

Nov. 2, 1965

G. V. HAEFELE ETAL

3,215,241

BATTERY TESTING AND DISPENSING APPARATUS

Filed Oct. 30, 1964

3 Sheets-Sheet 1

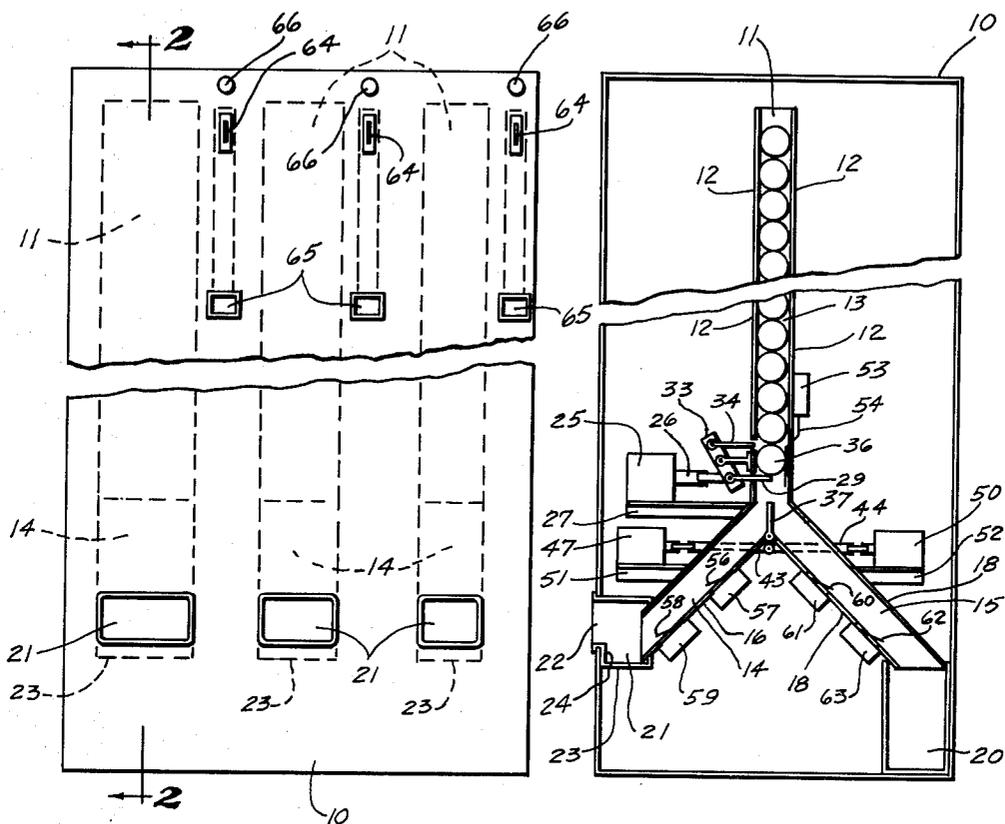


Fig. 1

Fig. 2

INVENTORS  
GAYLORD V. HAEFELE  
WILLIAM M. SKELTON  
BY

Alfred R. Fuchs  
ATTORNEY

Nov. 2, 1965

G. V. HAEFELE ETAL

3,215,241

BATTERY TESTING AND DISPENSING APPARATUS

Filed Oct. 30, 1964

3 Sheets-Sheet 2

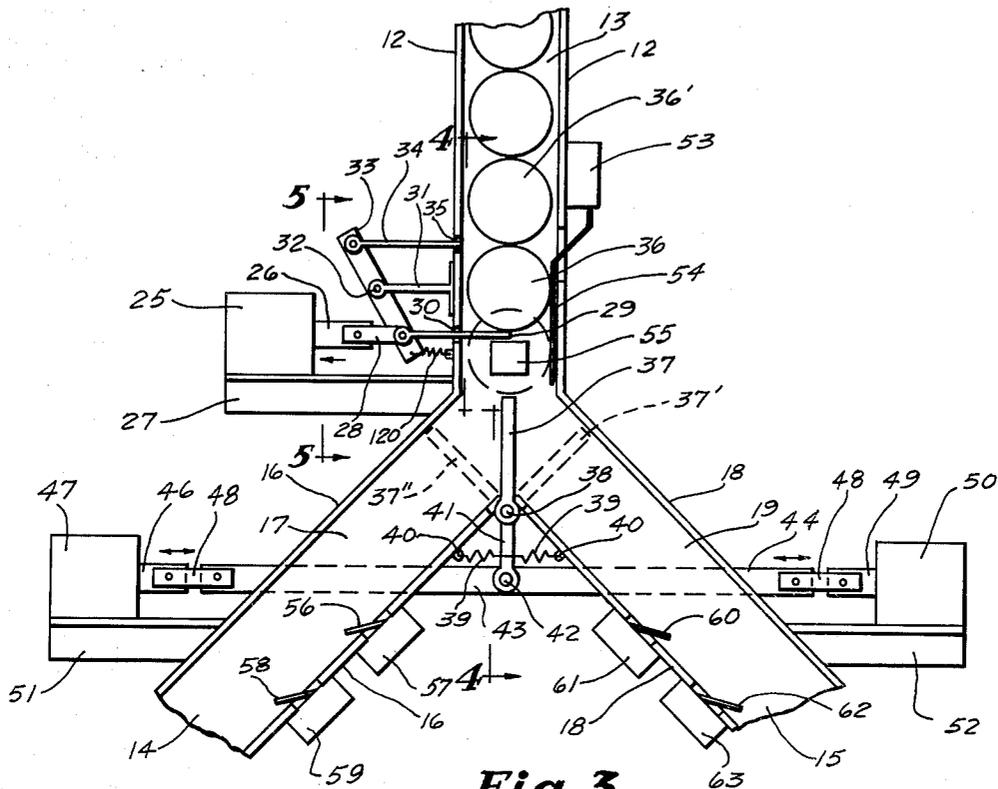


Fig. 3

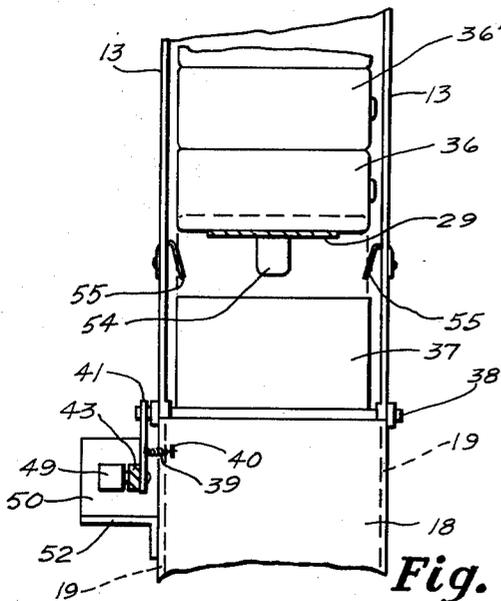


Fig. 4

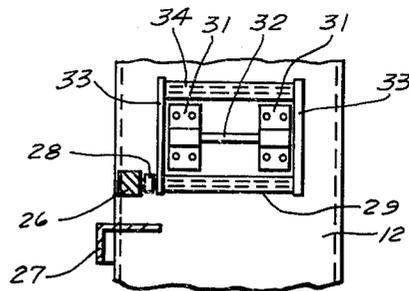


Fig. 5

INVENTORS  
GAYLORD V. HAEFELE  
WILLIAM M. SKELTON

BY

*Alfred R. Fuchs*

ATTORNEY

Nov. 2, 1965

G. V. HAEFELE ETAL

3,215,241

BATTERY TESTING AND DISPENSING APPARATUS

Filed Oct. 30, 1964

3 Sheets-Sheet 3

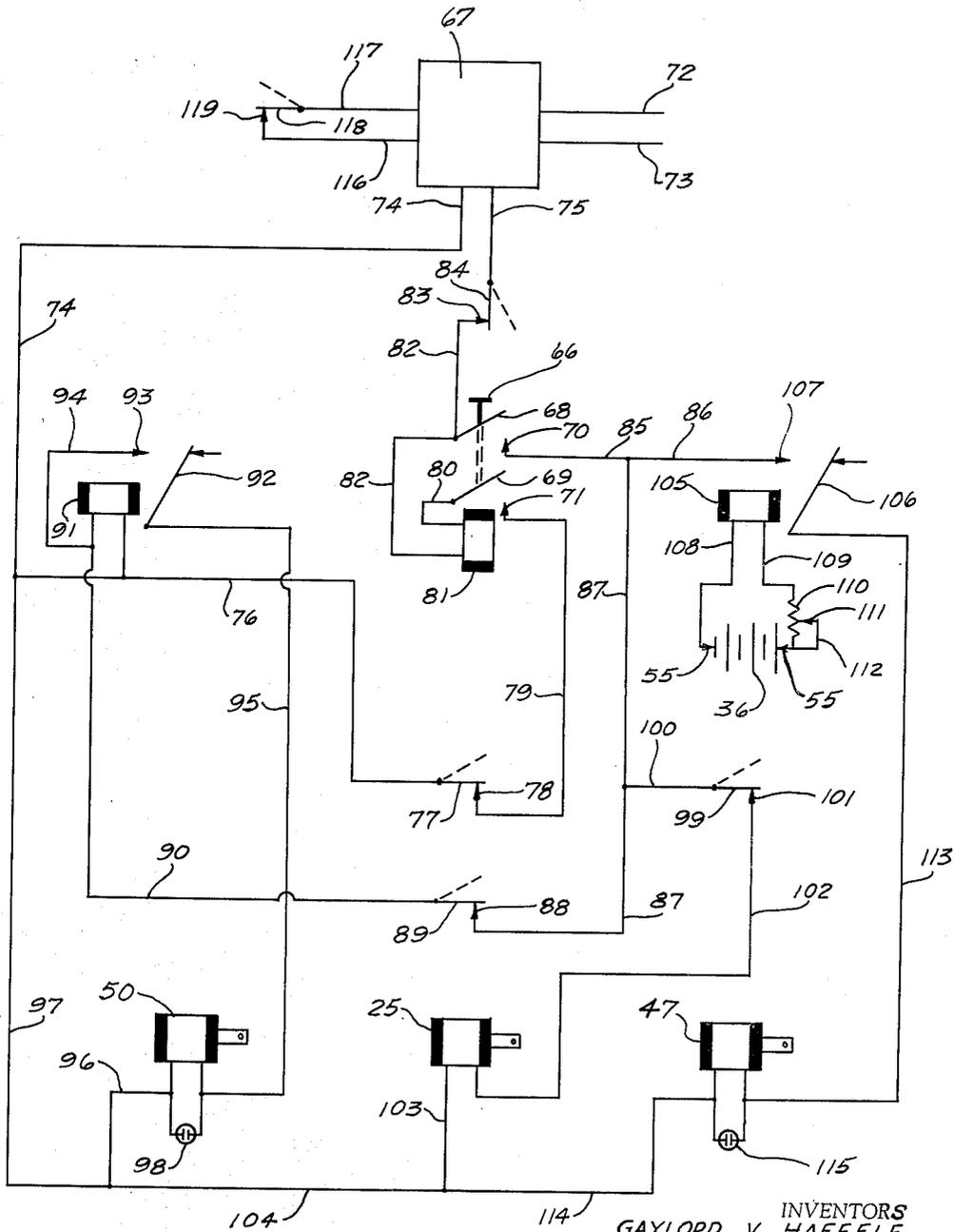


Fig. 6

INVENTORS  
GAYLORD V. HAEFELE  
WILLIAM M. SKELTON  
BY

*Alfred R. Fuchs*  
ATTORNEY

1

2

3,215,241

**BATTERY TESTING AND DISPENSING APPARATUS**

Gaylord V. Haefele, 205 E. 89th St., and William M. Skelton, 100 W. Pocahontas Lane, both of Kansas City, Mo.

Filed Oct. 30, 1964, Ser. No. 407,725  
17 Claims. (Cl. 194—10)

Our invention relates to dispensing devices, and more particularly to a battery testing and dispensing apparatus.

Our invention has for its purpose the dispensing of electrical devices that have an output of a predetermined value, or of a higher value than said predetermined value, comprising means for separating the electrical devices that have an output below a predetermined minimum from the devices that have an output of at least that minimum to travel in separate paths so that the electrical devices, that have an output of at least the minimum, are discharged from the apparatus so as to be available to the purchaser thereof and the devices that do not have the minimum output above referred to are retained in a suitable receptacle in the apparatus for receiving rejected devices, to thus assure the vending of only those electrical devices that come up to a predetermined standard.

