July 12, 1966 H. GREENWALD ETAL 3,260,337

COIN CHANGING MECHANISM

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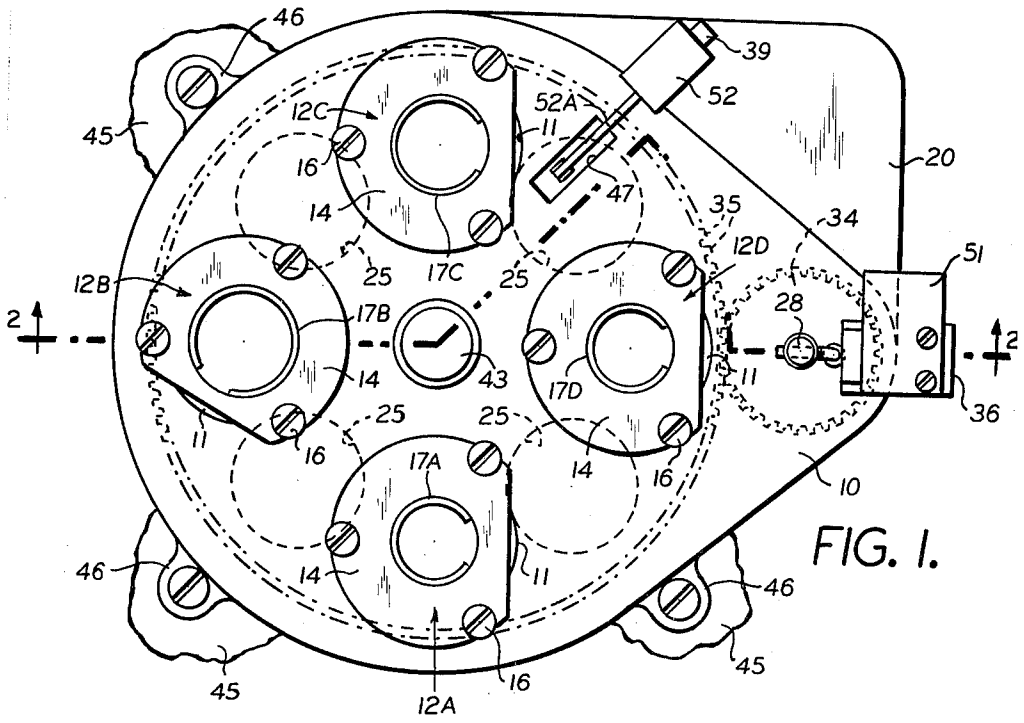

FIG. 1.

FIG. 2.

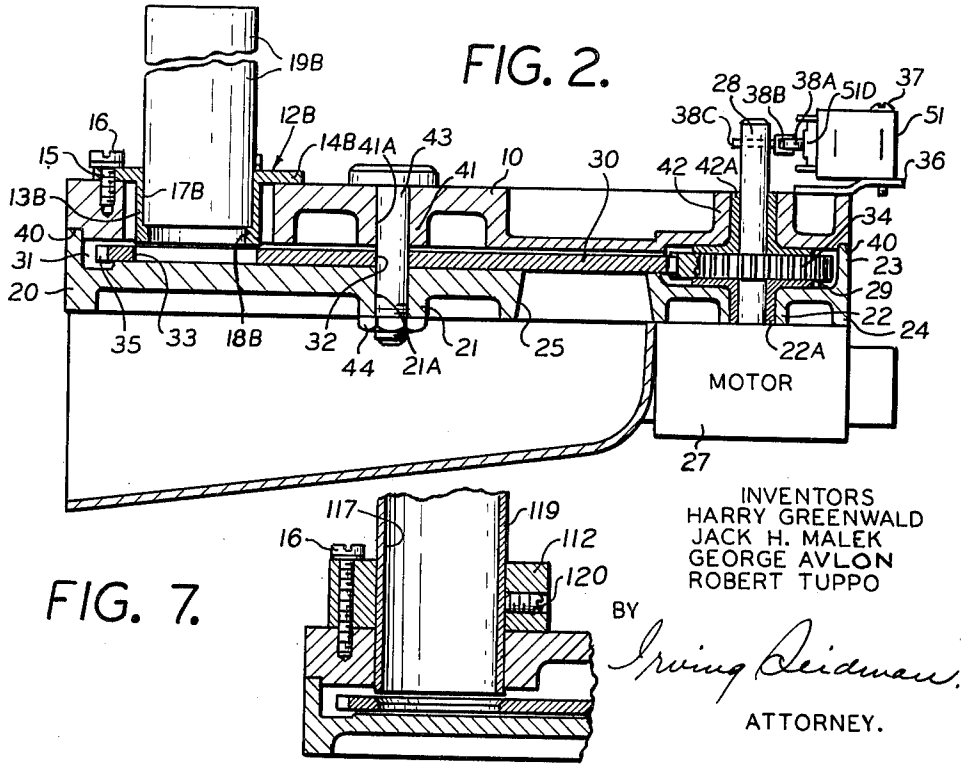

FIG. 7.

