Nov. 5, 1929. L. H. MORIN 1,734,740

COIN CONTROLLED MECHANISM

Filed Oct. 5, 1927 3 Sheets-Sheet 1.

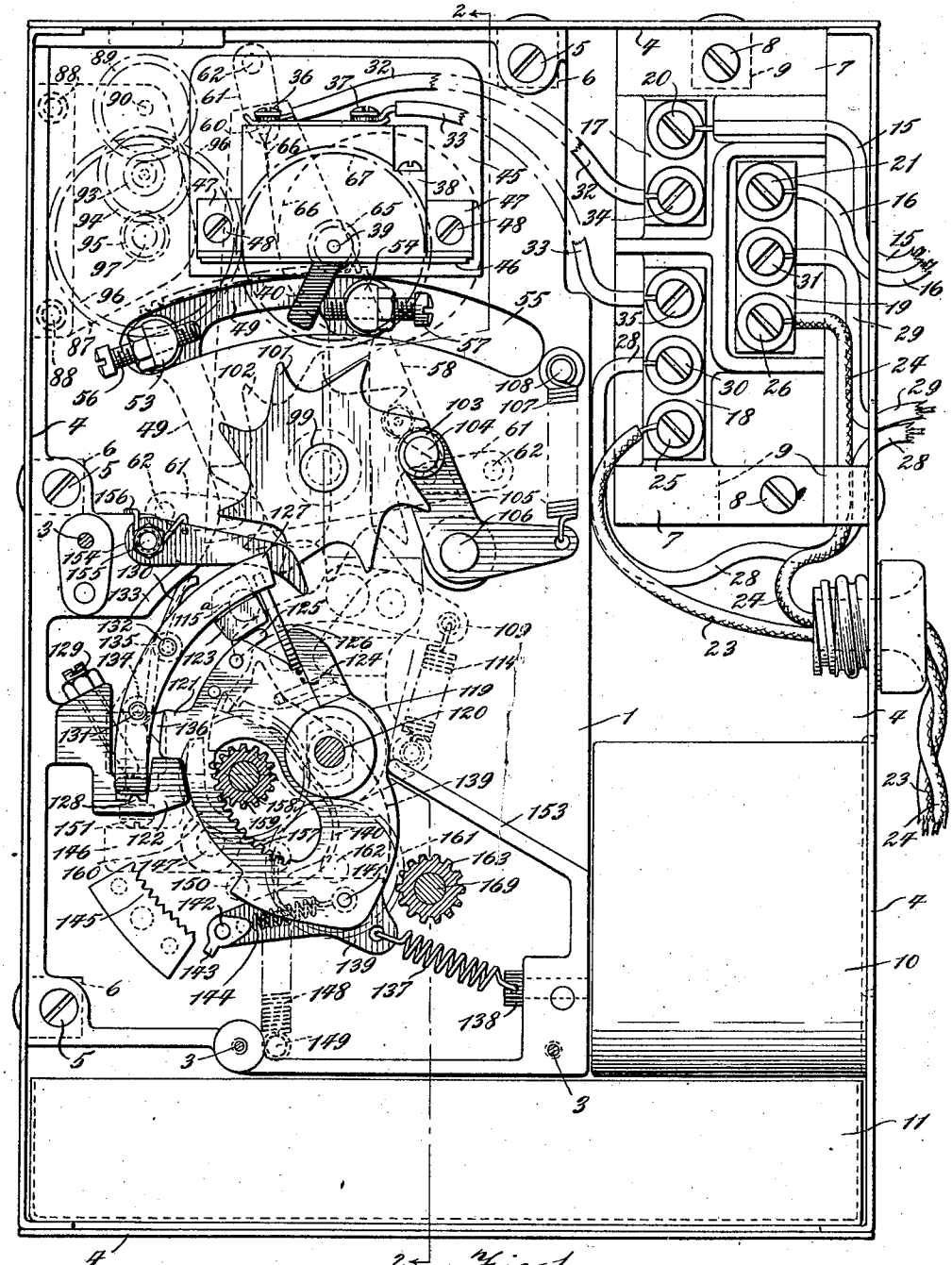


Fig. 1.

