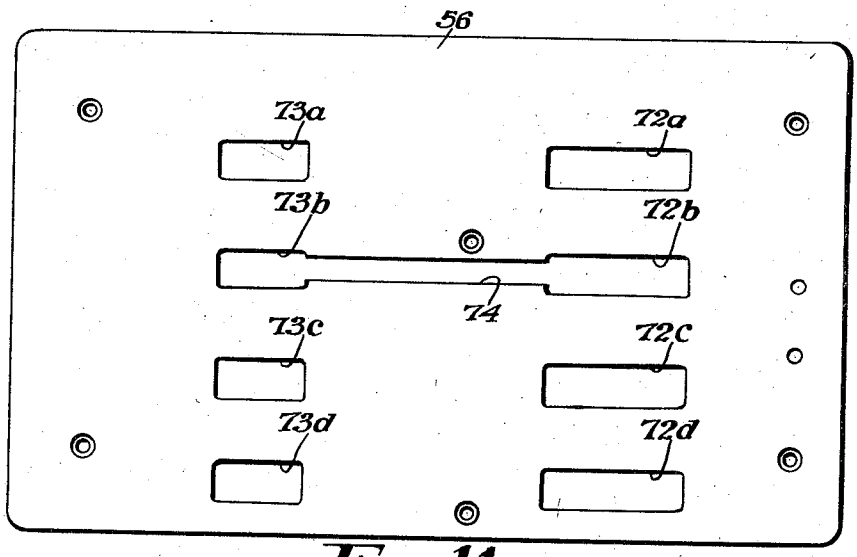


Fig. 11

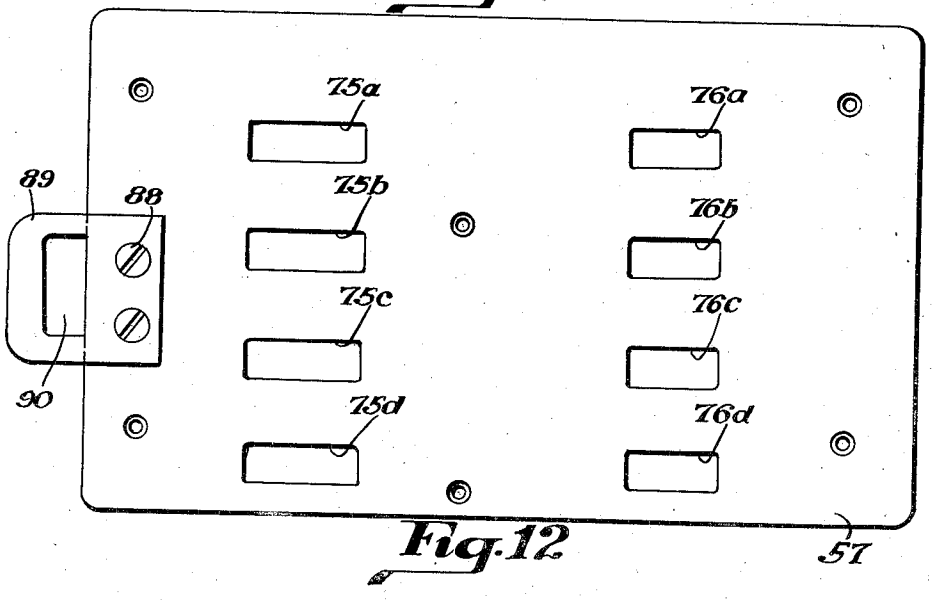


Fig. 12

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Patented Nov. 9, 1948

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UNITED STATES PATENT OFFICE

2,453,398

COIN-CONTROLLED DEVICE

Maurice J. Auerbach, Cleveland Heights, Ohio, assignor to Standard Vendors, Inc., Cleveland, Ohio, a corporation of Ohio

Application January 17, 1945, Serial No. 573,227

1 Claim. (Cl. 194—58)

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This invention relates, as indicated, to coin-controlled devices, but has reference more particularly to a coin-controlled latch and locking device for vending machines, more especially cigarette vending machines.