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FIG. 3.

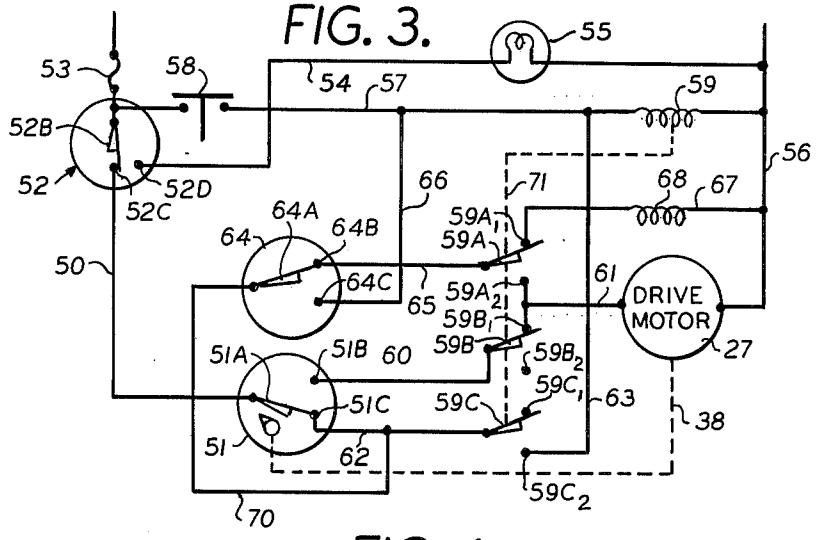
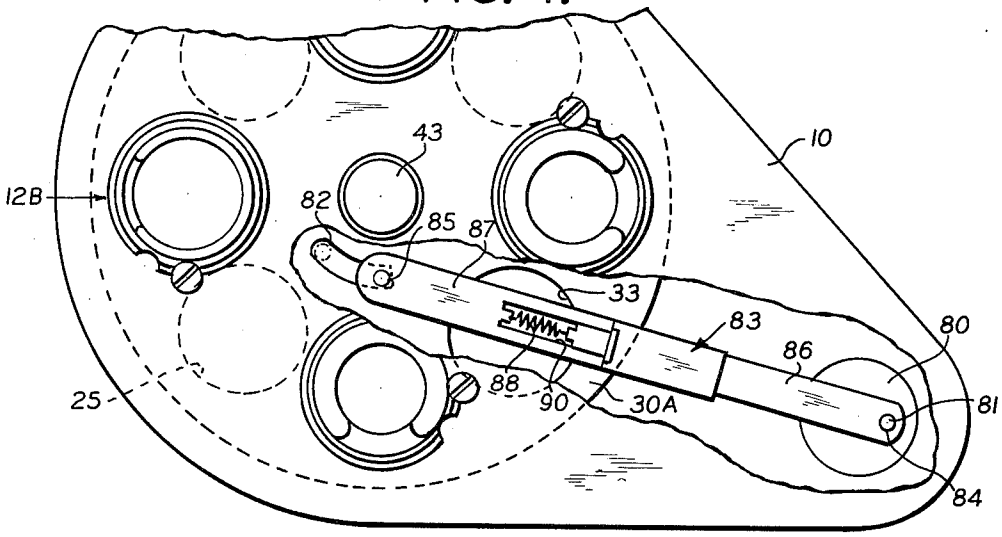


FIG. 4.



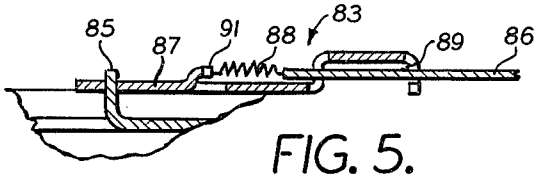
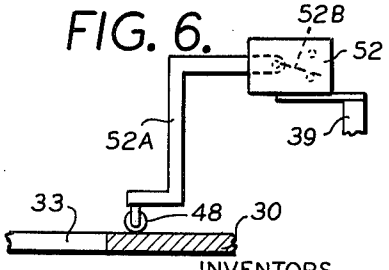


FIG. 5.

FIG. 6.



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COIN CHANGING MECHANISM

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7 Claims. (Cl. 194—10)

This invention relates generally to coin changing mechanisms and more particularly to coin changing mechanisms which are primarily adapted for use with an associated vending machine or similar device.