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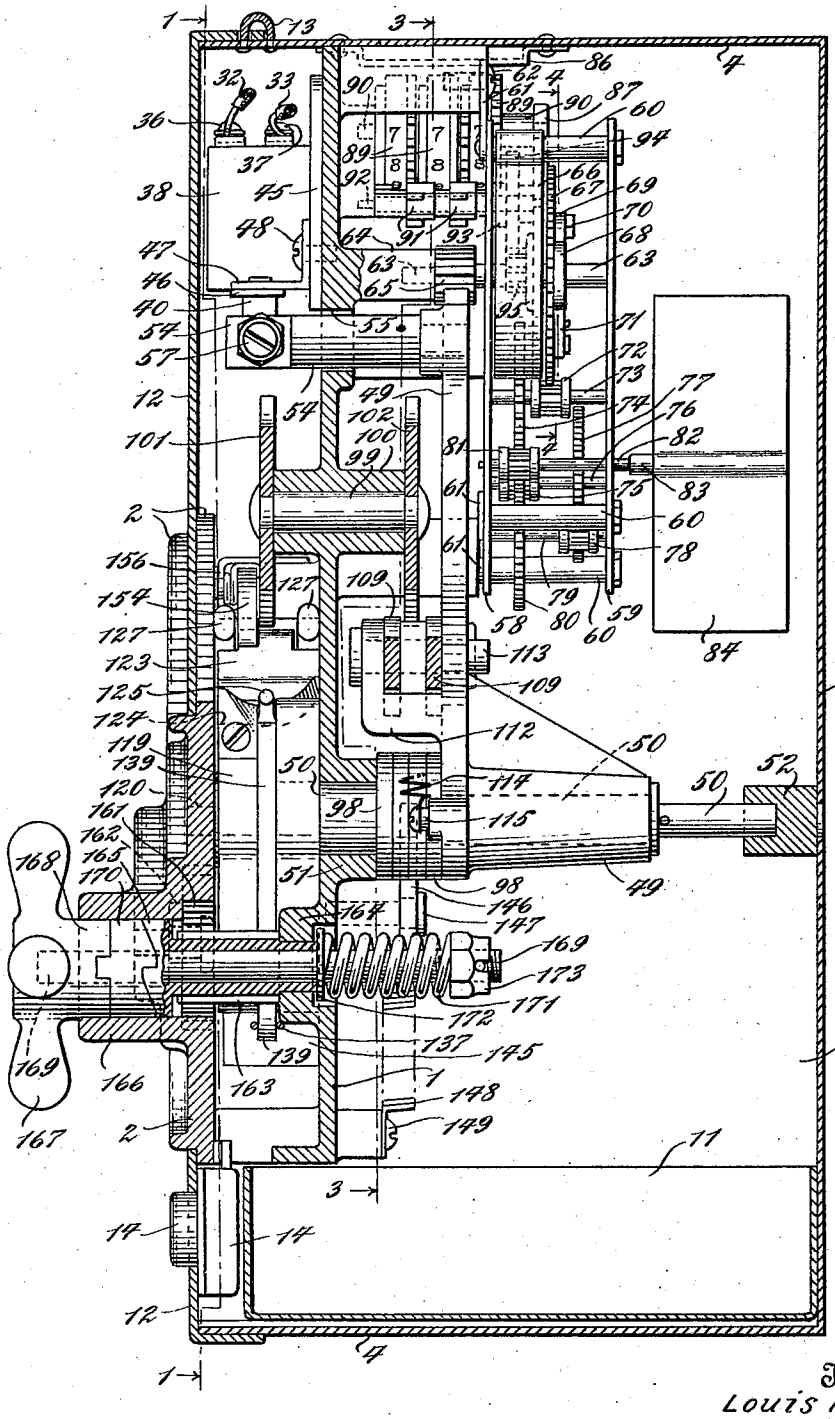


Fig. 2.

