Feb. 26, 1957 F. W. HOBAN 2,782,984

COIN DIRECTOR

Filed April 3, 1953 2 Sheets-Sheet 1

Fig. 1.

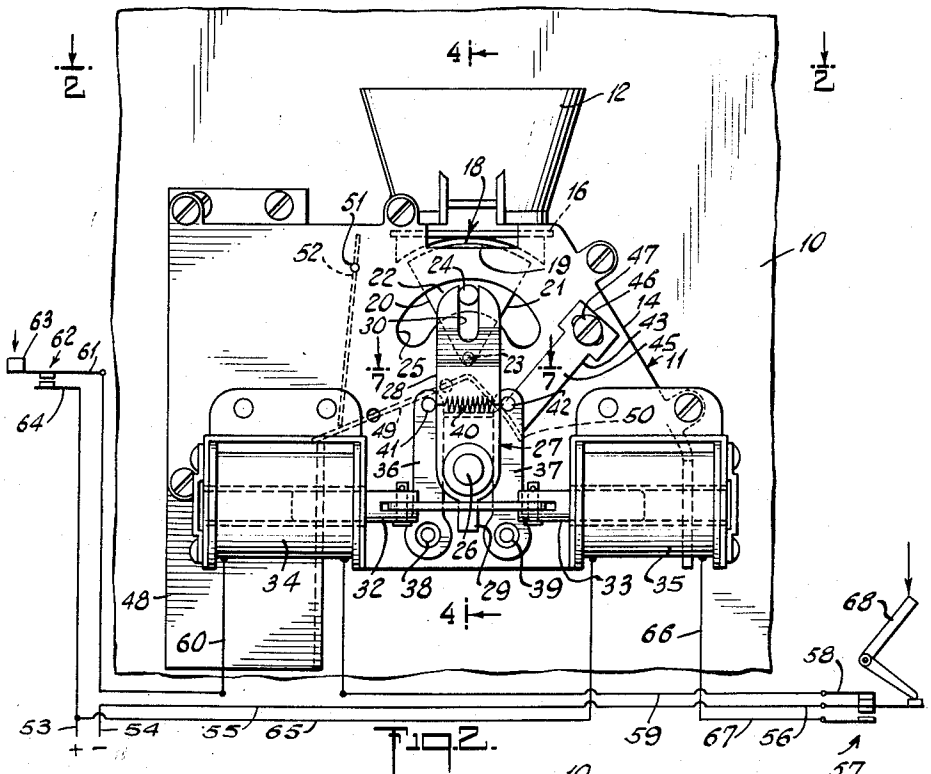
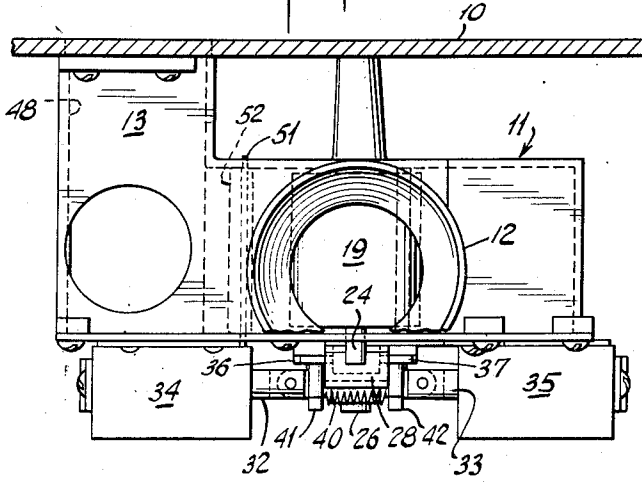


Fig. 2.



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Filed April 3, 1953 2 Sheets-Sheet 2

Fig. 3.

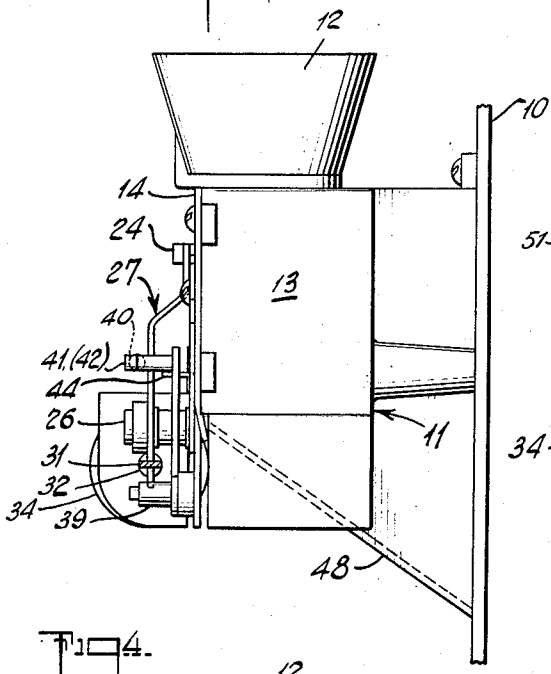


Fig. 5.