It is an object of the present invention to provide a coin changing mechanism which will dispense a preselected amount of change when actuated and which is easily adapted to dispense different numbers and varieties of coins to meet specified requirements.

It is another object of the present invention to provide a coin changing mechanism which is economic to manufacture and reliable in operation.

Accordingly, the coin changing mechanism of the present invention comprises a bottom and a top plate; the top plate is provided with coin receiving bores in which coin tubes for stacking preselected denominations of coins are received, and the bottom plate is provided with a like number of coin dispensing bores through which the coins to be dispensed pass. The axes of the coin receiving and coin dispensing bores lie on circles having the same radius and axis but the axes of the respective coin dispensing bores are off-set from the axes of the coin receiving bores. The coin tubes are removable and interchangeable and, as a result, a greater interchangeability of settings for the coin dispensing operation is possible than heretofore. A coin dispensing disc is rotatably mounted between the top and bottom plates and is similarly provided with a like plurality of bores as the top and bottom plates. The bores in the dispensing disc have a diameter which is larger than the diameter of the largest coin to be dispensed. Means are provided (which may be actuated by the insertion of a coin) for moving the dispensing disc from a first position wherein the bores in the dispensing disc are aligned with the coin receiving bores to receive coins from respective coin tubes, to a second position wherein each bore in the dispensing disc is aligned with a respective coin dispensing bore to simultaneously dispense the coins carried by the dispensing disc. The cycle of operation is completed when the dispensing disc is returned to the first position. In the present invention the means for rotating the disc may either comprise means for intermittently rotating the disc in one direction or means for oscillating the disc through a predetermined arc.

It is a feature of the present invention to provide a coin changing mechanism wherein different settings of coins for dispensing purposes may be easily accomplished.

Another feature of the present invention is the provision of a common coin dispensing disc for all coins.

It is essential, in coin dispensing mechanisms, to make the mechanism inoperative and to so notify the purchaser (if the mechanism is utilized in a vending machine, for example) if the mechanism cannot dispense the required amount of coins as when a coin tube is empty. It is also of utmost importance to eliminate any possibility of the mechanism "jackpotting" (i.e., delivering more than the preselected amount of coins).

It is therefore a further object of the present invention to provide a coin changing mechanism which automatically becomes inoperable when a coin tube is empty and which can only be actuated for one cycle of operation at any one time.

Thus, rotation of the dispensing disc is effected by a motor; the energizing circuit of the motor includes an empty sensing switch which opens when a coin tube is exhausted to prevent operation of the mechanism and which illuminates a coin empty indicator. The energizing circuit further includes a solenoid or relay actuated switch; however, the holding circuit for the solenoid per se, which closes upon insertion of a coin, is adapted to be broken by the motor through a positive mechanical linkage. Hence, after one cycle of operation, the motor de-energizes the solenoid which, in turn, releases the solenoid actuated switch and thereby de-energizes the motor to insure that the cycle of operation of the mechanism will not be repeated until another coin is inserted to actuate the mechanism.

The above and other objects and features of the present invention will become apparent upon consideration of the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a top plan view of a first embodiment of the coin changing mechanism of the present invention, with parts broken away;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1;

FIG. 3 is a partial schematic circuit diagram of the electrical elements of the coin changing mechanism shown in FIGS. 1 and 2;

FIG. 4 is a top plan view, with parts broken away, of a second embodiment of the coin changing mechanism of the present invention;

FIG. 5 is a detailed sectional view of a portion of the oscillating linkage shown in FIG. 4;

FIG. 6 is a detailed view, with parts broken away of the empty sensing switch shown in FIG. 1; and

FIG. 7 is a vertical section view, with parts broken away, showing the use of an alternative arrangement for mounting the coin tubes shown in FIG. 2.

It is to be understood that the like numbers in the various figures indicate identical elements. For ease of reference, the left portion of the mechanism shown in FIGS. 1 and 2 will be denoted the front of the device while the opposite end will be denoted the rear.

A first embodiment of the coin changing mechanism of the present invention is shown in FIGS. 1 and 2 and comprises a top plate **10**, which supports the upstanding coin stacking tubes **19**, a coin dispensing disc **30** and a bottom or base plate **20**.

Bottom plate **20** is provided with a central hub **21** and a hub **22** adjacent the rear of plate **20**. Hub **21** is provided with a bore **21A** and hub **22** is provided with a bore **22A**. The integral flanges **23** and **24** respectively project perpendicularly upwardly and downwardly from the peripheral edge of plate **20**. Plate **20** is further provided with a plurality of circumferentially, equally spaced coin dispensing bores **25** which extend therethrough. The diameter of bores **25** are equal and are greater than the diameter of the largest coin to be dispensed; the axis of each bore **25** lies on a circle having an axis coaxial with the axis of bore **21A**. As shown in FIG. 2, the walls of each bore **25** taper outwardly downwardly to facilitate passage of the coins therethrough. A coin chute **26** is connected to the bottom of plate **20** by any conventional means (not shown) and tapers downwardly frontwardly to cause coins passing through bores **25** to be channeled to the front of the mechanism.