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COIN CONTROLLED MECHANISM

Filed Oct. 5, 1927 3 Sheets-Sheet 3

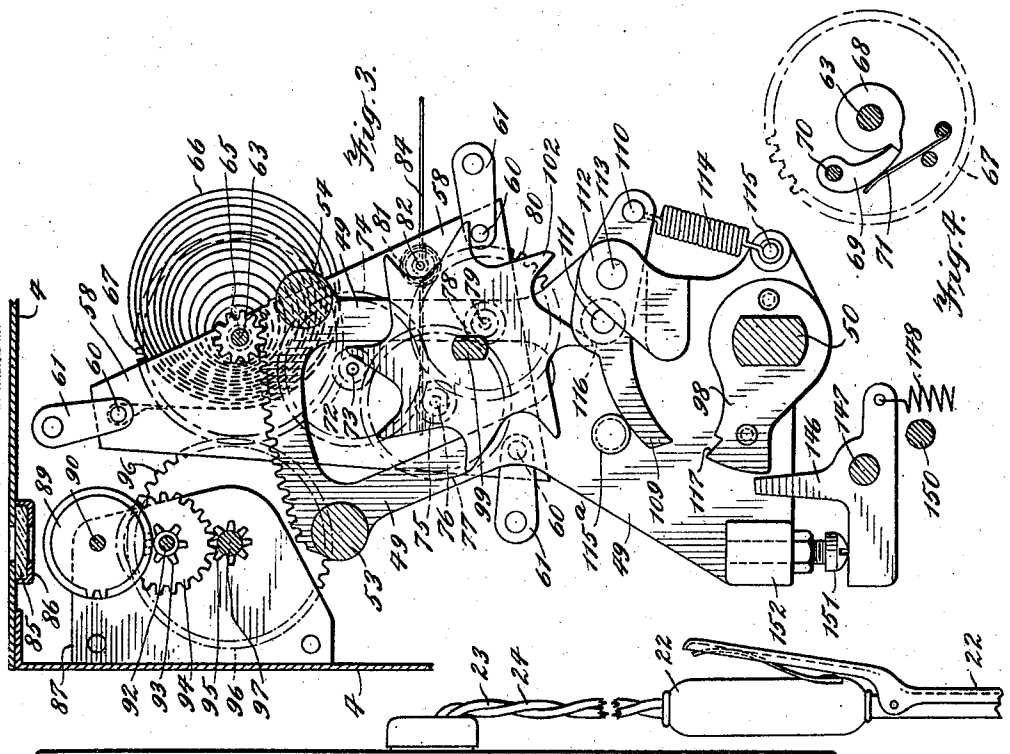


Fig. 3.

Fig. 4.

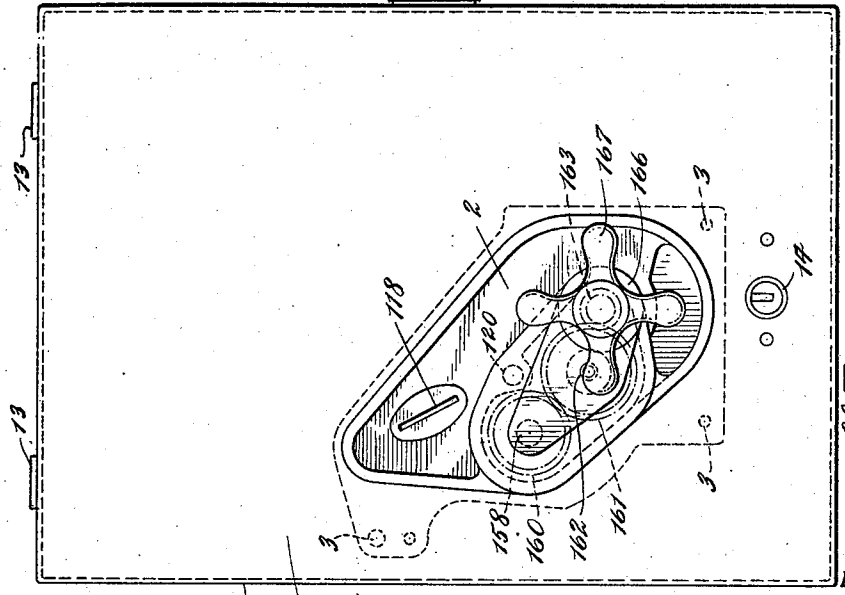


Fig. 6.

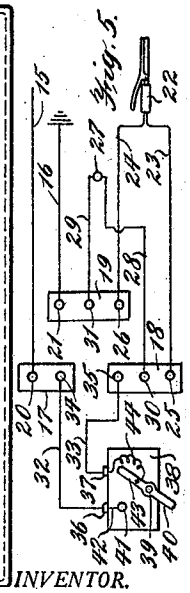


Fig. 5.

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UNITED STATES PATENT OFFICE

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COIN-CONTROLLED MECHANISM

Application filed October 5, 1927. Serial No. 224,052.

The construction and manner of operation of a coin controlled mechanism is necessarily to a considerable extent determined by the kind of service which it is intended to render available to the public. In my application for patent Serial No. 224,051, filed October 5, 1927, there is claimed a heavy duty coin controlled mechanism which is shown as embodied in a service-providing device of the kind employed for automatically effecting the sale of articles and which are commonly known as vending machines. The present invention may be considered in general as a variant form of or modification of that invention by which it is adapted for rendering an entirely different form of service available. The coin controlled mechanism of the present invention as herein disclosed is in control of a timed service-supplying device, for inaugurating the service to be supplied thereby and then, after a predetermined period of time has elapsed, for discontinuing such service, so that thereby the service rendered available is provided only over a predetermined limited period of time. While the service-supplying device shown herein as controlled by the present invention supplies electric current and while the embodiment of the invention disclosed herein is particularly adapted to be employed in connection with such device, it is to be understood as within the scope of the present invention that it may be employed, should occasion arise, in connection with and for controlling the operation of other forms of service-supplying devices in which a substantially similar manner of operation is required.

