

May 5, 1942.

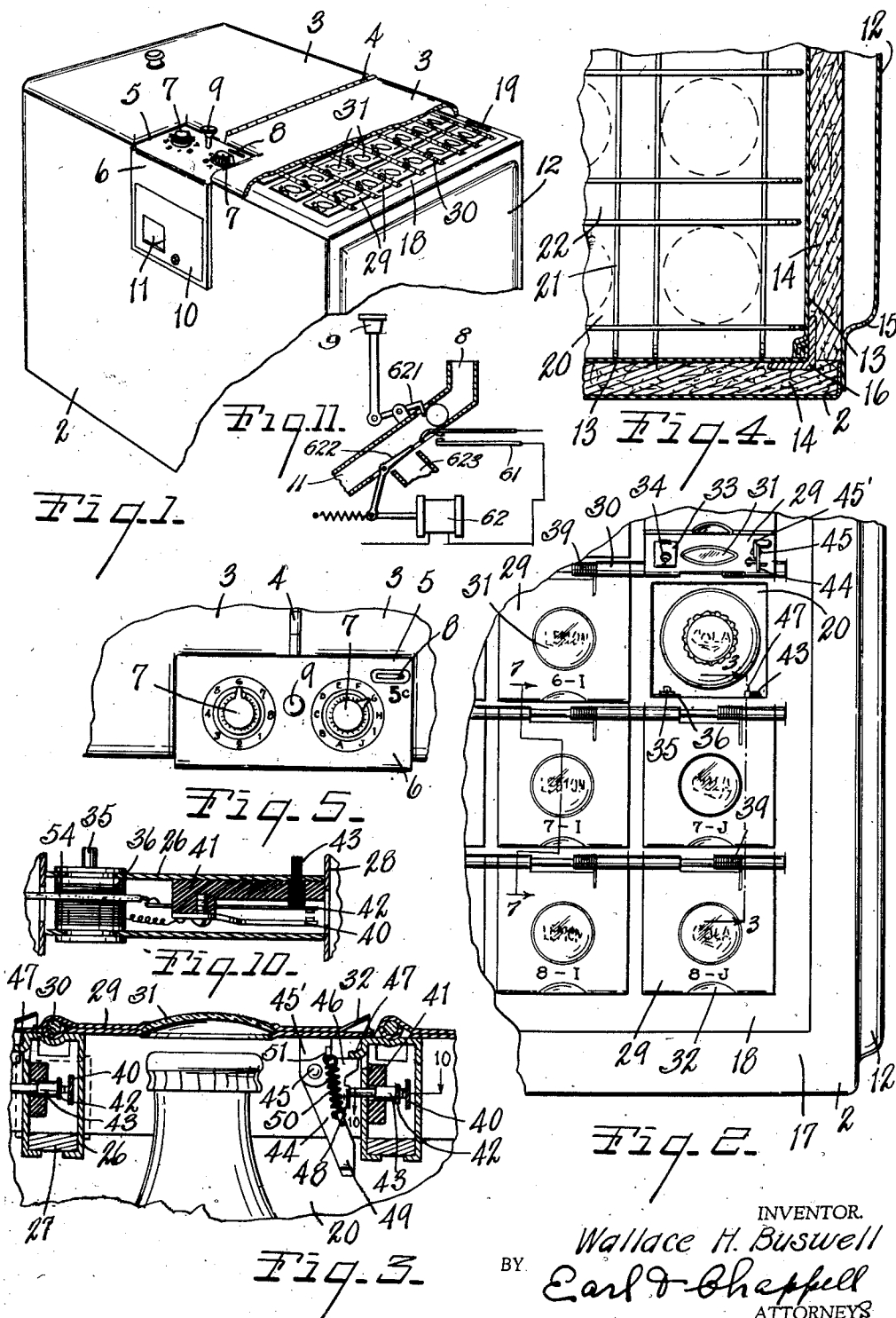
W. H. BUSWELL

2,282,164

SELECTIVE APPARATUS

Filed Nov. 25, 1938

2 Sheets-Sheet 1



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