A motor **27**, of any conventional type, is connected to the bottom rear of plate **20** by any conventional means (not shown) and has a rotatable output shaft **28** which projects upwardly through bore **22A**. The top of plate **20** is provided with a circular recess **29** concentric with bore **22A** for the reasons noted hereinbelow.

Top plate **10** is provided with a shoulder **40** about the bottom peripheral edge thereof which is sized and positioned to receive flange **23** in abutment so plate **10** rests upon plate **20** adjacent to the peripheral edges only and a recess **31** is formed between the plates, as noted below. Plate **10** is provided with a central hub **41**, having a bore **41A** therethrough, and a hub **42**, having a bore **42A** therethrough. The bores **41A** and **42A** are respectively aligned with bores **21A** and **22A**. A bolt **43** extends through bores **41A** and **21A** and has has a nut threaded on its end in abutment with plate **20** to secure plates **10** and **20** together. Shaft **28** extends upwardly through bore **42A**. Additionally, plate **20** is provided with ears **45** which project from the side walls and plate **10** is provided with protruding ears **46**. Ears **45** and **46** have threaded holes therein which threadedly receive screws **48** to further secure the top and bottom plates together.

As noted above, top plate **20** supports coin tubes **19**. Thus, a plurality of circumferentially equally spaced coin receiving bores **11**, equal in number to the plurality of bores **25**, extend through top plate **10**. Although four such bores **11** and, correspondingly, four bores **25** are provided in the present embodiment, each spaced from an adjacent bore by a fixed angle, it is to be understood that that is by way of illustration and not by way of limitation since any number of such bores may be provided; however the number of coin receiving bores must equal the number of coin dispensing bores. The diameters of bores **11** are equal and are greater than the diameter of the largest coin to be dispensed; the axis of each bore **11** lies on a circle having an axis coaxial with the axis of and having the same radius as the circle defining the loci of the axes of bores **25**. Moreover, as shown in FIG. 1, bores **11** are positioned so each bore lies between a different pair of bores **25** in bottom plate **20**. That is, each bore **11** in the embodiment illustrated is off-set at an angle from a respective bore **25** such that the plate **30**, in the "off-position," will reliably position a bore **33** under an empty sensing switch, in the manner noted below, and will also drop a coin through the bores **25** prior to picking up a next coin from the succeeding coin tube **19**.

Each bore **11** is adapted to receive a respective removable coin tube support bushing **12A–12D** therein which, in turn, supports a respective removable coin tube **19A–19D** in a sliding fit. Since each of the bushings **12A–12D** and the associated coin tubes **19A–19D** are similar, with the exceptions noted below, only one such bushing and coin tube will be described in detail. Thus, bushing **12B**, as shown in FIG. 2, comprises a downwardly projecting circular peripheral wall **13B** having an external diameter slightly less than the diameter of bore **11** and a bottom edge which terminates above the bottom of plate **10**. An integral circular flange **14B** extends horizontally from the top thereof and is provided with three circumferentially spaced apertures **15**. Plate **10** is correspondingly provided with three circumferentially spaced threaded holes **15A** about bore **11** which are positioned to be in alignment with apertures **15**. Thus, bushing **12B** is secured in place by screws **16** which pass through apertures **15** and are threadedly received in holes **15A**. Bushing **12B** is provided with a central through bore **17B**, of a preselected diameter, which terminates in an internal bead **18B** adjacent the bottom edge thereof to form an internal shoulder. A removable coin stacking tube or coin tube **19B** is received within bore **17B** in a close sliding fit with the bottom edge of tube **19B** resting on the shoulder formed by bead **18B**. Tube **19B** is adapted to hold coins of a predetermined denomination in stacked relation therein. It is to be noted, for example, that the internal diameter of tube **19C** is greater than that of tube **19D** and, correspondingly, the diameter of bore **17C** is greater than the diameter of bore **17D** (FIG. 1). The reason for the difference in the diameters of respective tubes and associated bushings is due to the fact that the tubes are adapted to stack coins of different denominations. In the example chosen, tube **19C** may stack twenty-five cent coins whereas tube **19D** may stack five cent coins. The coin dispensing settings of the present device may be changed simply by removing one coin tube supporting bushing and associated coin tube, and substituting another bushing and tube adapted to supply coins of a different denomination or they may be removed altogether. Thus, in accordance with one object of the present invention, coin setting changing is greatly simplified and facilitated in the present device.