It is a further purpose of our invention to provide means for separating such electrical devices to travel the separate paths above referred to, which separating means constitutes means for testing the electrical apparatus to determine whether it has the desired output, comprising a relay that is responsive to the desired output to actuate the separating means to direct the electrical apparatus into the path that leads to the discharge of the electrical apparatus from the dispensing apparatus, and which is provided with a time responsive relay which acts on the separating apparatus to direct the electrical apparatus that does not have the desired output into a path leading to the receptacle within the dispensing apparatus after the lapse of the time interval provided for by said time responsive apparatus, if the first mentioned relay has not acted to operate the separating means to direct the electrical apparatus into the discharge path.

Our improved apparatus is particularly adapted for automatically testing and dispensing dry cell electric batteries, it being adapted to dispense batteries of all sizes and shapes to the general public through vending apparatus that is coin controlled, which coin controlled vending apparatus includes a standard coin controlled switching device, the details of structure of which are not a part of said invention. Said coin controlled devices are so constructed that in case the output circuit thereof is broken, the coin fed into the same will be returned to the operator, and are also provided with a coin holding circuit that holds the coin until the circuit is broken, whereupon the coin is deposited in a suitable retaining receptacle in the coin controlled device. Commercially available coin controlled devices may take one or more coins and may provide change for coins in connection with the operation thereof, dependent upon the type of coin controlled device that is used.

