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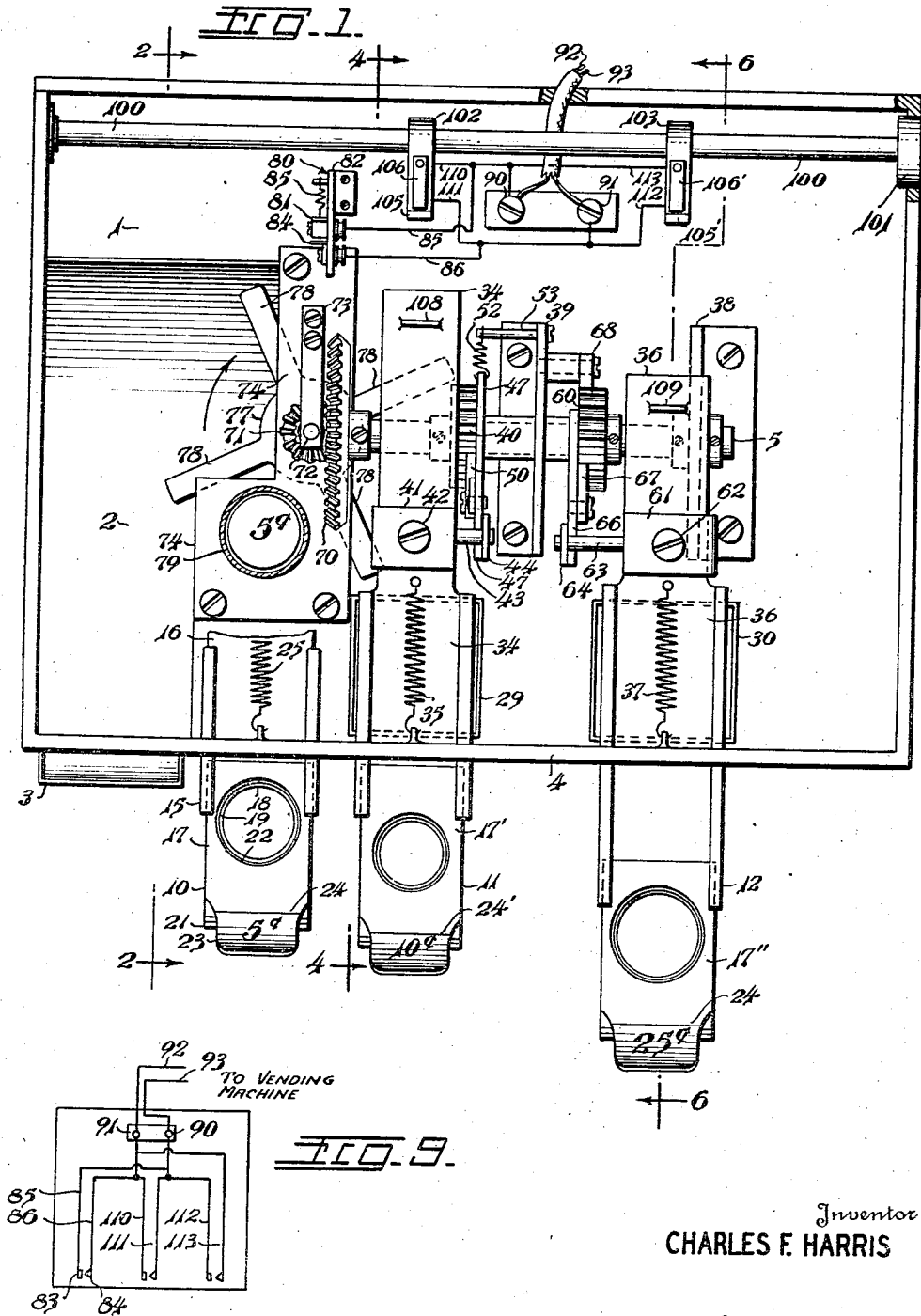
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2,269,936