The bottom face of plate **10** terminates above the top face of plate **20** to define a recess **31** therebetween, as noted above. As shown in FIG. 2, a coin dispensing disc **30** is received between plate **10** and **20** in recess **31** and is provided with a central aperture **32** which receives the shaft of bolt **43** therethrough and is rotatable thereon. Disc **30** is provided with four circumferentially, equally spaced bores **33**. The diameters of bores **33** are equal and are greater than the diameter of the largest coin to be dispensed and the axis of each bore **33** lies on a circle having an axis coaxial with the axis of and having the same radius as the circle defining the loci of the axes of bores **25**. Rotation of disc **30** will therefore cause each bore **33** to be simultaneously aligned with a respective coin receiving bore **11** to receive a coin and continued rotation will bring each bore into alignment with respective coin dispensing bores **25** to simultaneously dispense coins in the respective bores **33**.

To prevent more than one coin at any one time from being received in disc **30**, the space between the bottom of a bushing **12** and the top of plate **20** is less than twice the thickness of the coin the particular bushing is designed for. Thus, the height of each peripheral wall **13** of each bushing may vary depending on the denomination of coin associated with the particular bushing.

Where the coin to be dispensed has an extremely large diameter, any one or more of bushings **12A–12D** may be removed and inverted to allow a coin having a diameter substantially equal to the diameter of bore **11** to be dispensed. Thus, as shown in FIG. 7, a bushing **112** is affixed to top plate **10** by screw **16**. Bushing **112** lies on the top surface of top plate **10** and overlies a bore **11** and has an aperture **117** therein whose diameter is substantially equal to the diameter of bore **11**. A coin tube **119** is received in the bushing and extends into bore **11**. The spacing between the bottom of tube **119** and the top of plate **20** is adjusted to be less than twice the thickness of the coin associated with this tube. The tube may be fixed in place by means of a set-screw **120** which extends transversely in a threaded bore in bushing **112** and which may be tightened so the end of the screw abuts tube **119**.

Rotation of disc **30** is effected by the gearing arrangement illustrated in FIG. 2. A pinion **34** is received in recess **29** of plate **20** and is fixedly mounted to shaft **28** and is rotatable therewith. The peripheral edge of disc **30** is provided with gear teeth **35** which are in meshing engagement with pinion **34**. Thus, energization of the motor will rotate shaft **28** and thereby rotate disc **30** by means of pinion **34** and gear teeth **35**. In the present embodiment illustrating the use of four coin setting combinations, disc **30** is preferably positioned so each bore **33** will be aligned with and underlie a respective bore **11** to receive a coin by gravity feed. Ideally, the gear ratio is chosen so disc **30** rotates 45 degrees for a 360 degree rotation of shaft **28**. Thus, each bore **33** will have advanced to be aligned with and underlie the next succeeding bore **11** at the end of the cycle. However, the gear ratio may be changed to rotate the plate a whole multiple of 45 degrees (i.e., 90 degrees, 135, etc.) for one rotation of the shaft to vary the amount of change dispensed in accordance with the specified requirements.

The energizing circuit for motor **27** includes a limit switch **51** (FIG. 2) which is positioned adjacent shaft **28**. Thus, a bracket **36** is connected to the top of plate **10**,

at the rear thereof, by any conventional means (not shown) and extends longitudinally rearwardly and receives screws **37** (from switch **51**) in appropriately threaded apertures (not shown) to affix switch **51** to the top of plate **10**. Switch **51** includes a depressible member **51D** which is biased outwardly and which, when depressed, moves an armature **51A** from one contact to another. Depression of member **51D** is effected by a roller **38A** which is rotatably mounted in bifurcated arm **38B** which, in turn, is fixedly connected to shaft **28** by pin **38C** which is fixedly received in an aperture adjacent to the top of shaft **28**. Hence, member **51D** will be depressed once for every 360 degree rotation of shaft **28** by roller **38A** which rolls over member **51D** and depresses same.