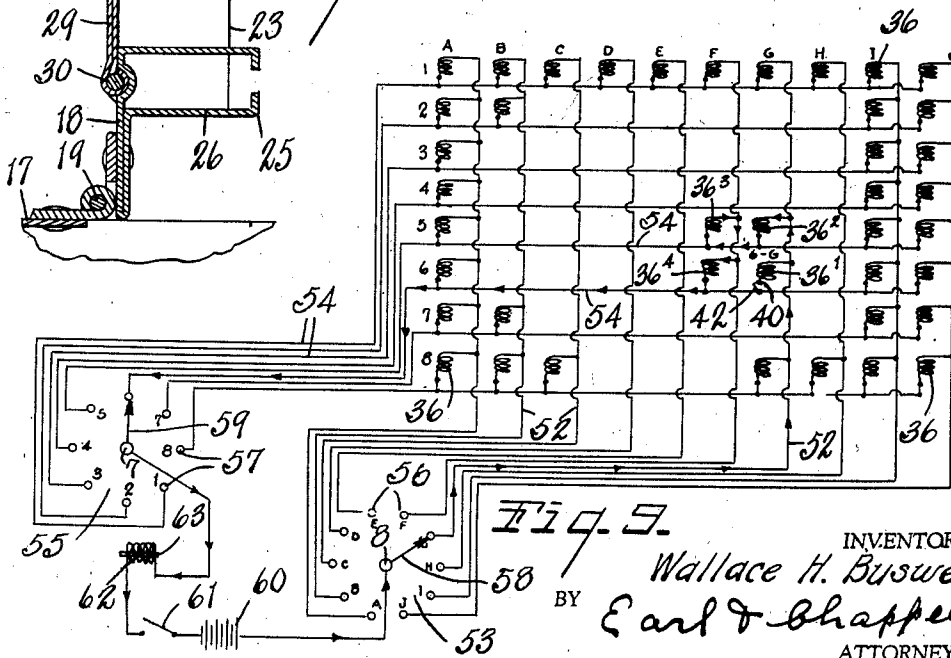
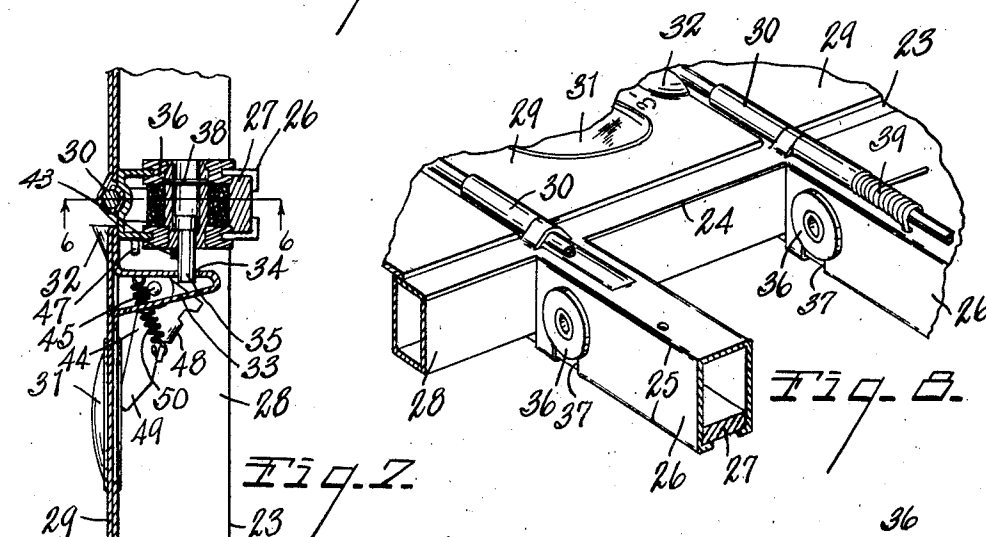
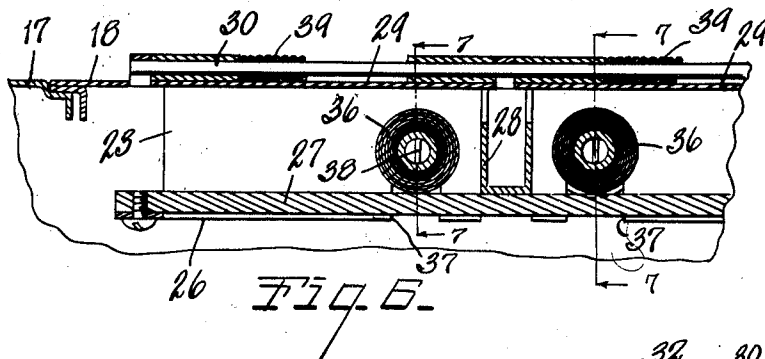
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2 Sheets-Sheet 2