A primary object of the invention is to provide a device of the character described having a coin chute member which is normally retained in locked position by two sets of latch or locking fingers, one set disposed rearwardly of the other, so that double assurance is had against unauthorized attempts to move the chute member.

Another object of the invention is to provide a device of the character described which may be operated by one or the other of a plurality of different selected coin combinations.

Another object of the invention is to provide a device of the character described in which provision is made for the return to the operator of any excess or surplus coins which may have been deposited in the machine.

A further object of the invention is to provide a device of the character described in which provision is made for operation of the device with a smaller number of coin combinations than is normally required for such operation.

A still further object of the invention is to provide a device of the character described, consisting of a minimum number of easily manufactured and readily assembled parts, compactly arranged in a single housing, which can be easily installed in a vending machine, in an easily accessible place in such machine.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same.

Fig. 1 is a fragmentary perspective view of a cigarette vending machine, such as is especially adapted for the incorporation therein of the coin-controlled device of the present invention;

Fig. 2 is a fragmentary view, partly in section and partly in elevation, showing a portion of a cigarette vending machine with the coin-controlled device of the present invention mounted therein;

Fig. 3 is a fragmentary cross-sectional view, taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary side elevational view of the coin-controlled device, as viewed from the right of Fig. 2;

Fig. 5 is a front end elevation of the coin-controlled device;

Fig. 6 is a side elevational view of the reverse side of the coin-controlled device from that seen in Fig. 4;

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Fig. 7 is a cross-sectional view, on an enlarged scale, taken on the line 7—7 of Fig. 6;

Fig. 8 is a cross-sectional view, taken on the line 8—8 of Fig. 4;

Fig. 9 is an elevational view of one face of the central plate of the coin chute member;

Fig. 10 is a view similar to Fig. 9, but showing the reverse side of the central plate;

Fig. 11 is a view of the outside face of the inside cover plate of the coin chute member;

Fig. 12 is a view similar to Fig. 11, but showing the outside face of the outside cover plate of the coin chute member;

Fig. 13 is a view similar to Fig. 2, but showing the position of certain parts of the coin-controlled device at the beginning of the cigarette-package ejecting operation;

Fig. 14 is a view similar to Fig. 4, but showing the position of certain parts of the coin-controlled device at the beginning of the cigarette package ejecting operation, and

Fig. 15 is a view showing an inoperative or non-functioning position of the latch fingers.

Referring more particularly to the drawings and more especially to Figs. 1, 2 and 3, it will be seen that a cigarette vending machine, such as is particularly adapted to have the coin-operated latch and locking device of the present invention incorporated therein comprises a frame 1, which is adapted to support a horizontal row of magazines or receptacles 2, each receptacle adapted to contain a stack of the articles to be dispensed, shown in this instance as packages 3 of cigarettes.

Each of the receptacles 2 is provided at the rear thereof and adjacent its lower end with a door or closure 4, which is normally disposed vertically, but which is pivotally mounted as at 5 to permit swinging of the same rearwardly when one of the packages 3 is ejected through the opening 6 at the lower rear portion of the receptacle.

The frame 1 is stationarily mounted on the vending machine, and is shaped to provide a cavity or recess 7, in which is mounted a multiplicity of pull handles or knobs 8, designed for use in ejecting packages from the receptacles 2.

Each of the handles 8 is mounted for reciprocal movement relatively to the recess 7, and each is provided with a longitudinally extending slot 9, through which a stop-rod or bar 10 extends, this bar being designed to prevent the handles 8 from being pulled beyond their outermost position. The bar 10 extends entirely across the vending machine and has the ends thereof mounted in the machine in such a manner as to permit the bar to be moved forwardly from the solid line position shown in Fig. 3 to the dotted line position, when such movement is permitted by the coin-controlled device to be hereinafter described.

The bar 10 is normally returned to the solid line position by means of springs (not shown).

Pivotally connected to each of the pull handles 8 adjacent its rear end is a lever 11 having an ejector head 12, the lower end of the lever being pivoted as at 13 to a bearing 14, which, in turn, is rigidly secured to the apron or skirt 15 which forms a part of the frame 1. A pivot pin 16, which connects the lever 11 to the handle 8 is movable in a vertical slot 17 in the handle, which slot is provided to accommodate the change in the point of pivotal connection between the handle and lever occasioned when the handle 8 is pulled forwardly.