The energizing circuit for motor **27** is illustrated in FIG. 3. A lead **50** connects one terminal of a two terminal source of potential (not shown) to armature **51A** of switch **51** through a serially connected fuse **53** and armature **52B** and a contact **52C** of an empty sensing switch **52**. Contact **52D** is connected to a lead **56** by a lead **54**, which contains a lamp **55** serially connected therein. Lead **56** is connected to the other terminal of the source of potential. The armature **52B** is caused to move from one contact to the other by a direct mechanical linkage which sense when a coin tube is empty. As shown in FIGS. 1 and 6, switch **52** is connected to top plate **10** adjacent to coin tube **19C** by a bracket **39**. Switch **52** includes a pivoted lever **52A** which extends through a cut out portion **47** of top plate **10**, and terminates in a roller **48** which rides on the upper surface of disc **30**. Lever **52A** is connected to armature **52B** and is adapted to move the armature from one contact to another. Thus, roller **48** will roll across the surface of disc **30** as disc **30** rotates. If bores **33** contain coins therein, lever **52A** will be restrained from pivoting and armature **52B** will be connected to contact **52C**. If, however, the bore **33** passing below roller **48** does not contain a coin therein, signifying coin tube **19C** is empty, the lever will fall into bore **33** and thereby pivot to move armature **52B** to contact **52C** and apply the source of potential across lamp **55**. It is therefore advantageous to load tube **19C** with the thickest coin to be dispensed since this determines operation of switch **52**. Lamp **55** may illuminate a sign indicating the mechanism is out of change. A lead **57** connects armature **52B** to lead **56** through the contacts of normally open, manually operable push-button switch **58** and the winding of a relay or solenoid **59**. Contact **51B** of switch **51** is connected to the armature of relay **59B** by a lead **60**. Contact **51C** of switch **51** is connected to the armature of relay **59C** by a lead **62**. The mechanical linkage between motor **27** and limit switch **51** shown in FIG. 2 is indicated by the broken line **38** in FIG. 3. Thus, when member **51D** is depressed armature **51A** will move from contact **51C** to contact **51B**. Contact $59B_1$ is connected to one terminal of motor **27** by a lead **61**; the other terminal of motor **27** is connected to lead **56**. Contact $59B_2$ is unconnected. Contact $59C_2$ of relay **59C** is connected to lead **57** between relay winding **59** and switch **58**, by a lead **63**. Contact $59C_1$ remains unconnected. Lead **62** is connected to the armature **64A** of a conventional coin switch **64** by a lead **70**. That is, armature **64A** will momentarily move from one contact to another upon insertion of a coin of a preselected denomination and will move back to its original position after the coin passes through. Contact **64B** of switch **64** is connected to the armature of relay **59A** by a lead **65**. Contact **64C** is connected to lead **57**, between relay winding **59** and switch **58**, by a lead **66**. Contact $59A_1$ of relay **59A** is connected to lead **56** by a lead **67**, through a conventional reject coil **68**. The reject coil in the conventional manner, energizes other elements (not shown) to reject coins which are not of the preselected denomination and therefore would prevent operation of the coin switch. When the coin changing mechanism is utilized in a vending machine, the coin switch and the reject coil of the vending machine may be included in the motor energizing circuit of the present invention. Contact $59A_2$ is connected by a lead **61** to motor **27**. Relay **59** controls the operation of relays **59A**, **59B** and **59C** (as indicated by the broken line **71**) and, when energized, will cause the respective armatures to move from the **1** contact to the **2** contact. Normally, the armatures of the various switches and relays will be in the position shown in FIG. 3.

In operation, the respective coin tubes **19A–19D** are filled with the denomination coin they are designed for, it being understood that the respective coin tube support bushings and associated coin tubes are chosen so the required amount of coins will be dispensed when the mechanism is operated. If the coin tubes have been empty, armature **52B** of empty sensing switch **52** will be connected to contact **52D** thereby connecting lamp **55** across the source of potential through lead **50**, fuse **53**, switch **52**, to leads **54** and **56**. As noted above lamp **53** will illuminate a notice signifying there is no change in the mechanism. The coin tubes are filled with the thinnest denomination coin preferably placed in the location of tube **19C**. The operator closes switch **58** to thereby energize relay winding **59** through lead **50**, switch **58** and leads **57** and **56**. This will cause the armatures of relays **59A**, **59B** and **59C** to move the respective contacts $59A_2$, $59B_2$ and $59C_2$ to thereby energize motor **27** through the circuit comprising lead **50**, switch **58**, leads **57** and **63**, relay **59C**, leads **62** and **70**, switch **64**, lead **65**, relay **59A** and leads **61** and **56**. The energization of motor **27** will cause shaft **28** to rotate and consequently rotate disc **30** through pinion **34** and teeth **35**. This will cause the disc to pick up coins (i.e., axially align each bore **33** below a respective bore **11**) in the manner noted below. Once lever **52A** is moved out of an empty bore **33** and on to the surface of disc **30**, the armature **52B** of switch **52** will be moved to contact **52C**. Switch **52** will remain in this position until lever **52A** again falls into an empty bore **33**. Thus, the machine is ready for operation.