In carrying out this invention some of the features disclosed and claimed in my above noted prior application have been retained in substantially similar form, while other features have been changed and further features have been incorporated, so that, on the whole, a substantial departure has been made from this prior invention. It should be noted that the construction of the coin carrier and its immediate adjuncts is substantially the same as in my copending application for patent for vending machines, Serial No. 39,442, filed June 25, 1925, which became Patent No. 1,723,948, August 6, 1929, of which the magnet feature is claimed in my copending divisional application Serial No. 133,615, filed September 4, 1926, which became Patent No. 1,657,836, January 31, 1928.

One object of the present invention is to provide a coin controlled mechanism which is particularly adapted for controlling the operation of a service-supplying device in such manner as first to initiate or inaugurate the available service and then, after a desired predetermined interval of time has elapsed, to discontinue the service thus provided, until another similar coin controlled operation is effected. In this connection, another object of the invention is to provide a coin controlled mechanism which is particularly adapted for heavy duty. Other objects are to provide a construction of this kind which is simple, strong, durable, effective, and inexpensive to manufacture. Other objects and advantages of the invention will hereinafter appear.

The invention includes various features of construction and combinations of parts, which are set forth in the appended claims, and as will appear from the following description of one embodiment of the invention, which is illustrated in the accompanying drawings, in which:

Fig. 1 is a complete front elevation of a service-supplying device and of parts of a coin controlled mechanism embodying the invention, with the front door omitted and with parts of the coin controlled mechanism in vertical section just back of the front plate, substantially on the line 1—1 of Fig. 2;

Fig. 2 is a vertical section on the zig-zag line 2—2 of Fig. 1;

Fig. 3 is a partial vertical section substantially on the zig-zag line 3—3 of Fig. 2, with some parts omitted;

Fig. 4 is a partial vertical section on the line 4—4 of Fig. 2, showing a detail feature of the construction;

Fig. 5 is a diagram of the electric circuits, and

Fig. 6 is a reduced front elevation of the complete apparatus in which the invention

is embodied, with some of the interior parts shown in broken lines.

A vertically disposed main frame plate 1 of the coin controlled mechanism is provided, on both the front and rear thereof, with various flanges, projections and bosses, as shown in Figs. 1 and 2, to provide supports and bearings for various operating parts of the coin controlled mechanism, as will hereinafter appear. A front frame plate 2 is disposed in parallel spaced relation to the lower portion of the main frame plate 1 and is firmly secured to forwardly projecting portions of the latter by means of screws 3 (Figs. 1 and 6). The main frame piece 1 is of substantially rectangular outline and fits into a rectangular casing box 4 adjacent the top and left side thereof, where it is secured in place by screws 5 entering lugs 6 provided in the casing 4. A terminal block 7, of insulating material, is similarly secured in the upper right hand corner of the casing box 4 by means of screws 8 and casing lugs 9.

A front vertically arranged baffle plate 10, curved inwardly at its lower end substantially flush with the lower end of the main plate 1, is secured to the adjacent right hand wall of the casing box 4 and serves to direct coins from the coin controlled mechanism into a money pan or coin box 11 which is loosely received in and substantially fills the bottom part of the casing 4 below the main frame 1 (Figs. 1 and 2). The casing box 4 is closed by a front door 12 hinged to the top thereof at 13 and provided at the bottom with a suitable lock 14 (Figs. 2 and 6). The door 12 is cut out around the major central portion of the front frame plate 2, which projects to the outside through the opening thus provided (Figs. 2 and 6). The casing 4 may be conveniently mounted with its back against the wall of a room and secured thereto in any suitable way.

A pair of line conductors or lead-in wires 15 and 16 may proceed from a commercial supply service or from any suitable source of electric current, in Fig. 5 the line conductor 16 being shown as grounded merely for clarity of illustration. Three conductive terminal strips, comprising a short terminal strip 17 and a pair of longer terminal strips 18 and 19, are mounted on the insulating terminal block 7. The line wires 15 and 16 are connected respectively to the short terminal strip 17 and to the right hand longer terminal strip 19 by means of binding screws 20 and 21. The devices for utilizing the electric current are connected across the two longer terminal strips 18 and 19.

In the drawings, the invention is shown as utilized commercially to provide for the use of an electric hair curler 22. A pair of out-put or lead wires 23 and 24 are connected to the curler 22 and twisted together to form an ordinary two-wire cord. One of these leads 23 is connected to the lower terminal strip 18 by means of a binding screw 25 and the other lead 24 is connected to the other longer terminal strip 19 by means of a binding screw 26. Also, to furnish a light when needed in using the curler 22, a lamp 27 is provided, having leads 28 and 29 connected respectively to the two longer terminal strips 18 and 19 by means of binding screws 30 and 31. Obviously, instead of the hair curler 22 and the electric lamp 27, or in addition thereto if desired, electric current may be similarly supplied to any kind of electrically operated device, such, for example, as a suitable stove, an electric fan, or a radio receiving set, merely by connecting their respective lead wires across the two longer terminal strips 18 and 19.