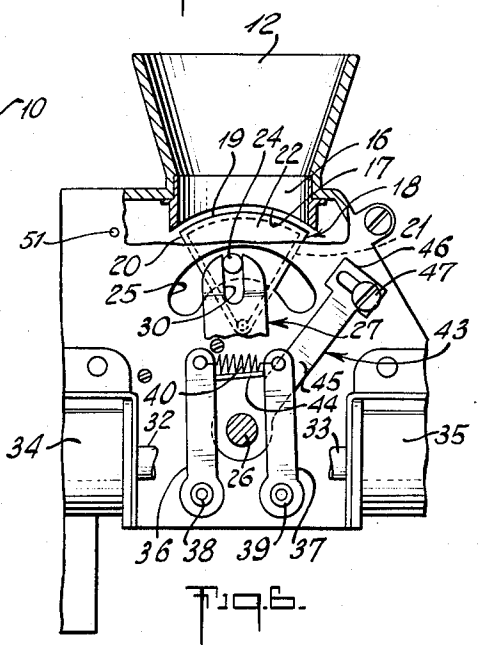


Fig. 4.

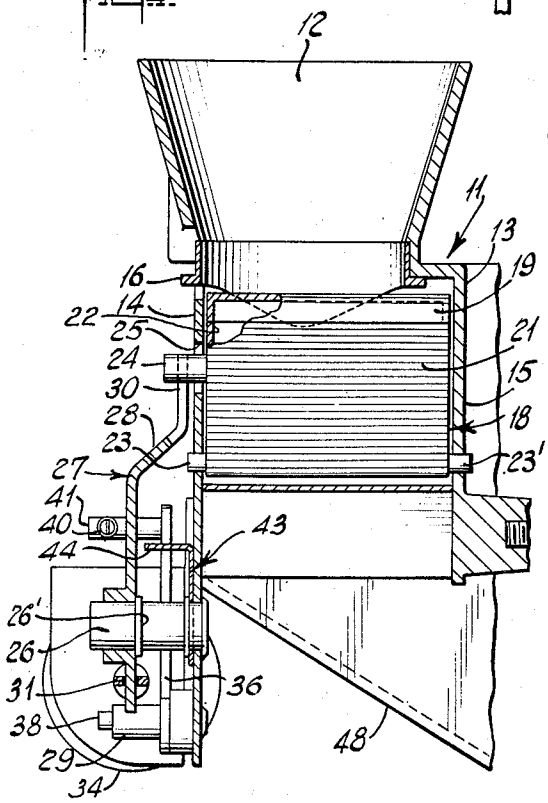
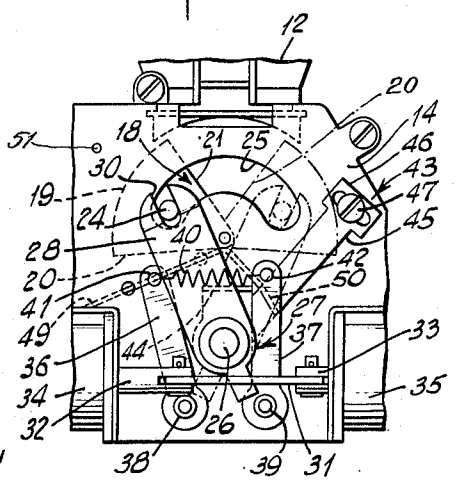


Fig. 6.



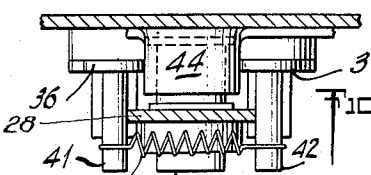


Fig. 7.

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COIN DIRECTOR

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Application April 3, 1953, Serial No. 346,635

2 Claims. (Cl. 232—57.5)

This invention relates generally to coin directing devices for coin-operated machines such as vending machines, telephone pay stations and similar equipment, and particularly pertains to a coin director adapted to normally retain coins inserted in the machine in a position from which they are released and guided either into coin-refunding means or into coin-retaining means within such equipment in payment of either a service rendered or merchandise delivered.

One of the major objects of the present invention is the provision of a coin director of a very simple and relatively inexpensive construction, positive and dependable in its function, and which is easily operable and which will not in normal use get out of order, thus assuring continuous service over extended time periods.