COIN CHANGER AND CONTROL DEVICE

Filed April 27, 1939

3 Sheets-Sheet 1



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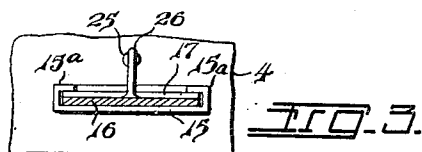
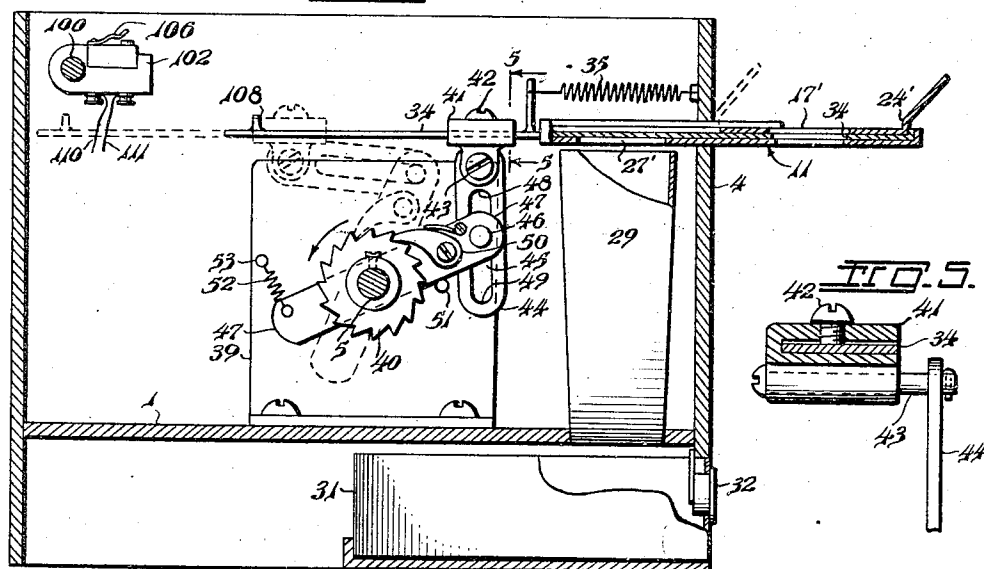
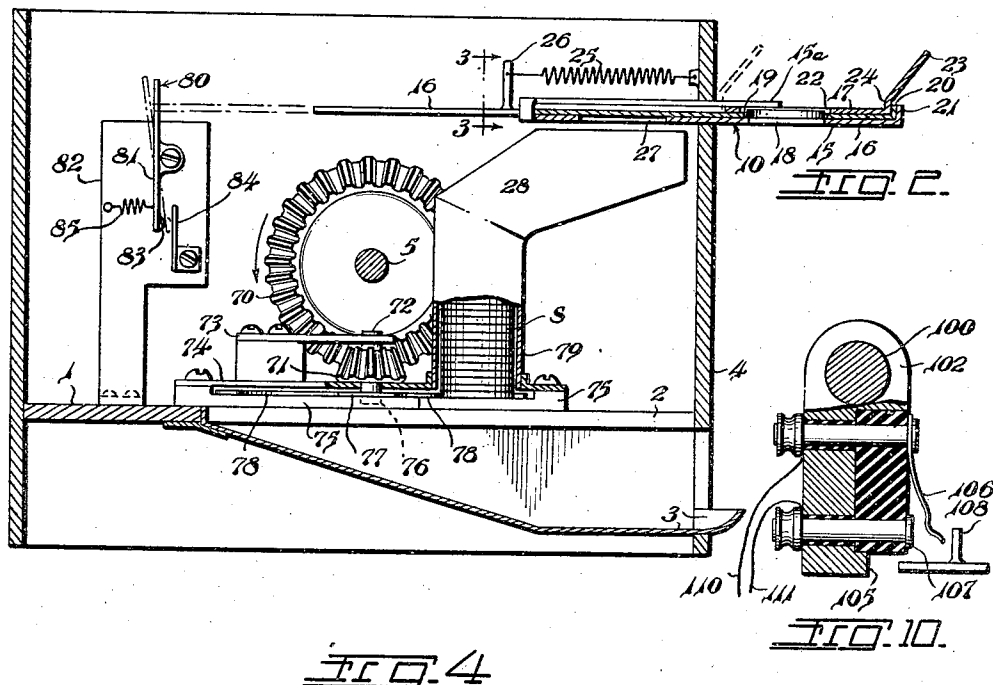
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3 Sheets-Sheet 2



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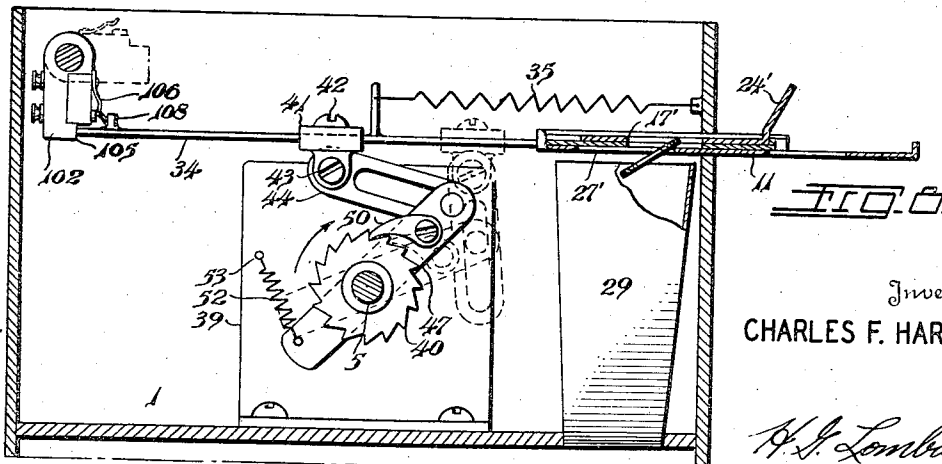
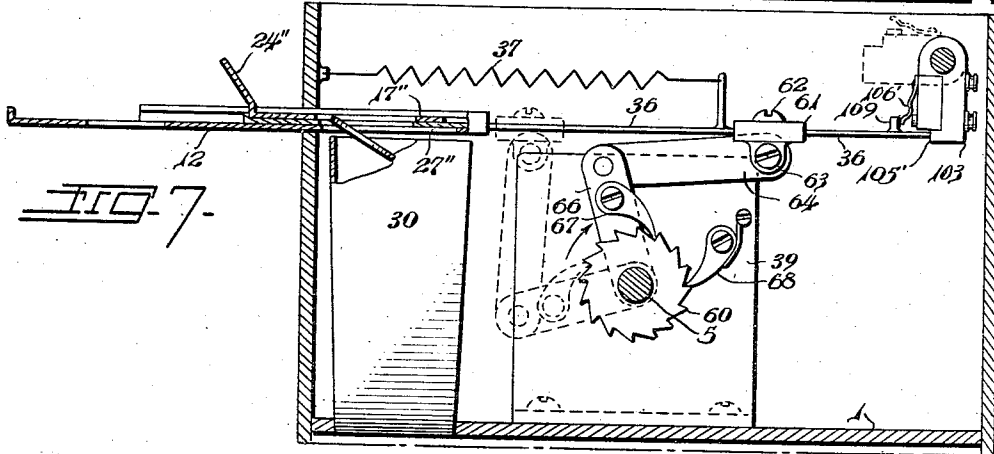
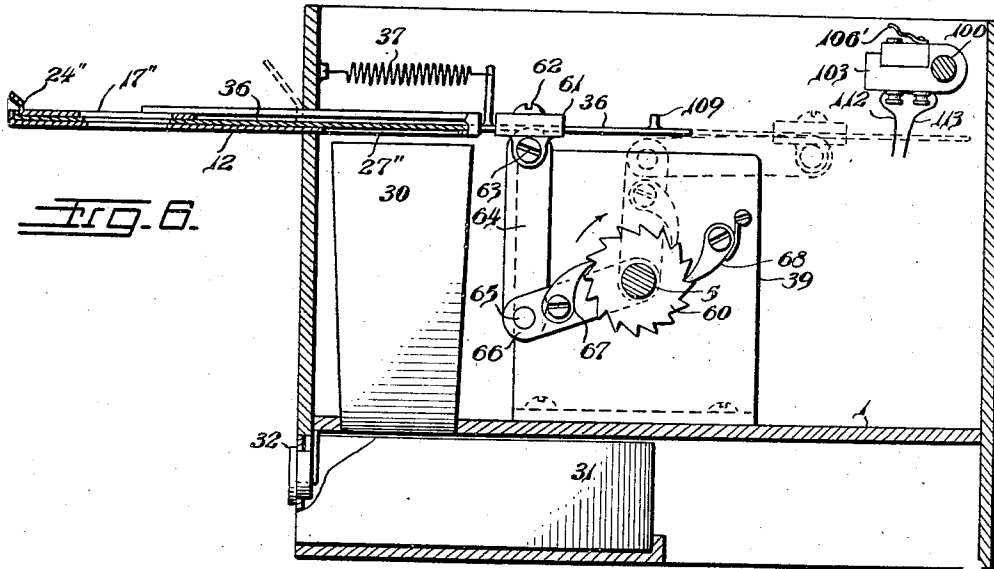
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COIN CHANGER AND CONTROL DEVICE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,269,936