At the start of each cycle of operation respective bores **33** will be in axial alignment with a different coin receiving bore **11** to thereby receive a coin by gravity feed. Reject coil **68** will be energized through the circuit comprising lead **50**, switch **51**, leads **62** and **70**, switch **64**, relay **59A** and leads **67** and **56** thereby preventing operation of switch **64** unless a coin of a preselected value is inserted into the device. When a coin of said preselected value is inserted into the associated vending machine, the coin switch will momentarily operate to move armature **64A** to contact **64C** to thereby energize relay winding **59** through the circuit comprising switch **52**, lead **50**, switch **51**, leads **62** and **70**, switch **64**, and leads **66**, **57** and **56**. As noted above, the energization of relay winding **59** causes the armatures of relays **59A**, **59B** and **59C** to be connected to respective contacts $59A_2$, $59B_2$ and $59C_2$. To keep winding **59** energized after armature **64A** returns to contact **64B** a holding circuit is established comprising lead **50**, switch **51**, lead **62**, relay **59C** and leads **63**, **57** and **56**. Motor **27** is energized through the circuit comprising lead **50**, switch **51**, leads **62** and **70**, switch **64** (armature **64A** will have moved back to contact **64B** at this time), lead **65**, relay **59A** and leads **61** and **56**. Shaft **28** will rotate and thereby rotate disc **30** through the gearing connection. Bores **33** will each carry a respective coin during rotation of disc **30** until each bore **33** is axially aligned with a respective coin dispensing bore **25** at which time the respective coin will simultaneously fall through an associated bore **25**, by action of their own weight, and onto chute **26** to be dispensed at the front of the machine.

Continued rotation of shaft **28** will bring roller **38A** into contact with depressible member **51D**. This will move armature **51A** into connection with contact **51B** thereby breaking the holding circuit and de-energizing

relay winding 59. The armatures of relays 59A, 59B and 59C will respectively return to contacts $59A_1$, $59B_1$, and $59C_1$. However, motor 27 will still remain energized through the circuit connections comprising lead 50, switch 51, lead 60, relay 59B and leads 61 and 56. Shaft 28 will therefore continue to rotate until roller 38A moves out of contact with depressible member 51D, thereby allowing armature 51A to move back to contact 51C and break the motor energizing circuit which existed through contact 51B and lead 60. Thus, shaft 28 will have rotated 360 degrees or one full revolution and disc 30 will have rotated 45 degrees thereby causing bores 33 to advance and be aligned below respective succeeding bores 11 to again receive coins therefrom. This operation will continue upon insertion of coins of preselected denomination until the coin tube 19C is empty and empty sensing switch armature 52B moves to contact 52D to deactivate the mechanism in the manner noted above.

In many cases it may be more desirable to oscillate disc 30 rather than to intermittently rotate disc 30 in the same direction as disclosed above. Thus, as illustrated in FIG. 4, a disc 80 is fixedly received on shaft 28 in the place of pinion 38, and receives an eccentrically located pin 81 thereon. Disc 30A is provided with an upstanding member 85 adjacent aperture 32. An arm 83 having an aperture 84 at one end and a similar aperture at the other end connects disc 80 and disc 30A with pin 81 being received in aperture 84 and member 85 being received in the other aperture. The remaining elements comprising the mechanism of the present invention are the same as those described above.

To prevent jamming, arm 83 comprises two members 86 and 87 which are connected together by a spring 88 and are movable with respect to one another. As shown in FIG. 5, member 86 is slidably received in a channel 89 in member 87; the end of member 86 extends into a rectangular opening 90 in member 87. Spring 88 connects the end of member 86 to projection 91 in opening 90. Thus, members 86 and 87 will be movably toward or away from one another when disc 81 and associated pin 81 are at the dead center position to prevent jamming.

Rotation of disc 80 will cause arm 83 to move disc 30 from a position wherein each bore 33 is aligned with a respective bore 11 to receive a coin to a position wherein each bore 33 is aligned with a respective bore 25 to dispense the coins. Further rotation of disc 80 will cause arm 83 to move disc 30 back to a position wherein each bore 33 again underlies the same respective bore 11. Rotation of disc 80 is effected in the same manner that pinion 34 is rotated.

Accordingly, a coin-changing mechanism has been provided which, when actuated, will dispense a preselected amount of change and which can easily be adapted to change the coin dispensing settings. Moreover, the operation of the present device is adaptable for either intermittent rotation or oscillation. Additionally, a positive mechanical linkage between the motor shaft and a switch controlling the motor energizing circuit ensures one cycle of operation only of the device for each coin of a preselected denomination inserted.

While preferred embodiments of the present invention have been disclosed, many modifications may be made without departing from the spirit of the invention.