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SELECTIVE APPARATUS

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Application November 25, 1938, Serial No. 242,179

2 Claims. (Cl. 177-353)

This invention relates to improvements in selective apparatus.

The main objects of my invention are:

First, to provide a selective vending machine for enabling a customer to serve himself easily and quickly.

Second, to provide a machine of the type described having a plurality of compartments adapted to contain commodities to be vended and having closure members adapted to be controlled for opening movement by a selective coin control apparatus.

Third, to provide a machine of the type described wherein a customer or operator effects a selection of the compartment wherein the commodity he desires is enclosed, by manipulating a pair of knobs to automatically select and complete a particular electrical circuit governing the closure for that compartment.

Fourth, to provide a selective apparatus characterized by its large capacity and by its simplicity.

Fifth, to provide an apparatus having a plurality of compartments along with circuit controlled provisions for selectively opening any one thereof and a cabinet of novel construction which is particularly adapted to house the said compartments and the circuits for controlling the latter.

Sixth, to provide a novel cabinet for a multi-compartment electrically controlled selective machine.

Seventh, to provide a circuit network to control the actuation of a multiplicity of devices, including combination means for effecting a selection of the particular circuit controlling the actuation of a given desired or selected device.

Eighth, to provide a selective coin controlled vending machine of the type described, which, because of the novel and ingenious manner of manipulating the same, is calculated to encourage the sale of the commodities vended thereby by reason of its appeal to customers.

Ninth, to provide a multi-compartment apparatus in which the opening of the compartments is electrically controlled, which is comparatively simple in its wiring and structural details.

Further objects relating to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view partially broken away, illustrating an embodiment of my invention and the general arrangement of the cabinet and closure elements thereof.

Fig. 2 is an enlarged fragmentary view illustrating several of the selectively controlled compartment closure members and the relation thereof to the machine or apparatus, one of the closure members being illustrated in open position.

Fig. 3 is a fragmentary view in section on line 3-3 of Fig. 2, illustrating certain details of the closure control mechanism.

Fig. 4 is a fragmentary view in horizontal section illustrating the compartments of my construction with relation to commodities contained therein and also illustrating in part the construction of the cabinet enclosing the same.

Fig. 5 is a fragmentary top plan view illustrating the manually controllable instrumentalities on the cabinet whereby selection of a predetermined article or commodity containing compartment is made by a customer.

Fig. 6 is a fragmentary view in section on line 6-6 of Fig. 7, illustrating further details of the closure control mechanism.

Fig. 7 is a fragmentary view in section on a line corresponding to line 7-7 of Figs. 2 and 6, still further illustrating details of the aforesaid mechanism, the closure controlled by the mechanism being shown in raised or open position, however, instead of the closed position of Figs. 2 and 6.

Fig. 8 is a fragmentary perspective view, more clearly illustrating details of construction of the compartment top, the formation thereof, and the arrangement of the closure control mechanism therein.

Fig. 9 is a diagram illustrating the wiring and closure control instrumentalities of my invention.