More specifically our invention comprises means for dispensing electric batteries, which is provided with an up-right passage for the storage of the batteries that are to be tested and dispensed, if the output thereof is satisfactory, from which a pair of branch passages extend obliquely downwardly in opposite directions, which up-right passage is provided with suitable means for delivering said electric batteries one at a time to a position between a pair of contacts, which engage the opposite terminals of the battery, said battery being supported in such position on a gate, which is movable between a

middle battery supporting position and a position on either side of said battery supporting position for blocking either one of the two obliquely downwardly extending passages, and a relay responsive to a predetermined voltage of said battery, the winding of which is connected with the battery upon engagement of the battery terminals with said contact, which relay moves the gate into position to block one of said passages and which apparatus is provided not only with coin controlled switching means closed by coins fed into the same, but by manually operated switching means in series with said coin controlled switching means, which controls the circuit to a time responsive relay so as to initiate operation thereof, said time responsive relay being adapted to move the gate to the position in which it blocks the other passage.

It is a further purpose of our invention to provide an apparatus of the above referred to character in which the feeding of the electric batteries into position supported on the gate between the above referred to contacts is controlled by a pair of vertically spaced stop members mounted in said upright passage so that each is adapted to move between a position in which it blocks the upright passage and a position in which it does not block said upright passage, said stop members being connected together so as to simultaneously move in opposite directions, and to provide means comprising a solenoid energized upon closing of the manually operated switch above referred to, to move the lower stop member out of blocking position and the upper stop member into blocking position, and to further provide said stop members with means for returning the lower stop member to blocking position and the upper stop member out of blocking position upon de-energization of said solenoid.