For completing the circuit through the hair curler 22 and the lamp 27 to inaugurate the available service, and then, after a predetermined interval of time has elapsed, for breaking the circuit to discontinue the service, an electrical connection is made between the short terminal strip 17 and the lower longer terminal strip 18, and this connection is subsequently broken. Both of these results are accomplished by means of a suitable circuit making and circuit breaking switch which is operated and controlled by the coin controlled mechanism. For this purpose, service-completing conductors, shown as wires 32 and 33, are connected respectively to the terminal strips 17 and 18 by means of binding screws 34 and 35. The circuit wires 32 and 33 are connected respectively to switch terminals shown as binding screws 36 and 37 (Figs. 1 and 2) mounted upon the top of a switch box or casing 38 which contains the switch mechanism. A journal pin 39 in the lower part of the switch box provides a pivot for a service-controlling or switch operating lever 40 which projects below the switch box (Figs. 1, 2 and 5).

Any suitable form of switch may be employed and it may be of a standard commercial type. In practice a readily purchasable well known commercial type of single pole, toggle, snap switch having a single metal operating lever has proved satisfactory and that is the switch shown in outside elevation in Figs. 1 and 2. In view of the well known construction of switches of this type, it seems unnecessary to illustrate its internal construction. However, for a clear understanding of the manner of operation, a simple but operable conventional form of a circuit making and breaking switch is shown diagrammatically in Fig. 5. As there shown, a contact member 41 is connected by a conductor 42 with the binding screw 36 and a rocking switch arm 43 carried by the rocking operating lever 40 has a pig-tail connection 44 to the other binding screw 37. In the position of

the switch operating lever 40 shown in the drawings (Figs. 1 and 5) the circuit is open and will be closed by the rocking of this lever 40 to its oppositely inclined position.

The switch box 38 is supported on the front face of the outer portion of the main frame plate 1 with the service-controlling operating lever 40 projecting downward. The back of the switch box 38 rests against an interposed insulating plate 45. The switch box 38 has a lower cover plate 46 which projects beyond its ends. A pair of L-shaped brackets or clips 47 are riveted or otherwise secured to the projecting ends of the cover plate 46 and are secured, by means of a pair of screws 48, to the frame plate 1.

This electric switch and more particularly its operating lever 40 forms a part of the coin controlled mechanism, during the operation of which this service-controlling lever 40 is operated in the manner required so as to be rocked to its current supplying position, and then subsequently, after the desired period of time has elapsed, to be returned to its normal position shown in the drawings, in which the supply of current is cut off. More broadly considered, however, the rocking service-controlling lever 40 by which the required operating movement is transmitted to the current controlling parts of the switch, conceivably might be utilized for operating some other form or service-supplying device, which might not be electric, but where a substantially similar manner of operation would be effective, should occasion arise for utilizing the present invention in connection with some such different service-supplying device, although the coin controlled mechanism of the present invention is particularly adapted and intended for controlling a supply of electric current, so as to render it available only over a predetermined limited period of time. The features of construction provided in accordance with the invention for thus operating the service-controlling member, shown as the rocking switch-operating lever 40, will now be described.

Suitably spaced rearwardly from the main frame plate 1, a rocking gear segment 49, which has substantially the form of an upwardly extending arm, is loosely pivoted upon a rocking operating shaft 50 which extends forwardly through the main frame plate 1 and is journaled in a bearing 51 formed thereon, and which extends rearwardly and at its rear end is journaled in a bearing block 52 secured to the back wall of the casing 4. This rocking arm 49 is normally disconnected from its operating shaft 50, and thereby forms an initial operating member for operating the rocking service-controlling lever or switch operating lever 40, which thus forms a second operating member, for operating the above described electrical service-supplying device. For this purpose, the gear segment arm 49 near its end carries a pair of laterally spaced operating lugs or studs 53 and 54 which project forwardly through an arcuate slot 55 in the main frame plate 1. These studs 53 and 54 together with the ends of the slot 55 may serve as stop means for limiting the maximum extent of rocking movement of the gear segment 49, which is more particularly desirable in its return movement, as will presently more clearly appear. A pair of opposed operating screws 56 and 57 are respectively screwed transversely through the forward ends of the respective studs 53 and 54 for transverse adjustment relatively thereto.

When the gear segment 49 is rocked forward and back the opposed spaced ends of these operating screws 56 and 57 will engage alternately with the opposite sides of the rocking service-controlling lever 40 and thus these screws, together with the studs 53 and 54 by which they are carried, form an adjustable lost motion operating connection between the gear segment 49 and the service-controlling switch operating lever 40 for rocking the latter, first to its forward position and for then returning it to its normal position shown in the drawings. The operating arm or gear segment 49 thus forms an initial operating member relatively to which the service-controlling lever 40 is a second operating member which directly operates the switch mechanism.