What is claimed is:

1. In a coin dispensing mechanism, a first and a second plate each having a plurality of circumferentially spaced bores in one-to-one correspondence therethrough:

means for connecting said first and second plates together with the bores in said plates out of alignment;

stacking means for stacking coins of preselected denominations removably received in respective bores in said first plate;

a coin dispensing disc having a plurality of circumferentially spaced bores therethrough equal to the plurality of bores in said first plate;

means for rotatably mounting said coin dispensing disc between said first and second plates for movement between a first position wherein the bores in said coin dispensing disc underlie the respective bores in said first plate to receive coins from the respective stacking means, and a second position wherein the bores in said coin dispensing disc overlie the respective bores in said second plate to dispense all the coins carried by said coin dispensing disc therethrough;

a motor having a rotatable output shaft;

motor energizing means responsive to the insertion of a coin of a preselected denomination for energizing said motor;

disabling means connected to said motor shaft for de-energizing said motor at least once during one revolution of said output shaft;

and connecting means interconnecting said output shaft and said coin dispensing disc for moving said coin dispensing disc between said first and said second positions at least once during the interval of time said motor is energized.

2. A coin dispensing mechanism as defined in claim 1, wherein said connecting means comprises a driving disc fixedly mounted on said shaft and rotatable therewith, a pin eccentrically located on said driving disc, and an arm having an aperture at one end and receiving said pin therein and being connected to said coin dispensing disc at the other end whereby rotation of said driving disc causes said arm to oscillate said coin dispensing disc between said first and said second positions.

3. A coin changing mechanism as defined in claim 2, wherein said arm comprises a first and a second member, said first member having a channel which slidably receives said second member therein, and a spring interconnecting said first and second members, whereby said members are movable toward and away from each other to prevent jamming of said means interconnecting said output shaft and said coin dispensing disc during rotation of said driving disc.

4. In a coin dispensing mechanism as defined in claim 1 wherein said motor energizing means includes relay means connected to said motor and adapted, when energized, to connect said motor across a source of potential; a first switch connected to said relay means and operable upon reception of a coin of a predetermined denomination to connect said relay means across a source a potential to energize said relay means; and a second switch connected to said relay means and operable from a first state to a second state to disconnect said relay means from the source of potential to de-energize said relay means and maintain the motor energized; means biasing said switch to the first state; said disabling means comprising means connected to said shaft and engageable with said second switch near the termination of one revolution of said shaft for operating said second switch to the second state and disengageable with said second switch at the termination of one revolution of said output shaft, whereby said motor remains energized a predetermined interval of time equal to the duration of time required for the output shaft to make a complete revolution.

5. In a coin dispensing mechanism as defined in claim 4, and an empty sensing switch, said empty sensing switch including an armature adapted to connect a source of potential to said motor energizing circuit when in a first position and to disconnect said motor energizing circuit from the source of potential when in a second position, said empty sensing switch further including an arm pivotally mounted on said switch and connected to said armature at one end and in engagement with the surface of said coin dispensing disc, said arm being positioned to overlie the bores in said coin dispensing disc during move-

ment of said coin dispensing disc, whereby said arm will fall into an empty bore and pivot to move said armature from said first position to said second position to make said mechanism inoperative.

6. A motor energizing circuit for a coin dispensing mechanism of the type including a coin dispensing disc having bores therein and being movable between a coin receiving position wherein said bores receives coins therein and a coin dispensing position wherein the coins are dispensed from said bores, a motor having a rotatable output shaft, and means interconnecting said shaft and said disc for rotating said disc between coin receiving and coin dispensing positions during one revolution of said shaft, the motor energizing circuit including relay means connected to said motor and adapted, when energized, to connect said motor across a source of potential; a first switch connected to said relay means and operable upon reception of a coin of a predetermined denomination to connect said relay means across a source of potential to energize said relay means; and a second switch connected to said relay means and operable from a first state to a second state to disconnect said relay means from the source of potential to de-energize said relay means and maintain the motor energized; means biasing said switch to the first state; and means connected to said shaft and engageable with said second switch near the termination of one revolution of said shaft for operating said second switch to the second state and disengageable with said second switch at the termination of one revolution of said output shaft, whereby said motor remains energized a predetermined interval of time equal to

the duration of time required for the output shaft to make a complete revolution.

7. A motor energizing circuit for a coin dispensing mechanism as defined in claim 6, and an empty sensing switch, said empty sensing switch including an armature adapted to connect a source of potential to said motor energizing circuit when in a first position and to disconnect said motor energizing circuit from the source of potential when in a second position, said empty sensing switch further including an arm pivotally mounted on said switch and connected to said armature at one end and in engagement with the surface of said coin dispensing disc, said arm being positioned to overlie the bores in said coin dispensing disc during movement of said coin dispensing disc, whereby said arm will fall into an empty bore and pivot to move said armature from said first position to said second position to make said mechanism inoperative.

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