The manually operated switching means is of such a character that it would only make instantaneous contact unless it were provided with holding means, and our improved apparatus is provided with means for holding said manually operated switch closed, including a switch biased toward circuit closing position, which is provided with operating means mounted in the obliquely downwardly extending passage, that leads to the discharge of the battery from the dispensing apparatus, so that said battery being discharged will operate said means to open said switch and break the holding circuit, which puts the apparatus out of operation until the coin controlled switch is again operated and the manually operated switch is also operated. Said passage is also provided with similar switching means biased toward closing position, which is provided with operating means engaged by a battery traveling down said passage to open the same, that is in a holding circuit for the coin in the coin controlled apparatus that, upon being broken, deposits the coin or coins required into a suitable coin receptacle within the coin controlled apparatus.

It is a further purpose of our invention to provide means for halting the operation of the time responsive relay for an instant and break the operating circuit for the stop actuating solenoid when a battery that does not have the desired output has been tested between the above referred to terminals and has passed into the passage that leads to a receptacle for the batteries that are unsuitable for vending, so that another battery will be fed into position to be tested between the pair of contacts without affecting the main circuit operated by the manually operated and coin controlled switches, and which will cause a new start of the time responsive relay so as to initiate a new testing interval, the batteries so fed then passing either out of the apparatus to be available to a purchaser or into the receptacle for the batteries not coming up to standard, by the further operation of the apparatus by the voltage responsive relay or the time re-

sponsive relay, this continuing until a battery of an output suitable for vending is discharged from the apparatus.

It is another purpose of our invention to provide means for preventing operation of the apparatus and to provide for return of a coin or coins fed into the coin controlled apparatus when there are no more batteries available for vending in the apparatus, said means comprising switching means biased toward an open circuit position held closed by a battery that is adjacent the upper of the stop members in the upright passage.

Other objects and advantages of our invention will appear as the description of the drawings proceeds. We desire to have it understood, however, that we do not intend to limit ourselves to the particular details shown or described, except as defined by the claims.

In the drawings:

FIG. 1 is a front elevation partly broken away of our improved battery testing and dispensing apparatus.

FIG. 2 is a fragmentary section partly broken away, taken on the line 2—2 of FIG. 1.

FIG. 3 is an enlarged fragmentary vertical sectional view through portions of the upright and obliquely downwardly extending passages and associated parts.

FIG. 4 is a section taken on the line 4—4 of FIG. 3.

FIG. 5 is a fragmentary section taken on the line 5—5 of FIG. 3, and

FIG. 6 is a diagram of the circuit connections involved in our improved battery testing and dispensing apparatus.

Referring in detail to the drawings, in FIG. 1 is shown a housing 10, which is provided with vertical passages 11 having the opposed walls 12 and 13, the passages being shown as being of different sizes to receive dry cell batteries of different sizes. Extending from the passages 11 are downwardly obliquely extending passages 14 and 15 (see FIGS. 2 and 3) the passages 14 being provided with opposed walls 16 and 17 and the passages 15 being provided with opposed walls 18 and 19. Each of the passages 15 extends to a receptacle 20 for discarded batteries, and each of the passages 14 extends to a receptacle 21, which is provided with an opening 22 so that a battery discharging into the receptacle 21 is available to the person operating the dispensing apparatus. Each of said receptacles 21 is provided with a depressed bottom wall 23 so that a generally cylindrical battery rolling down the passage 14 will be stopped by the vertical wall 24 from rolling out of the opening 22.

Mounted adjacent the upright passage 11 is a solenoid 25, which is provided with a movable core 26, said solenoid being mounted on a suitable bracket 27 provided on one of the walls 12. It is of course, to be understood that there is one of said solenoids for each of the passages 11. The core 26 is connected by means of a link 28 with a stop member 29 slidably mounted in an opening 30 in one of the walls 12 of each of the passages 11, said link being pivotally connected both with the core 26 and with said stop member 29 to prevent binding of the parts. The wall 12 that is provided with the opening 30 also has brackets 31 extending therefrom, which mount a pivot 32 for levers 33 that are pivotally connected with the stop member 29 and with a stop member 34 adjacent the opposite end thereof, said stop member 34 being slidably through an opening 35 in the wall 12. An expansion coil spring 120 is provided, connected with the lower extremity of the lever 33 for holding the parts in the position shown in FIGS. 3 and 4 with the lower stop member 29 in position to block the passage 11 and the upper stop member 34 in a position in which it will not block the passage 11, the spacing of the stop members 29 and 34 being so that a battery 36 can not be positioned between the two stop members, but so that the upper stop member 34 will project sufficiently into the passage 11 to hold the next higher battery 36' from moving past the stop member 34 when the battery 36 drops down because of removal of the stop member 29. Such movement of the stop member 29 and the stop member 34 will take place when the solenoid 25 is energized.

Mounted pivotally on a bracket provided between the passages 14 and 15 is a gate 37, the gate being shown in full line position extending upwardly from the shaft 38, which is its normal position, said gate being fixed to said shaft and held in said position by a pair of coil extension springs 39 extending between the ears 40 on the walls 16 and 18 and a crank 41 fixed on the shaft 38. When in such position the gate 37 is adapted to support the battery 36 after it is moved down from the full line position thereof in FIG. 3 to the dotted line position thereof, this taking place when the stop member 29 has been withdrawn by energization of the solenoid 25. At the same time the stop member 34 will have moved into such position that it will block the passage 11 and not permit the battery 36' to move down into the position previously occupied by the battery 36.