COIN CHANGER AND CONTROL DEVICE

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10 Claims. (Cl. 133—4)

This invention relates in general to improvements in coin changing and coin control apparatus and deals, more particularly, with a device of this character which may be conveniently and efficiently attached to various vending machines now on the market as a combined control device and coin changing apparatus returning the correct change for coins of greater value than the cost of the article purchased, or, in a further relation, as a straight change maker giving the full amount of change for coins of larger denominations deposited therein.

The invention is directed in particular to various improvements in the means operating the coin ejecting mechanism of such a device as actuated by manually operated coin control means in serving as a straight change maker together with an improved regulating means by which the device may be readily converted to use as a control means for energizing an electrically operated article delivering apparatus of a vending machine, simultaneously returning the correct change for coins of greater value than the cost of the article purchased.

A primary purpose of the present invention, therefore, is to provide an improved coin changer of this character which may be readily attached to or embodied in a vending machine to permit the use of such vending machine by means of a coin of greater value than the cost of the article purchased in serving not only to operate the vending machine to deliver the article purchased, but also, to deliver the proper change depending on the value of the coin deposited. For example, if the price of an article delivered by the vending machine is five cents, the improved coin changer and coin control device of the present invention may be attached to the vending machine to permit the use thereof by a dime or quarter whereupon the article purchased will be delivered by the vending machine and the proper amount of change returned by the coin changer, which amount will be a nickel in the event a dime is inserted or four nickels in the event a quarter is deposited. However, it is to be understood that the coin changer is not limited to use with coins of such denominations but is equally adaptable for use with the coins of other values by varying the size and proportions of the various operating parts of the device or otherwise changing the relation of certain mechanical elements thereof.

A further object of the invention is to provide a coin changing and control device of the kind aforesaid including means for receiving a coin of

the value of the article purchased and controlling the delivery apparatus of the vending machine without affecting the change returning mechanism thereof.

Another object of the invention is the provision of a manually operated change delivering device of this character which may be employed, if desired, as a straight change making apparatus giving the full amount of change for coins of larger denominations.

A still further object of the invention is to provide an improved coin changing and coin control device which is of simple, compact construction, efficient in operation and comprises relatively few inexpensive parts making possible the production of such devices at comparatively low cost.

A more specific object is the provision of an improved coin changing device having a plurality of coin slides for receiving coins of different denominations and comprising substantial slide bars employed with a novel form of operating means adapted to directly actuate the coin ejecting mechanism of the device in response to the movement of such slide bars. In this relation, the invention contemplates still further the provision of such slide bar members in a manner to operate the device either as a straight change maker giving the full amount of change for coins of larger denominations deposited therein, or, by means of a suitable auxiliary stop mechanism regulating the movement of such slide bars, as a combined control device and coin changer employed with a vending machine for controlling the article delivering apparatus thereof and returning the correct amount of change for coins of greater value than the article purchased.

Further objects and advantages and other new and useful features in the construction, arrangement and general combination of parts of the invention will be readily apparent to those skilled in the art as a description thereof proceeds with reference to the accompanying drawings in which like reference characters designate like parts throughout the same, and in which—

Fig. 1 is a top plan view of the improved coin changer and control device with the cover removed, showing the general construction and arrangement of the operating parts thereof;

Fig. 2 is a sectional view along line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a section taken on line 3—3 of Fig. 2 showing the construction of one of the coin slides;

Fig. 4 is a section taken along line 4—4 of Fig. 1 showing the operating means actuated by the

dime coin slide when the device is employed as a straight change maker;

Fig. 5 is a section on line 5—5 of Fig. 4, looking in the direction of the arrows;

Fig. 6 is a section taken along line 6—6 of Fig. 1 showing the operating means actuated by the quarter coin slide when the device is employed as a straight change maker;

Fig. 7 is a similar view showing the device as employed as a combined coin changer and control device with the stop devices for this purpose in operative position;

Fig. 8 is a view similar to Fig. 4 showing the means operated by the quarter coin slide mechanism when the device is employed as a combined coin changer and control device;

Fig. 9 is a diagrammatic view illustrating the electrical circuits; and,

Fig. 10 is a close-up view illustrating in detail the construction of one of the stop devices shown employed in Figs. 7 and 8.