Fig. 10 is a fragmentary view in section on line 10-10 of Fig. 3, illustrating details of the auxiliary make-and-break control contact governing the return of a coin to a customer or operator under certain conditions.

Fig. 11 is a diagrammatic view indicating a conventional coin control device suitable for use with the apparatus of my invention.

In the accompanying drawings, I have illustrated my invention as I have embodied a selective coin controlled mechanism for vending commodities of a number of different kinds. The machine illustrated is designed for vending soft drinks or the like. It will be appreciated that, due to the compactness and large capacity, the

simplicity of operation, the economy of construction, and other factors, which it is believed will become apparent as the description proceeds, my machine or construction lends itself to the vending of a large number of different types of articles. In fact, I contemplate that structures in accordance with the invention to be described shall be utilized in practically any type of self-service merchandising, whether of refrigerated articles, such as soft drinks and the like, frozen vegetables and fruits, butter, eggs, etc., or of standard, low priced articles of merchandise such as are bought in large quantities in ten cent stores, etc. Obviously, in any of the aforesaid adaptations, the use of a self-serving, readily operable coin controlled selective device will greatly decrease the cost of merchandising. My selective mechanism is capable of a very wide range of use.

In the embodiment illustrated, I provide a cabinet having a large number of individual compartments therein each adapted to receive a single article of merchandise and provided with a closure normally preventing access to the compartment. These closures, in the illustrated embodiment, are under the control of individual solenoids, although those skilled in the art will be able to devise alternative forms of control instrumentalities. The solenoid coils form connecting parts of a circuit network including a pair of sets of wires, each of which is connected to a set of selector contacts engageable by a manually operable movable selector finger. The said fingers are series connected through a battery, a coin control switch, and a coin return mechanism to complete the selecting and closure control circuit for any given closure. It is apparent that when the two switch contact fingers are set, each to engage a contact of the respective sets of contacts (which contacts are identified by suitable indicia), a circuit is completed which will energize just one of the aforesaid solenoids, i. e., that corresponding to and in the circuit of the selected contacts, and thereby release the closure for the corresponding compartment to permit access thereto, assuming that the coin controlled switch is actuated by a proper coin, that an article is in the compartment, and that the closure control mechanism has been set, as will be described.

Further means are provided insuring that whenever a compartment is vacant, the customer's or operator's coin will be returned to him and these refinements will be more particularly hereinafter described; however, for the present, it is desired to point out that the selection of a compartment by manipulating a pair of selecting contact fingers affords an exceedingly large number of compartments controllable by only two selecting elements; that is, the number of compartments which can be controlled is equal to the product of the number of contacts governed by one contact finger times the number of contacts governed by the other contact fingers.

Referring to the drawings, the reference numeral 2 indicates a suitable cabinet having a pair of outer top covers or doors 3 pivoted thereto at 4 and adapted to be lifted by the customer to expose the individual compartment closures. The cabinet is provided with a front and central recess 5 receiving a control box or housing 6 adapted to contain various instrumentalities such as a coin return deflector, a coin receiver, a battery, selector contacts, and other elements or devices, some of which are merely conventional,

being illustrated diagrammatically in Fig. 11, hence will be but briefly referred to in the description to follow. The upper surface of housing 6 carries a pair of sets of dial selector indicia, one set consisting of the numerals "1" to "8," inclusive, and the other set consisting of the letters "A" to "J" inclusive. It will be understood that the number of indicia in each set (there being one indicium for each of the above mentioned selector contacts) is dependent solely on the number of compartments to be provided in the vending device or the number of devices to be controlled. The illustrated embodiment has eighty such compartments. Housing 6 also carries a pair of control knobs 7, one for each set of indicia, and each control knob has a contact engaging selector finger (to be described) connected therewith for coaction with a set of the aforesaid contacts.