Pivotally connected by means of the pivot member 42 with the crank are the bars 43 and 44. The bar 43 is connected with the core 46 of a solenoid 47 by a link 48 pivoted to said bar 43 and core 46 and the bar 44 is connected with the core 49 of the solenoid 50 by a link 48, the solenoids 47 and 50 being mounted, respectively, on brackets 51 and 52 provided on the walls 16 and 18 of the passages 14 and 15.

It will be obvious that if the solenoid 47 is energized the gate 37 will swing about the axis of the shaft 38 to the dotted line position indicated by the numeral 37', and when the solenoid 50 is energized the gate 37 will move to the position indicated by the numeral 37''. Thus upon energization of the solenoid 47, the passage 14 will be opened and the passage 15 will be blocked. Upon energization of the solenoid 50 the passage 14 will be blocked and the passage 15 will be opened. As soon as either the solenoid 47 or the solenoid 50 is de-energized, the springs 39 will return the gate 37 to the full line position thereof shown in FIGS. 2 and 3.

Mounted on one of the walls 12 of the passage 11 is a switch 53 that is normally biased toward open circuit position, which is provided with an operating member 54 extending into the passage 11, said operating member, when engaged by a battery in said passage holding the switch 53 is closed circuit condition. Also mounted in the passage 11 in a position to be engaged by the opposite terminals in the opposite ends of the battery 36, when in position on the gate 37, are contact members 55, the battery 36 bridging said contacts 55 when in said position. Mounted in the passage 14 in a position to be engaged by a battery traveling down said passage is an operating member 56 of a micro-switch 57, which switch is biased toward closed position, the switch 57 being opened by engagement with the operating member 56. Downwardly spaced from the operating member 56 in the passage 14 is an operating member 58 of a micro-switch 59, which switch 59 is normally biased toward closed circuit position, the operating member 58, when engaged by a battery traveling down the passage 14, opening said switch 59. Mounted in the passage 15 is an operating member 60 of a micro-switch 61 which is biased toward circuit closing position, the operating member 60, when engaged by a battery traveling down the passage 15, opens the switch 61. Mounted in the passage 15 in downwardly spaced relation to the operating member 60 is an operating member 62 for a micro-switch 63, which is biased toward closed circuit position and is opened by the operating member 62 upon engagement by a battery traveling down the passage 15 of said operating member. Associated with each of the passages 11 is a coin slot 64, a coin return opening 65 and a push button 66 for a manually operated switch to be described below.

Referring now to FIG. 6, the coin slot 64 leads to a coin controlled switching device 67 and the push button switch 66 is adapted to move a pair of movable contacts 68 and 69 of a manually operated switch, which are biased toward open circuit position, into closed circuit position into engagement with the stationary contacts 70 and 71, respectively. The line wires 72 and 73 lead from

a suitable source of electric current to the coin controlled switching device 67 and the conductors 74 and 75 lead from said coin controlled switching device 67. From the conductor 74 extends a branch conductor 76, which is connected with the movable contact 77 of the switch 59, said switch having a stationary contact 78 from which the conductor 79 extends to the stationary contact 71. A conductor 80 extends from the movable contact member 69 to one end of the winding 81 of a coil for holding the switching members 68 and 69 in closed circuit position, a conductor 82 extending from the other end of said winding 81 to the stationary contact 83 of the switch 53, which is provided with the movable contact 84. It will accordingly be seen that upon manual operation of the switch having the movable contacts 68 and 69 by means of the push button 66 the circuit will be completed to the coil 81 to energize the same to hold the movable contacts 68 and 69 into engagement with the stationary contacts 70 and 71, said circuit including the winding 81, thus being a holding circuit for the manually operated switch.

Extending from the stationary contact 70 is a conductor 85 from which extend the branches 86 and 87. The branch 87 extends to the stationary contact 88 of the switch 61, which has a movable contact 89 that normally engages the contact 88, which movable contact 89 is connected by means of a conductor 90 with the winding 91 of a time responsive relay, which is provided with an armature provided with a movable contact 92 that is adapted to engage with the stationary contact 93 upon energization of said winding 91, after the time period, for which said time responsive relay is set, has elapsed.

Extending from the stationary contact 93 is a conductor 94, which is connected with the conductor 90, and a conductor 95 extends from the movable contact 92 to one end of the winding of the solenoid 50, the other end of said winding of the solenoid 50 being connected by means of a conductor 96 with a conductor 97, which in turn is connected with the conductor 74. It will accordingly be seen that when the winding 91 is energized to move the contact member 92 in engagement with the contact member 93 the solenoid 50 will be energized. Suitable indicating means, such as the pilot light 98, is provided connected in parallel with the winding of the solenoid 50 to indicate that said winding is being energized.