The improved coin changer and control device of the present invention is one of general utility and may be employed in a number of ways both as a change maker for returning the full amount of change for coins of larger denominations deposited therein, or, as a combined coin changer and control device adapted for use with a vending machine structure for controlling the operation of the article delivery apparatus thereof by coins of greater value than the cost of the article purchased and simultaneously returning the correct amount of change depending on the denomination of the coin deposited. In the latter respect, though the description which follows refers, more particularly, to the coin changer as a more or less unitary device which may be readily attached to vending machines now on the market, it is to be understood that the invention fully contemplates the use of an equivalent or similar form of device which may be embodied directly in a vending machine structure having either a mechanically or electrically actuated article delivering apparatus.

In the drawings the improved coin changer and coin control device is shown in the manner of a unitary device adapted to be mounted onto a vending machine (not shown) normally operated, for example, by a nickel which sets into motion an electrically operated apparatus therein to deliver the article purchased. Referring more particularly to Fig. 1 which is a top plan view illustrating the general operating structure of the device, a preferred arrangement comprises any suitable type of casing having front, rear and side walls and a cover in the form of a removable or hinged panel provided with a lock whereby access to the interior of the coin changer may be had only by the attendant or other authorized persons. At a suitable point within the casing, as shown in Fig. 2, there is provided a flooring or base panel 1, having an opening 2, underneath which is attached a change tray 3, extending to the front wall 4, of the casing in such a manner that the change returned may be conveniently removed by the purchaser.

Mounted on the base panel adjacent said opening is a coin stack and coin ejecting mechanism, presently to be described, comprising a coin ejecting wheel 71 which operates in response to the rotary movement imparted to a main shaft 5, by independent pawl and ratchet operating members selectively actuated by certain of the manually operated coin receiving slides projecting to the front of the machine and arranged preferably

in the order substantially as shown in Fig. 1. In the present example, three of such coin slides are provided comprising nickel slide 10, dime slide 11, and quarter slide 12, and inasmuch as such coin slides are substantially similar in construction varying only in accordance with the size of the coin for which they are intended to be used, only one need be described in detail.

Thus, as best seen in Figs. 2 and 3, the nickel slide device 10, for example, comprises a substantial channel-shaped guide bar 15 suitably mounted in an opening in the front wall of the casing and in which are slidably received a slide bar 16 and push bar 17 in superposed relation, the same being held in assembled position by the inturned flanges 15a provided on said guide bar as shown in Fig. 3. Slide bar 16 has an aperture 19 the exact size of a coin required in operating the coin slide, and when said slide bar is disposed in normal coin receiving position, said coin receiving aperture therein is in exact alignment with an aperture 18 provided in the guide bar 15 so that a coin smaller than proper size coin will fall through, thereby preventing fraudulent operation of the machine. As shown in Fig. 2, a stop 20 or the end of said slide bar 16, in engaging the upturned end stop 21 on the guide bar, limits the outward movement of said slide bar and otherwise positions the same in proper coin receiving position. Push bar 17 is provided with an opening presenting a shoulder 22 engaging the edge of a proper coin positioned in the aperture 19 of the slide bar, and also includes a handle 23 having a shoulder 24 limiting the inward movement thereof as represented in dotted lines. Return of the slide bar 16 automatically is preferably provided for by means of a spring 25 connected from the front of the casing to a rigid pin 26 on the slide bar and urging the same to its normal, retracted, coin receiving position in which said stop 20 or end thereof abuts the upturned end stop 21 of the guide bar. Accordingly, unless a proper coin is placed in the coin receiving aperture 19 of the slide bar, no inward movement thereof can take place, and in the event the push bar 17 is forced inwardly regardless, as by one tampering with the machine, said push bar merely slides inoperatively into the interior of the casing until such movement is arrested by the stop 24 thereon abutting the front wall of the casing.

In the normal operation of such a coin slide, upon insertion of a proper size coin in the aperture 19 of the slide bar 16, as shown, the shoulder 22 presented by the opening in the push bar 17 engages the edge of the coin such that the slide bar is moved together with the push bar to the interior of the machine to a position in which the coin overlies a passage 27 in the guide bar and drops into a suitable coin collection receptacle at the front of the machine, which for the nickel slide 10, Fig. 2, is the magazine 28 replenishing the nickel coin stack designated generally S. In a like manner, a chute 29, Figs. 4 and 8, is associated with dime slide 11 and a similar chute 30 provided for quarter slide 12, Figs. 6 and 7, both of said chutes being suitably mounted on the base panel 1 and adapted to direct the coins passing therethrough to a collection box 31 at the front of the casing which is preferably provided in the manner of a removable drawer having a suitable lock such as 32.

Similar to the slide bar 16 of the nickel coin slide 10 just described, the dime slide 11 comprises a slide bar 34, Figs. 4 and 8, returned to its

normal, retracted position by coil spring 35, while quarter slide 12, Figs. 6 and 7, embodies a slide bar 36 provided with a coil spring 37 for a like purpose. With the respective slide bars thus provided, there may be employed suitable operating means adapted to actuate the coin ejecting mechanism of the device in response to the movement of such slide bars upon insertion of a proper coin in either the dime or the quarter coin slide. In this relation, the movement of said slide bars can be so regulated as to operate the device either as straight change maker giving the full amount of change for coins of larger denominations deposited therein, or, by the use of a suitable auxiliary stop mechanism limiting the movement of such slide bars, as a combined control device and coin changer employed with a vending machine for controlling the article delivering apparatus thereof and returning the correct amount of change for coins of greater value than the article purchased.