Another object of this invention is the provision in a coin director of the type indicated of an extremely simple, effective and positively operable coin control device adapted to temporarily support deposited coins in a central position, prior to their final disposition, that is either their return or their retention in payment for service rendered or merchandise received, and from which supported position the coins are accordingly directed into either a coin-return chute or into a coin receptacle, and which coin control comprises a sector of a cylinder having a cylindrical coin-supporting surface and two convergent coin-guiding surfaces, one of which being designed to direct the coins into the coin-return chute, the other surface being adapted to cause coins to drop into a coin-retaining receptacle.

A further object of this invention is the provision in connection with the coin control of simple and effective electro-magnetically operated actuating means for the latter, also adjusting means for positioning the cylindrical coin-supporting surface of the device and balancing or localizing means for causing it to reassume a central position after each movement imparted thereto by said actuating means.

The foregoing and numerous other objects and important advantages of the present invention will become more fully understood from the ensuing description in conjunction with the accompanying drawings forming an important part of the present disclosure, but being adapted to serve primarily for explanatory purposes without in any way limiting this invention to the structural embodiment illustrated, and wherein:

Fig. 1 is a front elevation of one of the many possible embodiments of the device, including a schematical wiring diagram;

Fig. 2 is a top view of the device, with its support shown partly in section along lines 2—2 of Fig. 1;

Fig. 3 is a right-hand end elevation of the device partly in section and with portions thereof omitted;

Fig. 4 is a vertical enlarged section taken approximately along lines 4—4 of Fig. 1;

Fig. 5 is a fragmental front elevation of the device with portions thereof in section, with the coin control shown adjusted in left-hand direction;

Fig. 6 is a fragmental front elevation of the device showing the two extreme end positions of the coin control; and

Fig. 7 is a fragmental enlarged horizontal cross section taken approximately along line 7—7 of Fig. 1.

As stated above, the coin director of the present invention is adapted for use in coin-controlled machines such as a merchandise vending machine, telephone pay stations and similar mechanisms in which it is necessary to provide a choice of the ultimately desired disposition of inserted coins, that is to cause the instrument to return or refund coins when either a service is not rendered or the purchase of merchandise is not intended, and to cause the retention of coins for services rendered or for merchandise purchased.

Assuming that the device is employed in a vending machine, the drawing discloses wall 10 of such machine which supports the device. The coin director comprises a casing 11 which is preferably diecast and includes a funnel 12. The casing forms a one-piece hollow structure 13 with a removable cover 14. That hollow structure has, what may be termed a rear wall 15 (see Fig. 4), while cover 14 constitutes the front wall of the casing. Within funnel 12 there is provided at its lower reduced or bottom end a cylindrical bushing 16 with a cylindrically curved lower edge 17 (see Fig. 5).

Just below the bushing is operatively mounted a coin control in the form of a cylindrical segment 18 having an upper cylindrically curved portion 19, two radially disposed converging side faces 20 and 21 and at least one end web 22 connecting the cylindrical portion 19 with the two converging faces 20 and 21.

At the juncture or apex of converging surfaces 20 and 21 there are provided pivots 23, 23' journaled in suitable aligned bearings arranged in casing rear wall 15 and cover 14, as can be clearly seen in Fig. 4, and operatively supporting coin control 18. From the frontal end web 22 of the coin control there extends a pin 24 through an arcuate slot 25 of cover 14. Just below frontal pivot 23 of coin control 18, but distanced therefrom, there is attached to cover 14 a relatively large pin 26 pivotally supporting a two armed lever 27, pin 26 carrying a stop ring 26' defining the position of the lever, the latter having a relatively long upper arm 28 and a shorter lower arm 29. The upper end of longer arm 28 is bifurcated as at 30 for accommodating and operatively engaging pin 24 of the coin control.

Short lever arm 29 projects through a slot provided in a connector or link 31 which operatively joins mobile armatures 32 and 33 of two solenoids 34 and 35 arranged in tandem fashion and symmetrically in respect to a vertical center plane passing through pivot pins 23, 23' of the coin control and through fulcrum pin 26 for two-armed lever 27. This lever is normally held in its central vertical position as shown in Fig. 1 and when thus positioned will maintain coin director 18 in its central position, that is in a position at which the smaller, reduced or bottom end of funnel 12 is closed by the cylindrical surface of the coin control.