The conductor 87 is connected with the movable contact 99 of the switch 63 by means of the conductor 100, said switch having a stationary contact 101, which is connected by means of a conductor 102 with one end of the winding of the solenoid 25, the other end of the winding of the solenoid 25 having a conductor 103 extending therefrom, which is connected by means of a conductor 104 with the conductor 97. It will accordingly be noted that when the coin operated switch 67 is closed, the manually operated switch and the switch 53 having the movable contact 84 is closed, the switch having contact 99 being normally in closed position, the solenoid 25 will be energized, the circuit being from the conductor 74 through the conductors 97, 104 and 103 to one terminal of the winding of the solenoid 25 from the conductor 102 through the movable contact 99, conductor 100, conductors 87 and 85, movable contact 68, conductor 82, movable contact 84 and conductor 75, to the coin operated switch.

The battery 36, when in position to have its terminals engage with the contacts 55, will supply electrical energy to the winding 105 of a relay having an armature having a movable contact member 106, which is adapted to engage a stationary contact 107 to which the conductor 86 extends. The relay having the winding 105 will only operate to move the movable contact 106 into engagement with the stationary contact 107 when the output of the battery 36 is sufficient to cause said winding to pull the armature of the relay into position to close the cir-

cuit between the contacts 106 and 107. A conductor 108 extends to one end of the winding 105 of said relay and a conductor 109 extends to one end of a resistance 110, which is interposed between the other end of said winding of the other contact member 55. A movable contact 111 is adjustable along the resistance 110 to determine the resistance of the circuit that includes the winding 105 in order to provide for adjustment of the relay to the desired minimum output of the battery, a conductor 112 extending from the contact 55 to said movable contact 111.

When a battery is passed into position between the contact members 55 that has sufficient output to sufficiently energize the winding 105 of the relay having the movable contact member 106 to move the contact member 106 into engagement with the stationary contact member 107 the winding of the solenoid 47 will be energized, the movable contact 106 being connected with one end of the winding of said solenoid 47 by means of a conductor 113 extending from the movable contact member 106, the other end of said winding being connected with the conductor 104 by means of a conductor 114 and an indicating means, such as the pilot light 115 is connected in parallel with the solenoid 47, being provided for indicating that the solenoid 47 is being energized. The coin controlled switching device 67 is provided with a coin holding circuit having the conductors 116 and 117, between which the switch 57 is interposed, said switch having a movable contact 118, which is normally in engagement with the stationary contact 119, the coin operated device operating so as to release the coin and deposit it into a suitable coin receptacle upon breaking of the circuit that includes the conductors 116 and 117. The coin controlled switching apparatus is not a part of the applicant's invention, being a commercially available device.

In operation, if the switch 53 is held closed by a battery so that the movable contact 84 engages with the stationary contact 83, and the manually operated switch is closed by means of the push button 56 and held in such position until the coin or coins for operating the coin operated switch 67 have been deposited, the solenoid 25 will be energized and at the same time the holding coil 87, and the timing means of the time responsive relay having the winding 91 will be set in operation. Energization of the solenoid 25 will move the stop member 29 out of holding position to permit the battery 36 to drop down beneath the contacts 55. If the battery 36 is a good battery, that is, has an output either at or above predetermined minimum, the movable switching member 106 will be moved to circuit closing position, which will result in energization of the solenoid 47 and movement of the gate 37 to the position 37'. The battery will then travel down the passage 14, first engaging the switch operating member 56 and then the switch operating member 58. Engagement of the switch operating member 56 by the battery will open the switch 57 having the movable contact member 118, thus breaking the coin holding circuit and depositing the coin in the receptacle provided therefor. When the switch operating member 58 is operated by the battery the switch 59 will be opened, which will cause the contact 77 to leave the stationary contact 78, breaking the holding circuit in which the holding coil 81 is located and the manually operated switch having the operating member 66 will then return to open circuit condition, terminating the operation of the apparatus.

During the time the battery 36 was moved into position in engagement with the contact 55 and operated the relay having the winding 105, the timing means of the time controlled relay having the winding 91 was set into operation. Upon breaking of the circuit that included the movable contact 68 and the stationary contact 70 the operation of said timing means was halted and returned to starting condition.

Should the battery 36 have an output below the re-

quired minimum to operate the relay having the winding 105 the timing means of the relay having the winding 91 will operate until the winding 91 is energized and a circuit is closed by movement of the movable contact 92 into engagement with the stationary contact 93, said circuit including the solenoid 50. Energization of the solenoid 50 will move the gate to the position 37" and the bad battery will be discharged into the passage 15, which will cause the operating members 60 and 62 of the switches 61 and 63 to be operated successively. This will cause the contact member 89 of the switch 61 to be moved to open circuit position first, which will terminate the operation of the timing means of the time responsive relay having the winding 91. However, as soon as the battery has passed the operating member 60 this circuit will again be closed starting the timing means again. When the operating member 62 is engaged by the battery traveling down the passage 15 the switch 63 having the movable contact member 99 will be opened, which will de-energize the solenoid 25 and cause the stop members 29 and 34 to move to the position shown in FIG. 3, permitting the battery 36' to move down to the position on the stop member 29 that was previously held by the battery 36. The opening of the switch 63 will, however, be only for an instant, after which the solenoid 25 will be re-energized, as the movable contact member 99 will again engage the stationary contact member 101, feeding the battery 36' into position between the contacts 55.