The control housing 6 has a coin slot 8 and an escapement push button or other suitable master control device 9 for controlling the drop of a coin onto a switch in a manner to be described and the front panel or side of the control box 6 is provided with a suitable lock controlled closure 10 affording access to a coin receiver (not shown) in the housing in order to remove the coins. An open coin return compartment 11 is likewise provided.

The aforementioned elements and their functioning in the machine will be hereinafter referred to in greater particular.

Referring to Fig. 4, the cabinet of sheet metal construction consists of the outer walls 12 and the inner walls 13, the space between which is filled with suitable insulating material 14 such as cork, and if desired, certain of the outer walls 12 may be offset outwardly at 15 to provide a still further dead-air insulating space. The inner wall 13 is secured to and rigidified by vertically disposed angle irons 16. The outer walls 12 at the top thereof are turned inwardly at 17 (see Fig. 6) to provide a flange with which the pivoted top or closure carrying lid 18 coacts. This lid or top is pivoted to the rear of the cabinet at 19 and is locked in closed position relative to the cabinet interior by any suitable locking means (not shown). It is adapted to be raised upwardly to expose or open all of the compartments within the cabinet simultaneously for refilling and to effect certain setting operations for the individual compartment closure devices which will be described.

The compartments within the cabinet, designated by the numeral 20, are formed by wire racks or by sheet metal partitions 21, as illustrated in Fig. 4, to outline the individual compartments 20 and insulating air spaces 22 between the compartments. The commodities, in this case bottles of different kinds of soft drink, are indicated in dotted lines in Fig. 4.

Referring to Figs. 6, 7, 8, the cabinet closure or pivoted lid 18 has a main body portion 23 made up from a single sheet of metal which is cut along slitted lines 24 and folded downwardly then inwardly to form the corners 25 of a rectangular conduit or channel 26 which is completed by a suitable bottom strip 27. By forming the conduit 26 in such manner, I effect considerable economy from the standpoint of economy of material, as well as simplicity of assembly. The conduits 28, which are disposed at right angles to conduits 26, are formed by uniting suitable U-shaped channel elements to the body 23 of the lid, i. e., to the strip remaining after the

conduits 26 have been formed as described. Conduits 26, 28 house certain portions of the closure control mechanisms as well as the circuit wires thereof, insulating the same from cold and moisture.

Lid 18 has a plurality of compartment closure members 29 pivoted thereto, there being one closure for each compartment 29, pivoted to the lid at 30 immediately adjacent the compartment. Each closure 29 is provided with a suitable window or other viewing provision 31 through which the contents of the compartment may be ascertained and is struck up at 32 at the edge opposite the hinge 30 to provide a lip for elevation by the finger of the user.

Each individual closure 29 has a depending keeper member 33 (preferably formed integral therewith in the interests of economy of material and assembly) and the keeper member has a keeper recess 34 adapted to coact with a latch 35 in the form of the axially movable core of a solenoid coil 36. The solenoid is mounted in the conduit 26, which is cut away at 37 for this purpose.

From the foregoing, it will be understood that each compartment has a closure member 29 provided with its individual latch keeper 33 and its individual electrically actuated bolt or latch coacting with the keeper to normally hold the closure in the position illustrated in Fig. 7, but adapted to release the same for manual opening by a customer when the bolt is withdrawn upon energization of the solenoid 36. A transverse stop pin 38 secured to the solenoid body limits the rearward movement of the latch or core 35 upon energization of the coil. Springs 39 associated with the pivot 30 of the individual closure members 29 serve to normally urge the same to closing position.

In connection with the electrically controlled actuating mechanism which has been described, I provide a further manually settable make-and-break control device for each compartment (see Fig. 10) in the form of a fixed contact 40 mounted within the conduit 26 on an insulating block 41 and a movable resilient contact 42, the movement of which is controlled by a button or tappet 43 of insulating material. This tappet is carried by the contact 42 which may also be mounted on block 41. The contact 42 extends through block 41 and the wall of conduit 26 for actuation by a manually settable contact making dog 44.