When it is desired to eject a package from one of the receptacles 2, the necessary coins are deposited in the machine, permitting the handle for that receptacle to be moved to the position indicated in dotted lines in Fig. 3 and causing the lever 11 to be moved to the position likewise indicated by the dotted lines, the lever moving through slots 18 and 19 in the frame and through a slot 20 in the lower end of the receptacle. Incidental to this movement, the ejector head 12 lifts all of the packages in the receptacle, but after such head has moved to the dotted line position in Fig. 3, the packages are dropped to a lower position in the receptacle. Upon pushing the handle 8 inwardly, the various parts are restored to their initial position, as shown by the solid lines, and the ejector head 12, incidental to its return to such initial position, forcibly ejects the lower-most of the packages 3 through the opening 6, as indicated in Fig. 3, the package swinging the door 4 outwardly.

The ejecting mechanism, as thus described, is similar to that shown and described in my copending patent application, Serial No. 505,600, filed October 9, 1943, now Patent No. 2,399,612, to which reference may be had for a fuller description thereof.

The present invention is concerned more particularly with a coin-controlled device for controlling the movement of the bar 10 to permit operation of one or the other of the handles 8 for ejecting cigarette packages from the machine.

Such coin-controlled device or mechanism includes a housing generally indicated by numeral 21, preferably made as a die casting, and having ears 22, whereby the housing may be removably secured, as by means of screws 23, to one of the side walls 24 of the vending machine, preferably the right side wall, as viewed from the front of the machine.

The housing 21 comprises spaced inner and outer walls 25 and 26, respectively, and a top wall 27 having slots 28 and 29 therein for the reception of coins, the slot 28 in this instance being designed for the reception of dimes and the slot 29 for the reception of nickels. The walls 25 and 26 are spaced apart at the bottom by means of a relatively short bottom wall 30, and by a coin separator member 31, which is secured to the walls 25 and 26, as by means of a screw 32 and nut 33. A coin return chute 34 is secured, as by screws 35, to the lower edge of the wall 26 of the housing.

The inner wall 25 is provided with two horizontally-spaced rows of vertically-spaced substantially-rectangular openings, the openings in the front row being designated 36*a*, 36*b*, 36*c* and 36*d*, while those in the rear row are designated 37*a*, 37*b*, 37*c* and 37*d*. The opening 36*b* communicates at one end with a horizontal slot 38, and directly below this slot below the level of the openings 36*d* and 37*d*, is a second slot 39, the slots 38 and 39 serving a purpose to be presently described.

The outer wall 26 is similarly provided with two horizontally-spaced rows of vertically-spaced openings substantially rectangular openings, the openings in the front row being designated 40*a*, 40*b*, 40*c* and 40*d*, while those in the rear row are designated 41*a*, 41*b*, 41*c* and 41*d*. The openings 40*a*, 40*b*, 40*c* and 40*d* are in alignment respectively with the openings 36*a*, 36*b*, 36*c* and 36*d*, and the openings 41*a*, 41*b*, 41*c* and 41*d* are in alignment respectively with the openings 37*a*, 37*b*, 37*c* and 37*d*.

Secured to the outer face of the wall 26 is a row of vertically spaced brackets 42 having horizontally-disposed flanges 43 through which spaced shafts 44 and 45 extend, and in which such shafts are secured against vertical displacement as by means of nuts 46 secured to their lower threaded ends.

Pivotally secured to the shaft 44 immediately below the flanges 43 is a series of latch fingers 47, such fingers being retained against displacement, axially of the shaft, by means of spacer bars 48 which interconnect the shafts 44 and 45, and by means of tubular spacer elements 49 mounted on the shaft 44 between the spacer bars 48 and the flanges 43 of the brackets 42.

Pivotally secured to the shaft 45 immediately below the flanges 43 is a series of latch fingers 50, which are retained against displacement axially of the shaft by means of the spacer bars 48 and tubular spacer elements 50*a* mounted on the shaft 45 between the spacer bars 48, and the flanges 43 of the brackets 42.