The testing operation above described will then be repeated, and if another bad battery is fed between the contact members 55 the operation of the time responsive relay will cause the battery to be discharged into the passage 15, whereupon the apparatus will be operated to feed another battery into position between the contacts 55, while if the battery 36' is a good battery the relay having the winding 105 will be operated to direct the good battery into the passage 14 and will halt operation of the apparatus, returning the parts to starting position in the manner above described.

The coin controlled switch is of such a character that if the circuit leading therefrom is opened coins will be discharged therefrom through the return slot 65. For this reason it is necessary to hold the push button 66 depressed until the coin operated switch has been able to operate to close the circuit, whereupon the holding coil 81 will hold the operating circuit closed. However, if there are no batteries remaining in the passage 11 the switch 54 having the movable contact 84 will move to open circuit condition and any coins fed into the coin operated member 67 will be discharged from the coin operated switching device into the return passage 65.

What we claim is:

1. An apparatus for dispensing only electrical devices having an output at or above a predetermined value comprising: a container for the devices to be dispensed having an upright passage therein adapted to contain a single upright row of said devices, a pair of branch passages extending downwardly from the bottom end of said upright passage, a gate mounted at the junction of said passages, said gate having a plurality of positions including a position in which said gate is adapted to support one of said devices, a stop member above said gate mounted to move between a position in which said stop member supports the lowermost device in said row and a position in which said lowermost device is released to move into engagement with said gate, electrical means for moving said stop member to releasing position upon being energized, a manually operated switch for closing the circuit to said electrical means, a gate controlling circuit including a pair of contacts adapted to be bridged by said device supported on said gate to supply the output of said device to said controlling circuit, a relay in said controlling circuit responsive to an output at or above said predetermined value, and means energized by said controlling circuit upon response of said relay to said

predetermined output to move said gate out of device supporting position and into a position to block one of said branch passages and open the other branch passage.

2. An apparatus for dispensing electrical devices as claimed in claim 1 which has a circuit for holding said manually operated switch closed, said holding circuit being established upon closing said manually operated switch and including means for breaking said holding circuit to open said manually operated switch upon passage of said device along said other branch passage.

3. An apparatus for dispensing electrical devices as claimed in claim 1 which has time responsive switching means in said controlling circuit and means energized by said controlling circuit upon operation of said time responsive means to move said gate to a position to open said one branch passage and block said other branch passage upon closure of said time responsive switching means.

4. An apparatus for dispensing electrical devices as claimed in claim 1 which has time responsive switching means in said controlling circuit, means energized by said controlling circuit upon operation of said time responsive means to move said gate to a position to open said one branch passage and block said other branch passage upon closure of said time responsive switching means, means for returning said stop member to supporting position upon de-energization of said electrical means and means for breaking the circuit to said electrical means and to said time responsive switching means for an interval upon passage of said device along said one branch passage.

5. An apparatus for dispensing electrical devices as claimed in claim 1 which has a circuit for holding said manually operated switch closed, said holding circuit being established upon closing said manually operated switch and including means for breaking said holding circuit to open said manually operated switch upon passage of said device along said other branch passage, time responsive switching means in said controlling circuit, means energized by said controlling circuit upon operation of said time responsive means to move said gate to a position to open said one branch passage and block said other branch passage upon closure of said time responsive switching means, means for returning said stop member to supporting position upon de-energization of said electrical means and means for breaking the circuit to said electrical means and to said time responsive switching means for an interval upon passage of said device along said one branch passage.

6. An apparatus for dispensing electrical devices as claimed in claim 1 which has a switch in series with said manually operated switch biased toward open circuit position and operating means for holding said last mentioned switch closed mounted in position adjacent the lower end of said upright passage to be engaged by one of said devices to hold said last mentioned switch closed.

7. An apparatus for dispensing only electrical devices having an output at or above a predetermined value comprising: a container for the devices to be dispensed having an upright passage therein adapted to contain a single upright row of said devices, a pair of branch passages extending downwardly from the bottom end of said upright passage, a gate mounted at the junction of said passages, said gate having a plurality of positions including a position in which said gate is adapted to support one of said devices, a pair of vertically spaced stop members above said gate mounted to move into and out of holding position in said upright passage, means connecting said stop members to move in opposite directions, said lower stop member being normally in a holding position in said passage, electrical means for moving said lower stop member out of said holding position, a manually operated switch for closing the circuit to said electrical means, a gate controlling circuit including a pair of con-

facts adapted to be bridged by said device supported on said gate to supply the output of said device to said controlling circuit, a relay in said controlling circuit responsive to an output at or above said predetermined value, and means energized by said controlling circuit upon response of said relay to said predetermined output to move said gate out of device supporting position and into a position to block one of said branch passages and open the other branch passage.

8. An apparatus for dispensing electrical devices as claimed in claim 7 which has a circuit for holding said manually operated switch closed, said holding circuit being established upon closing said manually operated switch and including means for breaking said holding circuit to open said manually operated switch upon passage of said device along said other branch passage.

9. An apparatus for dispensing electrical devices as claimed in claim 7 which has time responsive switching means in said controlling circuit, means energized by said controlling circuit upon operation of said time responsive means to move said gate to a position to open said one branch passage and block said other branch passage upon closure of said time responsive switching means, means for returning said lower stop member to a holding position in said upright passage and moving said upper stop member out of said position upon de-energization of said electrical means and means for breaking the circuit to said electrical means and to said time responsive switching means for an interval upon passage of said device along said one branch passage.