This dog and its relation to contacts 40, 42 are illustrated in Figs. 3 and 7. The dog is pivoted at 45 on the depending struck-out tab 45' and carries a trip lug 46 coacting with an integral lip 47 struck out from the wall of conduit 26 in the lid body portion 23. It likewise carries a surface 48 for engagement with tappet 43 to depress the same and an extended finger 49 whereby it may be manually actuated to be set after the compartments have been filled or refilled. A coil spring 50 extends on one side of the pivot point 45 of the dog, from a fixed point 51 to a suitable point on the dog, for the purpose of urging the dog, once it is set, in counterclockwise direction as viewed in Fig. 3, and for withdrawing the dog in clockwise direction to inoperative position as illustrated in Fig. 7 when trip lug 46 is actuated by lip 47 upon opening of the closure. When in the position illustrated in Fig. 3, the tappet engaging surface 48 is effective to thrust tappet 43 to the right and effect electrical contact of the contacts 40, 42, thus

completing a circuit so far as the individual compartment is concerned. When, however, the contents of the compartment are removed by a customer, the dog is automatically moved rearwardly to the inoperative position of Fig. 7, thus breaking the circuit at contacts 40, 42.

Each of the fixed contacts 40 is connected to one end of one of the solenoid coils 36 which in turn is connected by a lead 52 to one of a set of selector contacts 53 (see Fig. 9) while each movable contact 42 is connected by another lead 54 to one of a second set of control contacts 55.

As previously described, there are a plurality of the leads 52, one for each lettered selector contact 56, and a plurality of the leads 54, one for each of the numbered selector contacts 57. A movable conducting selector finger 58 engageable with the set of contacts 53 is carried by one of the manually adjustable knobs 7 and a similar movable selector finger 59 is carried by the other knob for adjustable engagement with the set 55. These movable fingers are electrically connected through a battery or other source of E. M. F., 60, a coin controlled switch 61, and a coin return solenoid 62.

As illustrated in Fig. 2, each of the compartments, or the closure 29 therefor, is designated by a combination indicium consisting of a letter corresponding to the lettered set of contacts 53 and a number corresponding to the numbered set 55, indicating that that compartment may be opened by setting movable contacts 58, 59 in correspondence with the letter and numeral and performing certain other steps. These steps consist in inserting the proper coin in slot 8 and then depressing or actuating the control button 9 controlling a master escapement or coin control element 62, see Fig. 11. This element withholds engagement of the coin with switch 61 and when the button is depressed or actuated, the coin is permitted to fall against the switch 61 to actuate the same to instantaneously close the circuit at that point. The particular coin controlled mechanism has not been illustrated in all of its details since the same forms no part of my invention per se and since devices of the type intended are known, however it is pointed out that the button 9 should not be actuated until the selector knobs are set, since depression of the button results in instantaneous unlatching of whatever closure 29 the selector is set for. The closure of switch 61 by the coin, assuming that contacts 40, 42 for a given compartment are closed and that movable selector fingers 58, 59 are appropriately set for that compartment, causes the corresponding solenoid 36 to be energized and the core or bolt 35 to be withdrawn.

The coin accepting or return solenoid 62, when sufficiently energized, actuates a core 63 which is suitably connected to a deflector (not shown) which either deflects the coin to a cash receiver (not shown) in housing 6 in the event the conditions set forth above warrant, or permits the coin to pass to the coin return chamber 11 when it is not actuated.