It will be noted that as the gear segment arm 49 moves forwardly the service-controlling operating lever 40 will not be rocked in its forward direction until the gear segment 49 approaches the end of its forward movement and takes up the lost motion provided between the end of the operating screw 56 and the operating lever 40. Similarly, as the gear segment 49 is returned from its forward to its normal position shown in the drawings, the lost motion then present between the ends of the other operating screw 57 and the operating lever 40 will prevent the latter from being returned to its normal circuit opening position until the gear segment 49 approaches the end of its return movement. By suitably adjusting the operating screws 56 and 57, the extent of the lost motion between them as to each direction of their movement may be varied, for thereby rocking the circuit controlling switch lever 40 to the proper extent and at the proper point, in both the forward and back rocking movement of the gear segment 49. In a usual snap switch construction, as above noted, when the movement of the switch lever 40 has been substantially initiated in one direction, it will be snapped over to its opposite position by the switch mechanism, for thus quickly making or breaking the electric circuit, which is desirable, as is well understood.

The coin controlled means for manually

rocking the initial operating member or gear segment arm 49 to its forward position, for thereby closing the electric circuit, will be described presently. An energy storing device is provided to be stored with energy by the gear segment 49 during its forward movement and then to become immediately effective for returning the gear segment to its normal position. Also a speed-retarding timing device is provided in connection with the energy storing device for retarding the return movement of the gear segment arm 49 over a predetermined interval of time, during which the supply of electric current is provided. The energy storing device and the timing device shown will now be described.

In the construction shown, a relatively small auxiliary frame is provided for the energy storing device and for the timing device which is shown as associated therewith. This frame has a front plate 58 and a rear plate 59 which are tied together by spacers 60, shown as three in number. This frame is supported at the rear of the upper portion of the main frame plate 1, and also at the rear of the upper end portion of the gear segment 49, by means of three small strips or clips 61, secured at the front face of the front plate 58 on the forward ends of the spacers 60 and having their projecting other ends secured, such as by means of screws 62, to rearwardly projecting portions or lugs formed on the back of the main frame plate 1.

A main shaft 63, which forms both a spring-winding and a timing or retarding shaft, is journaled in the frame plates 58 and 59 and projects forwardly, where at its forward end it is journaled in a bearing 64 on the main frame plate 1 (Fig. 2). A spring-winding pinion 65 is fixed on this shaft 63 and engages with the gear teeth of the operating arm or gear segment 49. A convolute ribbon spring 66, of the usual clock type, surrounds the shaft 63, with its inner end connected thereto and with its outer end anchored to the spacer 60 at the top of the frame (Figs. 1, 2 and 3). The convolutions of the spring are arranged so that it will be wound up by the counter-clockwise rotation of the pinion 65, as viewed from the front (Figs. 1 and 3), this being the direction of forward rotation of this pinion as imparted thereto by the forward rocking movement of the gear segment 49. When this spring has been thus wound, it acts through the pinion 65 as a return spring for the gear segment 49, and becomes immediately effective for this purpose under the control of the speed-retarding timing device, which will now be described.

An automatically acting one-way clutching connection is provided between the rotatable spring-winding and timing shaft 63 and the timing device, by which the timing device remains idle or inactive during the forward rotation of this shaft and then becomes effective, in opposition to the tension of the wound spring 66, to retard the reverse rotation of this shaft together with the pinion 65, thereby to retard the spring-actuated return to normal position of the gear segment 49 over a predetermined interval of time. In the construction shown, a large gear wheel 67 is loosely mounted on the shaft 63 at the rear of the spring 66 and forms a rotatable part of the timing or retarding device. Just at the back of this gear a clutch disc 68, shown as having a single clutch tooth, is fixed upon this shaft, with its clutch tooth directed backwardly in reference to the direction of forward rotation of the shaft. A one-way clutch pawl 69 is pivoted, by a pin 70, on the back of the gear 67, to be engaged by the tooth of the clutch disc 68 upon the reverse rotation of the shaft 63, while providing for the free forward rotation of the latter (Figs. 2 and 4). It will be noted of Fig. 4 that the gear wheel 67, which is located forwardly of the section line on Fig. 2, is accordingly shown in broken lines in Fig. 4. The clutch pawl 69 is urged towards the clutch disc 68 by a small leaf spring 71 attached to the gear wheel 67 (Figs. 2 and 4).