The latch fingers 50 are normally maintained in the openings 41*a*, 41*b*, 41*c* and 41*d* by means of tension springs 51 which interconnect the fingers with the brackets 42, and each of the fingers 50 is provided with a heel extension 53 against which the heel portions 47*a* of the fingers 47 bear in such a manner that when the fingers 47 are lifted from the openings 40*a*, 40*b*, 40*c* and 40*d*, they cause the fingers 50 to be simultaneously lifted from the openings 41*a*, 41*b*, 41*c* and 41*d* against the tension of the springs 51.

The coin-operated device further includes a coin chute member mounted for reciprocal movement in the housing 21, and generally designated by the reference numeral 54, such chute member comprising a central plate 55, preferably made as a die casting, and cover plates 56 and 57 preferably of steel.

The central plate 55 has formed in its outer face a forward chute 58 and a rear chute 59, these chutes having a common entry opening 60, which is in registry with the nickel slot 29. The chutes 58 and 59 are separated from each other by a rib or partition 59*a*. The plate 55 has formed in its inner face a forward chute 61 and rear chutes 62 and 63, the chutes 61 and 62 having a common entry opening 64 which is in registry with the dime slot 28. The chutes 61 and 62 are separated from each other by a rib or partition 62*a*, while the chutes 63 and 61 are separated from each other by a rib or partition 63*a*.

The central plate is further provided with rectangular openings 65*a*, 65*b*, 65*c* and 65*d*, which are respectively aligned with the opening 40*a*, 40*b*, 40*c* and 40*d*, in the housing wall 26, and with rectangular openings 66*a*, 66*b*, 66*c* and 66*d*, which are respectively aligned with the openings 41*a* 41*b*, 41*c* and 41*d* in the housing wall 26. A horizontal slot 67 extends between the openings 65*b*

and 66b and is in registry with the slot 38 in the housing wall 25.

The plate 55 has also pivotally secured thereto, as by means of screws 68, levers 69 and 70, which, in their normal position, bear against pins 71, which extend from the plate 55, the levers having vertical portions which in their normal position straddle openings in the plate, the lever 69 straddling the openings 65a and 65b, and the lever 70 straddling the openings 65c and 65d. The radius of travel of pivoted levers 69 and 70 is less than the linear distance between rib 62a and pivot joint 68, or rib 63a and pivot joint 68, respectively, thereby permitting unobstructed pivotal movement of the levers.

The cover plate 56 is provided with openings 72a, 72b, 72c and 72d which are in alignment with the openings 65a, 65b, 65c and 65d, respectively, in the plate 55; with openings 73a, 73b, 73c and 73d which are in alignment with the openings 66a, 66b, 66c and 66d, respectively, in the plate 55, and with a slot 74 which extends between the opening 72b and 73b and is in registration with the slot 67 in the plate 55.

The cover plate 57 is provided with openings 75a, 75b, 75c and 75d which are in alignment with the openings 65a, 65b, 65c and 65d, respectively, in the plate 55 and with openings 76a, 76b, 76c and 76d which are in alignment with the openings 66a, 66b, 66c and 66d, respectively, in the plate 55.

The device further includes a bracket 77 which is slidably mounted on the inner wall 25 of the housing, and is provided with flanges 78 and 79 forming coin rests, the flange 78 extending through the slots 38, 74 and into the slot 67, and the flange 79 extending through the slot 39 and to a point below the chutes 61 and 58. The bracket 77 is provided with elongated openings 80 and 81, through which pins 82 extend, the bracket being resiliently maintained in engagement with the wall 25 of the housing 21 by means of springs 83 which are interposed between washers 84 and 85, the washers 85 being retained on the pins 82 by means of cotter pins 86. A coil spring 87, which interconnects the wall 25 of the housing 21 and the bracket 77, resiliently maintains the bracket in its normal position, and in such position, the pins 82 are disposed at the rear ends of the openings 80 and 81.

The assembly comprising the central plate 55 and cover plates 56 and 57 has secured to its forward edge, as by screws 88, a plate 89 having a rectangular opening 90 therein, through which the stop rod or bar 10 extends.