As respects the function of the slide bars 34, 36, of the dime and quarter slides 11, 12, respectively, for operating the coin ejecting mechanism of the device, each of said slide bars has connected thereto a pawl and ratchet mechanism adapted to impart distinct and different degrees of movement to main shaft 5 which in turn actuates the coin ejecting means, as presently to be described. Said main shaft is mounted for rotary movement in the casing by bearing supports 38, 39, Fig. 1, and has fixedly secured thereto the ratchet operating members 40, 60, actuated by the said respective slide bars 34, 36 of the dime and quarter slides.

Fig. 4 shows in elevation the ratchet member 40 which is actuated upon insertion of a dime in coin slide 11, by means of a lost motion link mechanism adapted to impart only a relatively slight rotation to the main shaft 5 under a considerably greater movement of the slide bar 34 which is necessary in order that the dime inserted in the coin slide may be carried a sufficient distance into the interior of the casing to drop in collection receptacle 29. In other words, it will be understood that in the operation of the dime coin slide 11, the movement of the slide bar 34 thereof must be such as to carry the coin within the casing to drop into the collection chute 29 and yet impart only a relatively small amount of rotation to the main shaft through its ratchet operating means in order to cause a proportionately small actuation to the coin ejecting mechanism which is all that is required to deliver one or two nickels change, as the case may be.

Accordingly, as shown in Fig. 4, the mechanism for operating the ratchet 40 upon insertion of a dime in coin slide 11, comprises a substantial cross-head 41 adjustably secured to the slide bar 34 as by a set screw fastening means 42, Fig. 5, and provided with a pintle 43 on which one end of a lost motion connecting rod or link 44 is pivotally mounted in the relation seen in Fig. 1. The link 44 is provided with a longitudinal slot 45 in which the crank pin 46 on a crank lever or arm 47 is slidably received such that the motion thereof is controlled by the opposing end walls 48, 49, Fig. 4, of said slot in response to the movement of said connecting link 44. The said crank 47 is loosely mounted relative to the main shaft 5 and otherwise carries a spring pressed pivoted pawl 50 adapted to engage the teeth of ratchet wheel 40 fixedly secured to said main shaft 5.

Operation of the shaft rotating mechanism just described takes place upon insertion of a dime in the coin slide 11, whereupon the slide bar 34 and cross-head 41 thereon may be moved forwardly carrying the slotted link 44 and crank 47 therewith to substantially the position represented by dotted lines. The setting of the pawl 50, is such as to engage the ratchet wheel 40 to move the same through a predetermined distance as limited by the stop shoulder 24' of coin slide push bar 17', Fig. 4, engaging the front wall 4 of the casing, as also represented in dotted lines. In the present example, the setting and design of the operating mechanism is such as to move the ratchet wheel through a distance of two teeth in an arrangement wherein the coin ejecting means will eject a coin for each such tooth distance the ratchet wheel is moved to deliver the maximum of two nickels for the dime inserted therein when the device is employed as a straight change maker. On the initial inward movement of said slide bar 34, it will be understood that there is a period of lost motion in which the link 44 does not actuate the crank 47 since the crank pin 46 rides freely in said slot 45 therein. During this period of lost motion, the inserted coin is carried within the casing by the movement of the slide bar 34 and just before the end of such movement, as limited by stop shoulder 24' of the push bar, the end wall 49 of the connecting link slot 45 engages the crank pin 46 to actuate the crank 47 which in turn rotates the ratchet 40 the distance of two teeth for which the mechanism is set. At the substantial end of said movement of the slide bar 34, the inserted coin is in overlying relation to the coin passage 27' and drops into the collection chute 29, whereupon the slide bar 34 is free to be automatically returned by the coil spring 35 to its normal, coin receiving position carrying the link 44 therewith. The end wall 48 of the slotted link 44 then engages the crank pin 46 in the initial return movement of said crank 47 to normal position which is regulated by means of a suitable adjustable stop 51, if desired, while it is automatically retracted and maintained in fully returned position under influence of coil spring 52 attached to a pin 53 fixed to the adjacent support 39, and connected to the lower free end of the crank in any suitable manner.

It will be seen that in the forward operating movement of link 44 the crank 47 is moved only by the engagement of the end wall 49 of the slot 45 therein with the crank pin 46, and accordingly, if it is desired that the ratchet wheel be moved through a distance of more than two teeth, it is merely necessary to adjust the cross-head 41 on the slide bar by means of set screw 42, such that the engagement of the end wall 49 of said slot with the crank pin 46 is advanced and otherwise moves the crank 47 over a longer stroke to cause the ratchet wheel to move a proportionately greater distance more than that of two teeth, as aforesaid. In this relation, it will also be quite readily appreciated that simply by changing the setting of the pawl 50 on crank 47, the ratchet 40 may be moved through a distance of three or more teeth, an arrangement by which the coin ejecting means would return, say three pennies change from a penny coin stack when the cost of the article purchased is seven cents and the machine operated upon insertion of a dime in the manner described.