Lever 27 is held in its central position by an arrangement of two cooperating spring-connected balancing bars 36 and 37, the lower ends of which are pivotally supported at 38 and 39, while their free upper ends are movable and are urged towards each other by the tension of spring 40, the latter being attached to pins 41 and 42 which are caused to normally bear against the side edges of the longer lever arm 28. Pivotal supports 38 and 39 for bars 36 and 37 are disposed symmetrically in respect to the above defined vertical central plane. Since pins 41 and 42 are biased by spring 40 and are urged towards one another, they maintain lever 27 in its vertical central position. If for any reason there should arise the

necessity for a slight positional change of the coin control so that the latter's cylindrical surface **19** fully closes the bottom end of funnel **12**, lever **27** is rendered adjustable and will effect the adjustment of the coin control. For the adjustment of lever **27** there is provided an adjustable cam structure **43** consisting of a cam **44** in the form of a flange and an adjusting leg **45** for the cam, the leg having an enlarged slotted end **46**. Cam flange **44** engages with its ends the adjacent edges of bars **36** and **37** which are urged against one another by spring **40**, see Fig. 7. Slotted end **46** of adjusting leg **45** is held in adjusted position by screw **47**, see Figs. 1, 5 and 6. In Fig. 5 the degree of adjustment of lever **27** by cam structure **43** is exaggerated.

By consulting Figs. 1, 2, 3, 4 and 6, it will be observed that casing **11** is provided with a coin refunding chute **48**, and that within the casing there are arranged two divergent coin-deflecting surfaces **49** and **50**, and that above surface **49** there is pivotally suspended at **51** a coin abutment vane or coin guard **52** adapted to slow down the speed of released coins, thus preventing undue wear of the left end wall of the casing (see Figs. 1 and 2). Deflecting surfaces **49** and **50** have a common joining ridge disposed just below the pivotal suspensions **23**, **23'** of the coin control.

Wiring

In Fig. 1 there will be seen a schematical diagram of electric connections intended to facilitate the explanation of the operation of the present device. There are illustrated main supply leads **53** and **54**, from which latter branch lead **55** extends to the mobile middle blade **56** of multiple contact switch **57**, the latter having a pair of normally closed contacts and another normally open contact pair. Middle blade **56** is provided with upper and lower contacts, the upper contact normally engaging the contact of blade **58**. From that blade a branch lead **59** extends to one terminal of solenoid **34**, while from the other terminal a branch lead **60** passes to switch blade **61** of normally open two-contact switch **62** which, when the present device is installed in a vending machine, is operable manually by depressible button **63**. The other blade **64** of switch **62** is connected with main lead **53**.

From this main lead there extends a branch lead **65** to one terminal of solenoid **35**, while from the other terminal of the solenoid a lead **66** is connected with the lower contact blade **67** of multiple contact switch **57**. The contacts of blades **67** and **56** are normally separated, since mobile middle blade **56** is normally maintained in the position shown. That switch blade is intended to be automatically operated by actuating means **68**, assumed to form a part of and being movable by a mechanism of either a vending machine, a telephone pay station or any other coin-operated device, after either merchandise is delivered or service is completed, respectively. In the application of the present device to a pay station, switch **62** is actuated automatically instead of manually when, for instance, no service is rendered and when the receiver is replaced to its non-operative position.

Operation

Assuming that the device is employed in a merchandise vending machine, coins deposited in the machine will drop into funnel **12** where they are temporarily retained until the would-be purchaser decides to either obtain a desired article vended by the machine or to forego such purchase, in which latter event the coins inserted will be refunded to him when he closes switch **62** by depressing button **63** (see Fig. 1). By closing switch **62** solenoid **34** becomes energized and attracts armature **32**, drawing it into the solenoid. This movement of the armature causes short end **29** of lever **27** to move in clockwise direction, thereby moving longer lever arm **28** also in clockwise direction. This movement of the lever swings coin control **18** to the right, indicated in broken lines in Fig. 6. At that position of the coin control the latter's cylindrical surface **19** clears the bottom end of funnel **12**, thus releasing the coins to slide down onto coin directing face **20**, from which surface the coins drop upon deflecting surface **49**, and progress, after having passed vane **52**, into coin refunding chute **48**.

Solenoid **34** becomes energized by closing of manually operable switch **62**, but that closing of the switch is dependent upon the circuit being kept closed by blades **56** and **58** of multiple contact switch **57**, that pair of switch blades being wired in series with switch **62**. If the contacts of these blades are separated, no current can pass to solenoid **34**. The opening of blades **56** and **58** is effected, for instance, by partly pulling a knob or partly depressing a button, not shown, which would normally cause the delivery of merchandise from the machine when operated to the full intended extent. Thus, when the would-be purchaser tries by such incomplete operation of the knob or button to obtain merchandise, while at the same time closing switch **62** to have the deposited coins refunded, he will be foiled in that attempt since such partly effective operation of the knob or button is designed to cause a slight movement of switch-actuating means **68**, such movement, no matter how slight, being sufficient to temporarily separate the contacts of blades **56** and **58**.