It will also be noted that when the various parts of the device are in their normal position, the latch fingers 47 and 50 are disposed in the various openings in the coin chute member and serve to lock such member against forward movement.

Having thus described the mechanical construction of the coin-operated device, the operation thereof will be briefly described:

The device, in this instance, has been designed primarily for so-called 20-cent operation, that is to say, the purchaser of a package of cigarettes will drop 20 cents into the machine, as two dimes, a dime and two nickels, or four nickels, and will receive the package of cigarettes, which will contain the necessary change in the form of pennies or stamps, if the actual cost of the cigarettes is less than twenty cents.

If the purchaser desires to operate the machine with two dimes, he will deposit the dimes successively into the slot 28, the dimes falling thence through the chute opening 64. The first dime will fall into the chute 61 and will come to rest on the coin rest 78, being loosely positioned between the partition 62a and the vertical portion of the lever 69. The second dime will, upon striking the first dime, be deflected rearwardly into the chute 62 and be guided by the curved rear wall of said chute into the lower portion of the chute 61, coming to rest upon the coin rest 79, being loosely positioned between the partition 63a and the vertical portion of the lever 70. The position of the two dimes on the coin rests 78 and 79 is clearly shown in Fig. 9.

With the coins thus positioned, the operator will, upon pulling one or the other of the pull handles 8, exert a forward pull on the stop rod 10, causing the coin chute 54 to be likewise pulled forwardly a slight distance. Since the presence of the dimes prevents the levers 69 and 70 from being swung rearwardly, the levers will remain in their normal position, and the vertical portions thereof will come into engagement with the latch fingers 47. Continued forward movement of the coin chute 54 and of the levers 69 and 70 causes these levers to swing the fingers 47 about their pivotal mountings and out of the openings 65a, 65b, 65c and 65d. This, in turn, causes the latch fingers 50 to be swung about their pivotal mountings and out of the openings 66a, 66b, 66c and 66d. With the latch fingers 47 and 50 thus retracted as clearly shown in dotted lines in Fig. 8 and in solid lines in Fig. 13, there is no hindrance to the continued forward movement of the coin chute member 54, and consequently to the forward movement of the stop rod 10. During such forward movement of the member 54, the latch fingers 47 slide on the outer surface of the housing wall 57. Since the rod 10 may be moved forwardly, the cigarettes may be ejected in the manner already described.

When the coin chute member 54 has been moved forwardly sufficiently to cause the dimes to be removed from the supporting influence of the coin rests 78 and 79, the dimes will drop into a suitable coin receiving or cash box (not shown), being guided thereto by the coin separator 31.

The forward movement of the coin chute member 54 is limited by the engagement of the rear edge of the opening 66b with the coin rest 78.

When the pull handle 8 is pushed inwardly, incidental to the operation of ejecting a package of cigarettes, suitable springs (not shown), cause the stop rod 10 to be retracted to its original position, thereby causing the coin chute member 54 to be returned to its normal position. When such chute member is being returned to its normal position, the springs 51 act on the fingers 50, and the extensions 53 of the fingers 50 urge the fingers 47 to reenter the opening 65a, 65b, 65c and 65d. As the fingers 47 re-enter the slots 65, the fingers 50 are urged by action of the springs 51 into the openings 66 and the coin chute is thus locked against unauthorized forward movement.

Should the operator deposit only one dime in the machine, it will be impossible to pull the member 54 forwardly, since the lever 70 will swing rearwardly, and actuation of the two lower latch fingers 47 and 50 will not be possible before 50 engages the rearmost edge of slots 66c and 66d.

In Fig. 10, the operation of the device with four nickels is illustrated. In that case, the operator will deposit four nickels successively into the slot 29, the nickels falling thence through the chute opening 60. The configuration of the coin channel above the slots is such as will direct the nickel

into the chute 58 and it will come to rest on the coin rest 79, being loosely positioned between the partition 59a and the lowermost of the latch fingers 47. The second nickel will come to rest on the first nickel, being loosely positioned between the aforesaid partition and one of the fingers 47. The third and fourth nickels will come to rest substantially in the position shown in Fig. 10, as the distance between the engaging edge of fingers 47 and the forward edge of partition 59a is only slightly greater than the diameter of the coin.