10. An apparatus for dispensing electrical devices as claimed in claim 1 which has coin operated switching means in series with said manually operated switch having a coin holding circuit, a circuit for holding said manually operated switch closed, said holding circuit being established upon closing said manually operated switch and including means for breaking said holding circuit to open said manually operated switch upon passage of said device along said other branch passage, and means for breaking said coin holding circuit to release said coin and open said coin operated switch upon passage of said device along said other branch passage.

11. An apparatus for dispensing electric batteries comprising means for separating said batteries having a voltage output below a predetermined minimum from said batteries having a voltage output of at least said minimum to travel in separate paths comprising a gate movable from a mid position into either a first position to direct one of said batteries into a first path or a second position to direct said batteries into a second path, a solenoid for moving said gate into said first position, means for energizing said solenoid comprising a relay responsive to said minimum voltage controlling the supply of energizing current to said solenoid, a pair of contacts connected with the opposite ends of the winding of said relay, means for feeding said batteries one at a time into position to connect the opposite terminals thereof with said contacts, a solenoid for moving said gate into said second position, means for energizing said last mentioned solenoid comprising a time responsive relay controlling supply of energizing current to said last mentioned solenoid, and a manually operated switch simultaneously initiating operation of said feeding means and said time responsive relay.

12. In an apparatus for dispensing electric batteries as claimed in claim 11, a holding circuit for said manually operated switch, a switch biased toward closed position in said holding circuit mounted to be engaged by a battery traveling along said first path to open the same and break said holding circuit, a switch biased toward closed position controlling supply of operating current to said time controlled relay mounted to be engaged by a battery traveling along said second path to open the same and a switch biased toward closed position controlling operation of said feeding means mounted to be engaged by

said battery traveling along said second path to open the same.

13. In an apparatus for dispensing electric batteries as claimed in claim 11, coin operated switching means in series with said manually operated switch having a coin holding circuit, a switch biased toward closed position in said circuit mounted to be engaged by a battery traveling along said first path to open the same, a holding circuit for said manually operated switch and a switch biased toward closed position in said last mentioned holding circuit mounted to be engaged by a battery traveling along said first path to open the same and to break said last mentioned holding circuit.

14. An apparatus for dispensing electric batteries comprising walls defining an upright passage and a pair of passages extending obliquely downwardly in opposite directions from the bottom end of said upright passage, a pair of vertically spaced stop members in said upright passage each adapted to move between a position in which it blocks said upright passage and a position in which it does not block said upright passage, means connecting said stop members to simultaneously move the same in opposite directions, a gate mounted at the junction of said passage to swing about a bottom pivot, yielding means for holding said gate in an upright position with its upper end in downwardly spaced relation to the lower of said stop members, yielding means for holding said lower stop member in passage blocking position and said upper stop member out of passage blocking position, a solenoid for moving said lower stop member out of blocking position, a manually operated switch for closing the circuit to said solenoid, a battery released by said lower stop member being deposited on the upper end of said gate to be supported thereby, a gate controlling circuit including a pair of contacts adapted to be engaged by the opposite terminals of a battery while supported on said gate and a relay responsive to a predetermined voltage having the opposite ends of its winding connected with said contacts, and a solenoid energized by said controlling circuit upon operation of said relay to move said gate from said upright position into a position to block one of said obliquely downwardly extending passages.

15. In an apparatus for dispensing electric batteries as claimed in claim 14, a circuit for holding said manually operated switch closed including a switch biased toward closed circuit position, said holding circuit being established upon closing said manually operated switch, and operating means for opening said switch biased toward closed position mounted in said other obliquely downwardly extending passage to be engaged by a battery traveling along said last mentioned passage.

16. In an apparatus for dispensing electric batteries as claimed in claim 14, a circuit for holding said manually operated switch closed including a switch biased toward closed circuit position, said holding circuit being established upon closing said manually operated switch, and operating means for opening said switch biased toward closed position mounted in said other obliquely downwardly extending passage to be engaged by a battery traveling along said last mentioned passage, a coin operated switch in series with said manually operated switch, said coin operated switch having a coin holding circuit, a switch biased toward circuit closing position in said coin holding circuit and operating means for opening said last mentioned switch mounted in said other obliquely downwardly extending passage to be engaged by a battery traveling along said last mentioned passage.

17. In an apparatus for dispensing electric batteries as claimed in claim 14, a circuit for holding said manually operated switch closed including a switch biased toward closed circuit position, said holding circuit being established upon closing said manually operated switch, and operating means for opening said switch biased toward closed position mounted in said other obliquely downwardly extending passage to be engaged by a bat-

11

tery traveling along said last mentioned passage, a time responsive relay in said controlling circuit and a solenoid energized by operation of said time responsive relay to move said gate from said upright position into position to block the other of said obliquely downwardly extending passages, a switch biased toward circuit closing position in the operating circuit of said stop actuating solenoid, a switch in series with said time responsive relay, and operating means for opening both said last mentioned

12

switches mounted in a position to be engaged by a battery traveling down said one passage.

## References Cited by the Examiner

## UNITED STATES PATENTS

1,512,982 10/24 Graves.  
2,119,063 5/38 Wagner ----- 221--2 X

SAMUEL F. COLEMAN, *Primary Examiner.*