A customer desiring to purchase an article contained in a given compartment first notes the identifying combination indicium impressed adjacent the compartment or on the closure 29 therefor. He then manipulates knobs 7 to set contacts 58, 59 in engagement with the fixed contacts 56, 57 in correspondence with the desired combination indicium. He next places the appropriate coin in slot 8 and depresses button 9. This causes an instantaneous closing of switch

61. It will be assumed that in refilling the individual compartments as the contents thereof become depleted, care is taken to set the individual dogs 44 so that contacts 40, 42 are in electrical engagement. This is done when the cover or closure carrying lid 18 is swung on its hinge 19. The several solenoid core latches 35 of the individually controlled mechanisms are likewise properly engaged with the respective keeper recesses 34 on keepers 33 at this time, so as to maintain the closures in closing relation to the compartment with their individual control switches 40, 42 in closed position. Hence when switch 61 is closed by the coin an instantaneous flow of current will take place from battery 60 through movable selector finger 58, lead 52, solenoid 36, switch 40, 42, lead 54, selector finger 59, coin return solenoid 62, switch 61, and battery 60. The result is that latch 35 is withdrawn to permit lifting of closure 29 by the customer and simultaneously with this withdrawal the coin accepting or return core 63 and the aforesaid deflector associated therewith and controlling the forwarding of the coin to the coin return or coin receiving chamber will be actuated to deflect the coin into the coin receiving chamber. When the closure 29 is lifted, dog 44 is automatically snapped rearwardly to the inoperative position of Fig. 7.

It is important that the voltage of battery 60 or other source of E. M. F. be only sufficient to cause energization of solenoids 36, 62 when the machine is set for the desired compartment, and that provision in selecting the battery be made whereby in the event a greater resistance is imposed the current will be insufficient to energize solenoids 36, 62 enough to actuate the corresponding cores, namely, latch 35 and core 63. To illustrate this fact, I have designated a group of four of the solenoids in Fig. 9 by the superscripts "1," "2," "3," "4." Now, having reference to Fig. 9, if it be assumed that movable fingers 58, 59 are set as illustrated to select closure 6—G for actuation, but that the contacts 40, 42 corresponding to that closure are separated, as illustrated, the current must flow as indicated by the arrows, namely, through lead 52, coil 36², coil 36³, coil 36⁴, thence to lead 54 and through the rest of the circuit, inasmuch as no current can flow through coil 36¹. The additional resistance imposed by coils 36², 36³, 36⁴ over that normally imposed by a single solenoid cuts down the current in the circuit just enough so that none of the solenoids, including the coin accepting or return solenoid 62, is energized sufficiently to actuate its core, and the further result is that the coin is permitted to return to coin return chamber and is not deflected to the coin receiver. In short, at the very least the resistance of two extra solenoids 36 is added to the resistance of the circuit when the desired make-and-break contacts 40, 42 are open and this drops the current as described. In the event that any one of the coils 36², 36³, 36⁴ is separated from the circuit, due to a break in its auxiliary contacts 40, 42, the circuit will include even more coils and accompanying resistance. Of course, the flow of current through the extra coils is cut down to the same extent as the flow through coin accepting or return solenoid 62 so that the respective latches 35 thereof are not disturbed. When the make-and-break contacts 40, 42 for the desired closure are closed, sufficient current traverses only a single solenoid 36 and the solenoid 62, 75

with the result that both are operated to actuate their respective cores.

It will be understood that the mechanism associated with coin control switch 61 may be of a type such that actuation of said switch by a coin other than the proper and intended one is impossible.

When a compartment or compartments 20 become empty, it or they may be refilled by lifting lid 18 to the position illustrated in Fig. 7. This automatically causes all of the latches 35 to drop into their respective keeper recesses or openings 34, setting the same in locked position. The owner or proprietor then rotates each inoperatively positioned dog 44 from the inoperative position of Fig. 7 to the operative position of Fig. 3, thus closing and setting the auxiliary contacts 40, 42 to close the circuit at that point. After filling the compartments 20, the lid 18 is then lowered and locked in place.

The only possible inadvertent situation which my device does not meet and automatically cope with by returning the coin is that in which a customer deposits a coin and actuates escape-button 9 prior to setting selector fingers 58, 59 for a desired compartment, the selector fingers being at the time adjusted for release of an undesired compartment closure. In such case, the undesired closure will be unlocked, and it is then necessary for the customer to make a proper return of the undesired commodity and receive a refund of his coin. Should, however, the selector fingers 58, 59, or either of them, be disposed out of engagement with a contact 56, 57, i. e., in the space between the individual contacts so as to fail to complete the circuit between the finger and the individual contact, the coin will be automatically returned without causing energization of either a latch G, solenoid 36, or the coin accepting or return solenoid 62, due to the break in the energizing circuit at the selector.