With the nickels thus positioned, the operator will, upon pulling one or the other of the pull handles 8, exert a forward pull on the stop rod 10, causing the coin chute member 54 to be likewise pulled forwardly a slight distance. Continued forward movement of the member 54 causes the nickels to engage the fingers 47 and to swing such fingers about their pivotal mountings and out of the openings 65a, 65b, 65c, and 65d. This, in turn, causes the latch fingers 50 to be swung about their pivotal mountings and out of the openings 66a, 66b, 66c and 66d. With the latch fingers 47 and 50 thus retracted, there is no obstruction to the continued forward movement of the coin chute member 54, and consequently, to the forward movement of the stop rod 10.

When the coin chute member 54 has been pulled forwardly sufficiently to cause the nickels to be removed from the supporting influence of the coin rest 79, the nickels will drop into the coin-receiving or cash box, being guided thereto by the coin separator 31.

Should the operator deposit any number of nickels less than four, it will be impossible to pull the member 54 forwardly since one or more of the latch fingers 47 will not be engaged, and actuation of the corresponding latch fingers 50 will not be possible.

It will be apparent that operation of the device with two nickels and a dime can be readily accomplished in a manner similar to that already described. In such case, the dime will permit actuation of the two upper sets of latch fingers 47 and 50, and the two nickels will permit actuation of the two lower sets of such fingers.

The advantages of the present coin-controlled device will be readily apparent.

In the first place, the coin chute member is normally retained in locked position by four latch fingers, disposed one above the other, so that increased assurance is had against unauthorized attempts to move the chute member.

In the second place, the device consists of a minimum number of easily manufactured and readily assembled parts, compactly arranged in a single housing, which can be easily installed in a vending machine, in an easily accessible place in such machine. This is in contrast to other coin-controlled devices which while having one or more of the functions of the present device, are divided among several units which are installed at difference points in the vending machine.

Another advantage of the present device, is that if an excess number of nickels or dimes is deposited in the device, the excess coins will be returned to the operator through the chute 59 or 63, as the case may be, such coins falling through the coin return chute 34 into a receptacle, from which they are retrieved by the operator.

A still further advantage of the present device is that it is readily adapted for 5, 10, or 15 cent operation. If such operation is desired, one or more sets of the latch fingers 47 and 50 may be manually moved to an inoperative position, such as shown in Fig. 15. Such sets will be maintained in such position due to the fact that the point of engagement between the fingers 47 and 50 is inwardly of a line connecting the pivotal centers of these fingers, and the tension exerted by the spring 51 tends to maintain the fingers in such inoperative position.

Although the device has been described particularly in relation to its incorporation in a cigarette vending machine, it is to be understood that it may be used in connection with any other types of vending machine, or other machines in which coin-control of the machine is required.

It is to be understood that the form of my invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claim.

Having thus described my invention, I claim:

In a coin-controlled device of the character described, a housing, coin rests mounted on said housing, a coin-positioning member adapted to receive a plurality of coins of two denominations slidably mounted in said housing, a vertical shaft mounted exteriorly of said housing, a plurality of vertically-spaced latch fingers mounted for pivotal movement about said shaft and having portions adapted to enter said housing rearwardly of said shaft and lock said coin positioning member against substantial forward movement, a second vertical shaft disposed forwardly of said first-named shaft, a plurality of vertically spaced fingers mounted for pivotal movement about said second shaft and having portions adapted to enter said housing forwardly of said second shaft, levers disposed within said coin-positioning member and effective, upon the positioning of a selected combination of coins, to rotate said second-named fingers in the direction of movement of said coin-positioning member, cooperating heel portions provided on said latch-fingers and said second-named fingers whereby partial rotation of said second-named fingers causes said latch fingers to withdraw from locking engagement with said coin-positioning member and further rotation of said second-named fingers causes said latch-fingers to be locked in said withdrawn position, and spring means adapted to normally maintain said latch fingers in locked engagement with said coin-positioning member.

MAURICE J. AUERBACH.

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2,330,153	Steiner	Sept. 21, 1943