When the gear 67 is rotated by the shaft 63, through the flexing of the wound spring 66, this gear 67 transmits its rotation through a train of speed-multiplying, and correspondingly power-reducing, gearing shown as comprising consecutively, a pinion 72 fixed on a shaft 73, a gear 74 fixed on this shaft and engaging a pinion 75 fixed on a shaft 76, a gear 77 fixed on this latter shaft and engaging a pinion 78 fixed on a shaft 79, and a gear 80 fixed on the latter shaft and engaging a pinion 81 fixed on a final shaft 82. The opposite ends of the three shafts 73, 76 and 79 are journaled respectively in the front and rear frame plates 58 and 59. The final shaft 82 is journaled at its front end in the front frame plate 58 and is also journaled in the rear frame plate 59 beyond which it projects. A ferrule 83 is fixed upon the rear projecting end of the shaft 82 and fixed upon this ferrule is a fan or paddle 84.

In accordance with well known principles, the air will offer a substantial resistance to the rapid rotation of this paddle fan, whereby, through the above described connections, the return to normal position of the switch operating arm or gear segment 49 will be retarded and delayed, so that the service-controlling operating lever 40 will not be returned thereby to its circuit breaking position until a predetermined limited period of time has elapsed.

While the air paddle 84 has proved satisfactory in practice, it should be noted that, instead thereof, some other form of retarding device might be connected to the shaft 82, or to a corresponding shaft or other rotatable

part. For example, an escapement device substantially similar to those commonly employed in clocks, suitably constructed and adjusted to effect a proper timing, might be utilized for this purpose. In fact, any suitable form of retarding or timing device may be employed in connection with the initial operating member or arm 49.

The clock type of spring 66 shown has proved of particular utility as an energy storing device, in that it economizes space, is of light weight, and at the same time provides for the storing of an effective amount of energy therein. However, it is to be understood as within the province of the invention to employ some different kind of suitable energy storing device. For example, a weight might be used for this purpose. Likewise, a different form of spring might be used and operatively connected in a different manner to the initial operating member or arm 49.

In carrying out the invention, a counter or odometer is provided for indicating the number of operations of the apparatus, and which consequently correspondingly indicates the number of coins which have been deposited in the money pan 11. The indication of the counter may be seen through a suitable window provided in the top of the casing 4, this window comprising a slot in the casing covered at the inside by a transparent plate 85, such as glass, held in place by a slotted shell 86 secured by rivets (Fig. 2) to the casing 4. The counter per se may be of a usual construction, as shown, and therefore need not be described in detail. It is supported in part directly by the main frame plate 1 at the top and left side thereof and in part by a bracket plate 87 secured by screws 88 (Fig. 1) to a projecting portion of the main frame plate 1. The counter shown comprises three axially aligned number wheels 89 loosely mounted on a number wheel shaft 90, and a pair of transfer pinions 91 loosely mounted on a pinion shaft 92.

The units wheel of the counter, which is the one at the rear and appearing at the right in Fig. 2, is actuated by a drive pinion 93 loosely mounted on the pinion shaft 92 and having connected thereto a drive gear 94. The drive gear 94 is engaged and driven by a pinion 95 which is formed on or carried by large intermediate gear 96, both journaled on a stud 97. This intermediate gear 96 is engaged and driven by the gear 67 to which the timing device is connected, as above described. The above noted gearing, connecting this gear wheel 67 with the units wheel of the number wheels 89, is so proportioned that each time the gear wheel 67 is rotated the units number wheel will be moved forward to the extent of a unit indication. This occurs, through the clutch connection 68 and 69, each time that the gear segment or operating arm 49 is returned from its forward to its normal position by the spring 66. Thus each service-supplying operation of the apparatus will be indicated by the number wheels 89 of the counter.

The normally ineffective manually operable device comprising the parts of the coin controlled mechanism which are made effective by means of a proper coin, for moving the initial operating member or gear segment arm 49 to its forward position, thereby to inaugurate the service supplied by the apparatus, will now be described, together with the various associated cooperating parts.

It will be noted that the forward portion of the rocking operating shaft 50 which is journaled in the bearing 51 is of larger diameter than the rear portion of this shaft upon which the combined operating arm and spring-winding gear segment 49 is loosely mounted. Between the inner end of the bearing 51 and the front face of the gear segment 49, this shaft 50 is shown as flattened on its opposite sides (Figs. 1 and 3). A lever arm 98 is mounted on this flattened portion of the shaft 50 to be rocked thereby and normally extends towards the left at a slight inclination, as viewed from the front (Fig. 3). For obtaining adequate strength, with inexpensiveness of manufacture, this lever arm is shown as made up of four plate parts secured together by rivets (Figs. 2 and 3). This lever arm 98 forms a normally ineffective freely idly movable driving member for the gear segment arm 49, from which it is normally disconnected. A normally ineffective one-way coupling device to be made effective by a moving coin is provided for coupling or connecting the lever arm 98 to the gear segment arm 49 so that this gear segment will then be driven by the lever arm 98 in the forward direction only of the rocking movement of the latter. The particular coupling device shown as provided for this purpose will now be described.