I desire to call attention to the fact that my machine makes it possible to control a large number of compartments (in the illustrated embodiment eighty) by manipulation of only two selector members. The number of compartments which can be made available is limited only by the size of the cabinet which is practical or desirable. Obviously, my device requires a minimum of operating parts all of which are simple in nature and unlikely to get out of order. The cabinet construction per se lends itself particularly well to the multiple compartment selective mechanism, in that the conduits 26, 28 in addition to constituting a top for the cabinet also provide for the reception of solenoid coils 36 and the various lead wires 52, 54 therefor shielding the same from cold and moisture—in the event the device is employed to vend refrigerated commodities—and in any event further insulating the same electrically and removing such elements from sight. This top construction, as well as all of the other features of the cabinet and of the control instrumentalities, including the extremely compact wiring details, is designed to effect a maximum economy in material as well as increase the expediency of production.

It will be understood that a bottom is provided for the compartments and that suitable provisions are made for the reception of refrigerating structure or material within cabinet 2 if such is desired.

I have illustrated and described my improvements in an embodiment which is very practical. I consider that the employment of a plurality

of selector devices actuatable manually to effect, by the combined setting thereof, a choice of a given compartment to be novel with me in devices of the type under consideration, whether electrically or otherwise controlled or actuated. I have not attempted to illustrate or describe other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

1. In a selective apparatus, a plurality of controlled devices, each including a compartment and a manually actuated closure swingably associated therewith, and means for selectively controlling said devices, comprising a first set of parallel leads, a second set of parallel leads, means for electrically connecting each of the leads of said first set with each of the leads of the second set, comprising a plurality of electrically actuatable controlled mechanisms each provided with a normally closed switch in series therewith and having manually settable means coacting with the switch to maintain the same in normally closed position, individual latch members respectively actuated by said mechanisms engaging and maintaining said closures in closing relation to said compartment, the closures being adapted to be opened when said members are disengaged therefrom, means including manually settable selector means for completing a controlling circuit through a given selected mechanism, a source of E. M. F. for energizing said circuit, the selected mechanism being energized by current flowing in said circuit when the corresponding switch is closed to actuate and disengage the respective latch members from the closure, the current flowing through a shunt circuit including other mechanisms than the selected one and being thereby reduced to a value insufficient to actuate any of the mechanisms when the switch corresponding to the selected

mechanism is open, means including individual means on said closures associated with said normally closed switches automatically actuatable upon shifting of the closure relative to the compartment for opening said switches to prevent flow of further current through the mechanism corresponding thereto, and means for maintaining the thus opened switch in open circuit breaking condition until the same is manually reset to closed position.

2. In a selective machine of the type described, a plurality of electrically controlled devices each including an article receiving compartment, a closure therefor shiftably associated therewith to control access thereto, an electrically actuated control mechanism, means normally engaging the closure to maintain the same in closing relation to the compartment, said mechanism when energized actuating said last named means to disengage the same from closure whereby the latter is adapted to be opened, a normally closed switch member in circuit with and controlling the flow of current through said mechanism, means actuatable by the opening of said closure to open said switch, means to maintain the thus opened switch in open position until the same is manually reset to closed position, two sets of parallel partial circuits, the circuits of each of which sets are electrically connected respectively to those of the other through said mechanisms, each of a given number of the partial circuits of one set being so connected to each of a given number of those of the other, a selector member for each set, said selector members each being engageable selectively with each partial circuit of the corresponding set to combinatively select a given connection device for actuation, and means for electrically connecting and energizing said selector members to electrically unite said partial circuits and constitute the complete actuating circuit for said selected mechanism when the switch member thereof is closed.

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