As shown in Fig. 1, said main shaft 5 carries another ratchet wheel 60 fixedly secured thereto

and which is actuated by operating means controlled by the quarter coin slide 12 comprising slide bar 36, as best seen in Figs. 6 and 7. Such operating means may be substantially similar to that described with reference to Fig. 4 embodying a cross-head 61 adjustably retained on said slide bar by set screw 62 and carrying a pintle 63 on which one end of the connecting rod or link 64 is pivotally secured. At its opposite end said link is hinged by pin 65 to a crank 66, carrying a pivoted pawl 67 engaging said ratchet wheel 60 to impart the predetermined rotary movement to said shaft 5 in actuating the coin ejecting means. In the present example, in the use of the machine as a straight change maker, the coin ejecting means issues two nickels change for a dime inserted therein, but in the event a quarter is deposited, it is of course, required that five nickels be returned. Since the movement of the ejecting means is uniform, this may be readily accomplished in a manner similar to the arrangement of Fig. 4, by so designing the operating parts that a single coin will be ejected for each tooth distance the ratchet wheel is moved to deliver the maximum of five nickels for the quarter deposited in the use of the device as a straight change maker. Thus, in the arrangement of Fig. 6, the setting of the pawl operating mechanism is such as to engage the ratchet wheel 60 to rotate the same over a distance of five teeth during the inward movement of the slide bar 36 which is limited by the stop shoulder 24'' of the push bar 17'' engaging the front wall 4 of the casing as indicated by the dotted line showing of Fig. 6 which also illustrates substantially the position assumed by the cross-head 63 carried by said slide bar 36 and actuating the crank 66 and pawl 67 through the link 64 to impart a proportionate movement to said main shaft 5.

During the inward movement of the slide bar 36, the inserted quarter is dropped through passage 27'' in collection chute 30 and by reason of the comparatively long stroke of the crank in moving the ratchet wheel over a distance of five teeth, no lost motion linkage device or the like is necessary to insure the proper dropping of the coin as in the relatively short stroke of the crank in the operating mechanism of Fig. 4 associated with the dime slide. Preferably this quarter coin slide mechanism is designed to drop the coin into the coin chute 30 at the approximate end of the movement of said slide bar 36, whereupon the slide bar is free to be automatically returned to its normal coin receiving position by the coil spring 37.

In order that either ratchet operating mechanism will be in proper position for operation regardless of the number of times the other is actuated, the ratchet wheels 40, 60, Figs. 4 and 6, are preferably provided of the same size and with the same number of teeth, for example, 16, whereupon both may move on rotation of the shaft 51 with assurance that at the end of such movement, some tooth on either ratchet wheel is always in proper position to be engaged by its associated pawl for any subsequent operation of the machine. Operating movement of said main shaft 5 is necessarily only in the direction indicated by the arrows Figs. 2, 4 and 6, and in order to prevent accidental reverse movement thereof which would disturb the setting of any of the ratchet operating parts, a stop device is provided at any suitable point with respect to said shaft, as shown in Fig. 6, for example, wherein the

ratchet wheel 60 is engaged by a spring pressed pawl 68 carried by the adjacent support 39, and permitting movement of the shaft only in the operating direction.

As shown in Figs. 1 and 2, the coin ejecting mechanism comprises a bevel gear 70 carried by one end of said main shaft 5 and meshed with a pinion 71, said gears in the present example having a four to one ratio, whereupon a quarter-turn of main shaft 5, causes full revolution of said pinion. Said pinion 71, Fig. 2, is mounted on a vertical shaft 72 journaled at one end in a bearing arm 73 carried by a supporting plate 74 which is fastened onto a rabbeted bed block 75 in a manner to provide a space therebetween. The opposite end of said vertical shaft 72 has a bearing in said bed block as at 76 and carries fixedly connected thereto a coin ejecting wheel 77 comprising four arms 78, Fig. 1, uniformly spaced in a common horizontal plane and adapted to rotate in the space between said bed block and supporting plate such that upon rotation of the pinion, said arms of the ejecting wheel successively engage the lowermost nickels at the bottom of the coin stack S and push the same forward to drop through the opening 2 in the base panel 1, into the change tray 3.

The coin stack is provided by means of a cylindrical receptacle 79 fixedly mounted over an opening in the supporting plate 74 but having its lower edge spaced from the bed block 75, as shown in Fig. 2, such that the lowermost coin at the bottom of the stack rests directly on the bed block 75 and may be readily ejected by contact therewith of the adjacent arm 78 of the ejecting wheel. As a coin is removed, succeeding coins, of course, fall into position by gravity whereupon the arms 78 of the ejecting wheel successively engage such coins in the order they come to the bottom of the stack in the path of said arms. Thus, in the event a plurality of coins are to be ejected at one time as when five successive nickels is the correct change to be returned for a quarter, the ejecting wheel rotates through one and one-fourth revolutions whereupon each of the four arms 78 ejects a coin from the bottom of the stack in quick, successive relation with the first arm again coming into position to eject the fifth coin. In any such operation, in order to provide sufficient time to permit each coin to fall by gravity to the bottom of the stack before contact therewith of the next arm of the ejecting wheel, said arms are designed between their points of engagement with the coins with a spacing greater than the size of such coins. This differential spacing, therefore, may be designed as necessary to provide for the time required during movement of the ejecting wheel to permit a coin to fall in position at the bottom of the stack following the ejection of a preceding coin and before the next effective ejecting arm swings into operative ejecting position.

Although the ejecting wheel 77 is shown comprising four arms 78 with the bevel gear and pinion 70, 71 rotating the same, in a four to one ratio, it will be readily appreciated that simply by changing the ratio of said gears, the ejecting wheel may be caused to rotate more than a complete turn for each full rotation of the shaft 5 whereupon a greater number of ejecting arms would become effective to eject a proportionately greater number of coins from the coin stack. It is also quite apparent in the present example, that the ejecting wheel may com-

prise five equally spaced arms instead of four, whereupon five nickels would be returned for a quarter upon a full rotation of the shaft by the operating mechanism for ratchet wheel 60. Likewise, in a penny coin stack, five pennies would be obtained for a nickel or, in a dime stack, five dimes would be returned for a fifty cent piece, etc.