Assuming now the would-be purchaser wishes to obtain delivery of merchandise, he must either fully depress the button or fully pull the knob, whereupon switch actuating means **68** are operated to their full extent, that is to cause not only the separation of the contacts of blades **56** and **58**, but also the closing of the contacts of blades **56** and **67**. At that moment solenoid **35** becomes energized and attracts armature **33**, the latter moving lever **27** in counterclockwise direction, thus swinging coin control **18** to the left-hand position as seen in Fig. 6. As a result the coins first retained in the funnel will slide along directing surface **21** of the coin control and drop upon deflecting surface **50**, which latter guides the coins into a coin receptacle, not shown, while at the same time the desired merchandise is being delivered to the purchaser.

Assuming now that the device forms a part of an automatic telephone pay station, the operation will be very similar to that described above except that manual switch **62** is not actually operated manually but becomes operated when either the receiver is replaced on the hook or when actuated by the telephone operator. In every other respect, however, the function of the device is very similar to that described in connection with the vending machine.

The electric diagram discloses a specific arrangement of the wiring, including specific switches and means for actuating them, all for the single purpose to facilitate the understanding of the operation of the present device and without any intent to in any way limit the scope thereof, since it appears quite evident to any one skilled in the art that the electric control for a device of the type indicated can be solved in a great number of ways, depending upon the manner, purpose, intended use and location of the device.

By the same token, while in the foregoing a specific embodiment of the present invention is disclosed, it is obvious that its structural arrangements may undergo changes both in their form as well as in their relative disposition when the device is to be adapted to different requirements, for which reason it is believed that such changes or possible modifications are deemed to reside within the scope of the present disclosure as defined in the annexed claims.

What is claimed as new is:

1. In a coin director, a coin control in the form of a substantially closed body movable in opposite directions and having a cylindrical coin-supporting surface and two plane converging coin-directing outer surfaces, adjustable positioning means for the coin control, and actuating means for moving the coin control in opposite directions,

and wherein said coin control body comprises, substantially, a sector of a cylinder having a pivotal suspension at the juncture of its coin-directing surfaces and an operating pin extending from the body, and wherein said actuating means comprise a double-armed lever having short and longer arms, the longer arm having a bifurcated end, a pivot for the lever located in the vertical center plane passing through said pivotal suspension for the sector, said bifurcated end of the lever operatively engaging the operating pin of the sector; said adjustable coin control positioning means comprising a pair of bars pivoted at one of their ends and movable at their free ends, the pivoting points of the bars being disposed symmetrically relative to the pivot of the double-armed lever, the free bar ends engaging the side edges of the longer arm of said double-armed lever, spring means urging the bars toward one another and toward the edges of said longer arm; a cam structure for adjusting the position of the bars and thus of the double-armed lever and therethrough of the sector, said cam sturcture comprising an adjusting lever, pivoted coaxially with said double-armed lever, and a cam flange extending therefrom and adapted to engage the adjacent inner edges of the bars, and electromagnetic means operatively engaging the short arm of the double-armed lever and serving for imparting movement to that lever, and thus to the sector, said coin control positioning means serving for normally maintaining said double-armed lever in substantially a vertical position, and at which position of the lever the coin-directing surfaces of the coin control assume a position substantially symmetrical to the vertical center plane passing through said sector and its pivotal suspension.

2. In a coin director, the combination with a funnel

having a cylindrically curved bottom or discharge end, of a coin control in the form of a cylindrical segment operative relative to said curved bottom end of the funnel for normally closing the latter, and wherein said cylindrical segment comprises a structure having a cylindrically curved upper portion, two radially converging side portions and at least one end web connecting the curved upper portion with the two converging side portions, and wherein a pivotal support for the segment is provided at the apex of the converging side portions, and wherein an element for moving the segment relative to said funnel extends from said end web, and wherein means for actuating said segment moving element in two opposite directions are provided, said means comprising a double-armed lever operative about a pivot in vertical alignment with the pivotal support for the segment, said lever having long and short arms, the long arm engaging said element; a pair of oppositely disposed solenoids having mobile armatures, a slotted link connecting the latter, said short lever arm projecting through the slot of the link and being adapted to be swung in opposite directions when one or the other of the solenoids becomes energized, thereby imparting motion to the long arm, the latter in turn moving said segment by way of said element in just reverse directions to those imparted by the link to the short lever arm.

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