In a preferred form of the invention, which is described in detail in the instant disclosure only by way of example with the understanding that the invention in no manner or form is limited thereby, both ratchet wheels 40, 60 are provided of a size sufficient to cause four full turns of the main shaft 5 if either were rotated through a full revolution. Since the bevel gear and pinion 70, 71, are also in a four to one ratio, any such full revolution of either ratchet wheel providing four full turns of said shaft 5, would cause sixteen actuations of the ejecting arms; and proportionately, one-sixteenth of a revolution of a ratchet wheel would cause only one ejecting arm 78 to eject a single coin from the coin stack. Accordingly, with the ratchet wheels of such size and provided with 16 teeth, a movement of either through a distance of one tooth is effective to rotate the shaft 5, only one-sixteenth of a revolution which in turn will actuate only a single arm 78 of the ejecting wheel. In the operation of the dime slide 11, Fig. 4, it will be recalled that the ratchet wheel 40 is moved through a distance of two teeth wherefore two nickels are delivered by the coin ejecting means upon each actuation thereof in its use as a full change maker. Likewise, since the ratchet wheel 60, Fig. 6, actuated by the quarter slide 12, is moved through a distance of five teeth, there will necessarily be returned five nickels change for the quarter deposited.

The structure already described and shown in general in Fig. 1, provides a simple, compact form of straight change maker for returning the full amount of change for dimes and quarters, in which event the nickel slide 10 would not be used since no change is returned thereby and only the movement of either of the slide bars 34, 36, actuates the ratchet operating members associated therewith for returning the full amount of change, as aforesaid. The nickel coin slide may be used, however, to control the operation of the article delivering apparatus of the vending machine independent of the change making mechanism for dimes and quarters. In this relation, in the event the vending machine is an electrically operated motor driven apparatus, the nickel coin slide 10 is employed together with a suitable switch 80, Figs. 1 and 2, which is actuated by the extremity of slide bar 16 thereof (broken away in Fig. 1) to complete a circuit to the vending machine in causing an operation of the article delivering apparatus thereof without, of course, returning any change. As best seen in Fig. 2, such a switch may comprise a pivoted lever 81 mounted on a suitable support 82 and having a contact 83 normally maintained in spaced relation to a cooperating leaf spring contact 84 by a retracting spring 85. Thus, upon insertion of a coin in the nickel slide to operate in the manner described, the slide bar 16 not only carries the nickel within the casing to drop into the magazine 28 and thereby replenish the coin stack S, but also serves to actuate said switch lever 81, as represented by the dotted line showing, Fig. 2, to close the contacts 83, 84, and thereby complete the circuit in which

they are included through wires 85, 86, Fig. 1. These wires lead to terminals 90, 91 having conduits 92, 93, connected to the source of power supplying current to the vending machine delivery apparatus, substantially as represented in the diagram of Fig. 9. The contacts 83, 84 are closed only momentarily by the extremity of the slide bar 16, since as soon as the nickel carried thereby drops into the magazine, said slide bar is free to be immediately retracted to its normal coin receiving position by the coil spring 25. In case such momentary closing of the circuit is not sufficient in some instances to cause the vending machine motor to run the required length of time to deliver the article purchased, a suitable relay device (not shown) is employed to overcome this insufficiency.

The present invention also contemplates the use of a simple stop mechanism whereby the movement of dime and quarter slide bars 34, 36 may be regulated to cause less than the full amount of change to be returned and at the same time actuate suitable switch devices completing a circuit to the vending machine to cause an operation of the article delivery apparatus thereof; and thus, in this relation, the device is adapted to serve as a combined control device for the vending machine and a coin changer for returning the correct amount of change for coins of greater value than the article purchased. This is accomplished by the provision of a combined switch and stop means whereby the machine is always adapted to serve as a straight change maker for dimes and quarters in the manner described, with or without the nickel coin slide, but may be readily converted to use as a combined control device and coin changer for an electrically operated vending machine by a simple adjustment of such combined switch and stop means to operative position.

A preferred arrangement for such a combined switch and stop means comprises a rod 100 pivotally mounted in the casing as shown in Fig. 1, together with a lock 101 whereby only authorized persons may rotate the bar to set the machine for any selected use. Fixedly mounted on said rod in substantial alignment with the slide bar 34 of dime coin slide 11, is a combined switch and stop device 102, Figs. 1 and 10, and a similar device 103 in line with the slide bar 36 of quarter slide 12. As shown in Fig. 10, such a device comprises a stop shoulder 105 and a spring contact 106 normally disposed in spaced relation to contact 107 and adapted to be closed upon engagement therewith of a dog 108 carried by slide bar 34 of the dime coin slide 11, Figs. 1 and 8. The slide bar 36 of the quarter coin slide 12, carries a similar dog 109 for engaging the corresponding spring contact of the combined switch and stop device 103 associated therewith as shown in Figs. 1 and 7. As best seen in Fig. 1, connected to said contacts are wires 110, 111 of stop device 102, and 112, 113 of stop device 103, these conductors being connected in parallel and leading to the terminals 90, 91 and the conduits 92, 93 connected with the vending machine delivery apparatus, as represented in Fig. 9.

As shown in Figs. 4 and 6, the combined switch and stop devices are turned upwardly to inoperative position when the dime and quarter slides 11, 12, respectively, are employed as straight change making means in which event neither the switch nor stop elements thereof are in any way affected by the movement of the slide bars of said coin slides. However, when the rod 100 is

turned to lower the combined switch and stop devices to the position shown in Figs. 7 and 8, the same lie in the path of the slide bars 34, 36, and in this relation serve to shorten the full movement of said slide bars such that in each instance, a nickel less than the value of the coin deposited is returned to the purchaser at the same time the article purchased is delivered.

Accordingly, as shown in Fig. 8, with the stop device 102 of the dime slide 11 lowered into vending position, the stop shoulder 105 thereof is adapted to engage the extremity of slide bar 34 such that the full inward movement thereof is prevented and only one nickel change is returned by the ratchet mechanism and coin ejecting wheel operating in the manner described with reference to Fig. 4. At the same time, the dog 108 on the slide bar engages the spring contact 106 to close the circuit to the vending machine through wires 110, 111, Figs. 1 and 9, to cause an operation of the article delivering apparatus thereof, it being understood that this circuit lasts only momentarily and is broken under the immediate return movement of the slide bar under influence of spring 35 as soon as the deposited coin drops therefrom into the collection receptacle 29.

Similarly, as shown in Fig. 7, with the stop device 103 for the quarter coin slide 12 lowered into vending position, the stop shoulder 105' thereof is adapted to engage the extremity of slide bar 36 such that the inward movement of said slide bar is limited to the extent that the ratchet mechanism will cause the ejecting mechanism to deliver only four nickels change when operated in substantially the manner described with reference to Fig. 6. Likewise, the dog 109 on said slide bar 36 engages the spring contact 106' on said stop 103 to complete the circuit through wires 112, 113 to the vending machine, Figs. 1 and 9, to cause an operation of the article delivering apparatus thereof. Thus, when the device is adapted for use as a combined coin changer and control means for a vending machine, on insertion of a proper coin either the dime or quarter slides, a nickel less than the full value of the coin deposited will be returned to the purchaser together with the article purchased costing five cents. In this relation, it will be understood that upon insertion of a nickel in coin slide 10, no change is returned, of course, but the circuit to the vending machine completed through the switch contacts 83, 84 and wires 85, 86 to cause the same to deliver the article purchased.

Though the invention is shown and described as respects the making of change for coins of two different denominations, namely dimes and quarters, not including pennies, it will of course be understood that the same may be adapted to include pennies without departing from the scope of the invention. It will also be appreciated that the principles of the invention are capable of indefinite extension and design for returning change for any of the larger denominations of coins, or selected number of denominations, by employing the required number of coin slides, a plurality of coin ejecting mechanisms and the necessary operating means therefor.

And while the invention has been described in detail with specific examples such examples are intended as illustrations only, since it will be readily apparent to those skilled in the art that other modifications in the construction, arrangement and general combination of parts may be devised without departing from the spirit and

scope of the invention. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, with all changes falling within the scope, meaning and range of equivalency of the claims intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A device of the character described comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising an operating member and means connecting said operating member and shaft, said operating member having a normal movement for causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, and means mounted for movement into the path of the operating member for restricting the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins.

2. A device of the character described comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, an operating member, means connecting said operating member and ratchet member, said operating member having a normal movement for actuating said ratchet member in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, and means mounted for movement into the path of the operating member for restricting the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins.

3. A device of the character described comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, a crank, and means carried by said crank for moving said ratchet member, a slide bar connected to said crank, said slide bar having a normal movement for actuating the ratchet member through said crank in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, and means mounted for movement into the path of the slide bar for restricting the movement of said slide bar to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins.

4. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising an operating member and means connecting said operating member and shaft, said operating member having a normal movement for causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, a stop device mounted for movement to operative position in the path of the operating member for restricting the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less

than said predetermined number of coins; and control means associated with said stop device engageable by said operating member in such operative position of the stop device.

5. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, an operating member, and means connecting said operating member and ratchet member, said operating member having a normal movement for actuating said ratchet member in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, a stop device mounted for movement to operative position in the path of the operating member for restricting the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins, and control means associated with said stop device engageable by said operating member in such operative position of the stop device.

6. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, a crank, and means carried by said crank for moving said ratchet member, a slide bar connected to said crank, said slide bar having a normal movement for actuating the ratchet member through said crank in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, a stop device mounted for movement to operative position in the path of the slide bar for restricting the movement of said slide bar to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins, and control means associated with said stop device engageable by said slide bar in such operative position of the stop device.

7. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising an operating member and means connecting said operating member and shaft, said operating member having a normal movement for causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, and a combined switch and stop device mounted for movement to operative position in the path of the operating member, said stop being adapted to restrict the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins, and said switch being adapted to be engaged by said operating member in serving as a control means.

8. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, a crank, and means carried by said crank for moving said ratchet member, a slide bar connected to said crank, said slide bar having a normal movement for actuating the ratchet member through said crank in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins, a combined switch and stop device mounted for movement to operative position in the path of the slide bar, said stop being adapted to restrict the movement of said slide bar to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins, and said switch being adapted to be engaged by said slide bar in serving as a control means.

9. A coin changing device comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising an operating member and a lost motion mechanism connecting said operating member and shaft, said operating member having a normal movement for causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins with said lost motion mechanism providing for a relatively small rotation of said shaft during such normal movement of the operating member, and a stop device mounted for movement to operative position in the path of the operating member for restricting the movement of said operating member to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins.

10. A coin changing device for a vending machine comprising a shaft, a coin ejecting mechanism connected thereto and operated in proportion to rotation of said shaft, means for imparting rotary movement to said shaft comprising a ratchet member associated therewith, a lost motion crank mechanism for moving said ratchet member, and a slide bar connected to said crank mechanism, said slide bar having a normal movement for actuating the ratchet member through said crank mechanism in causing said shaft operated coin ejecting mechanism to issue a predetermined number of coins with said lost motion crank providing for a relatively small rotation of said shaft during such normal movement of the operating member, a stop device mounted for movement to operative position in the path of the slide bar for restricting the movement of said slide bar to less than said normal movement in causing the coin ejecting mechanism to issue less than said predetermined number of coins, and control means associated with said stop device engageable by said slide bar in such operative position of the stop device.

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