Above the rocking operating shaft 50 and parallel thereto a star wheel shaft 99 is journaled in and projects through a bearing 100 formed on the main frame plate 1. A coin-driven star wheel 101 is fixed upon the front end of this shaft for rotating the latter. The teeth of this star wheel have abrupt faces in the counter-clockwise direction in which it is to be rotated, the other sides or faces of these teeth being inclined. One of the teeth of this star wheel, at the lower part of its periphery, is always normally positioned to be engaged by the upper edge portion of a moving coin for thereby imparting a step of rotative movement to the star wheel. A second or rear star wheel 102, similar to the first or front star wheel 101 and having the same number and kind of teeth correspondingly directed, is fixed upon the rear end of the shaft 99, and is shown (Figs. 1 and 3) as having its teeth positioned midway be-

tween those of the front star wheel 101. This rear star wheel 102 is at the front of and adjacent to the upstanding gear segment arm 49.

Both of the star wheels 101 and 102 are yieldably positioned and normally thus maintained by means of a yieldable stop device. For this purpose, in the construction shown, a stop roller 103 engages between the teeth of the front or coin-driven star wheel 101, at the right thereof, as viewed from the front in Fig. 1. This roller is rotatable on a headed stud 104 which projects forwardly from the upper end of an upper arm of a bell-crank lever 105 the other arm of which projects towards the right, this lever being pivoted on a headed stud 106 which projects from the front of the main frame plate 1. The lower end of a coiled retractile spring 107 is connected to the outer end of the lateral arm of this lever and the upper end of this spring is anchored to the main frame plate 1 by means of a stud 108. This spring 107 urges the stop roller 103 towards the star wheel 101 and as this star wheel is rotated the inclined cam faces of its teeth will push back the stop roller 103 against the tension of the spring 107 which will react to position the star wheel and will be effective to impart the final portion of a step of movement thereto. Rotative movement of the first star wheel 101 imparts a like movement to the rear star wheel 102, which also is correspondingly positioned by the yieldable stop roller 103.

A normally ineffective coupling member is made effective by one of the teeth of the rotating rear star wheel 102 to form a one-way driving connection of the driving lever 98, in the forward movement of the latter, with the gear segment arm 49, thereby to impart forward rocking movement to the latter throughout the full extent of its operating movement, thereby to wind the spring 66 and to rock the service-controlling lever or switch operating lever 40 to the service-supplying or circuit closing position, whereby the service will be inaugurated in the manner hereinbefore described.

In the construction shown this coupling member comprises a two-armed substantially arcuate normally transversely extending pawl 109, shown as made up of two similar axially spaced parts which are rigidly connected together by two pins 110 and 111, of which the pin 110 is at the right end, or end of the tail arm, of the pawl and the pin 111 is at an intermediate position in the engaging arm of the pawl, which projects towards the left. Between these pins the coupling pawl 109 is pivoted on the gear segment arm 49 in notches provided in the top of a forwardly projecting lug or ear 112, on a pivot pin 113 which passes through this lug and through the body of the gear segment arm 49 (Figs. 2 and 3).

The engaging end of the driving arm of this pawl 109 is normally maintained above and out of the path of the end of the driving lever 98 in the rocking movement of the latter, by means of a coiled retractile spring 114 which at its upper end is connected, between the two parts of this pawl 109, to the tail arm pin 110 and at its lower end is anchored to a pin or stud 115 which projects from the front of the gear segment arm 49. This spring 114 normally holds the driving arm of the coupling pawl 109 against a stop lug or stud 115[a] which projects from the front of the gear segment arm 49. The pin 111 which connects the two parts of the driving arm of the coupling pawl 109 is provided between these parts of the pawl with a roller 116 which, in the normal position of the gear segment arm 49 and of the star wheels 101 and 102, is positioned just at the right of the inclined face of the end portion of the lowermost tooth of the rear star wheel 102 and substantially in contact therewith (Figs. 1 and 3).

As this star wheel 102 moves a step forward it will depress the driving arm of the coupling pawl 109 to bring its engaging end into the path of the end of the driving lever 98 in the forward movement of the latter and will thus hold this pawl at its engaging position during the time that the lower tooth of the star wheel is passing over the pawl roller 116. By reason of the fact that the lever arm 98 which drives the gear segment arm 49 starts to move before the pawl-operating star wheel 102 begins to move and is continuing to move while this star wheel is moving and depressing the engaging end of the coupling pawl 109, as will presently clearly appear, some free space or lost motion is provided between the end of the driving lever 98 and the engaging end of the coupling pawl 109 in the normal position of this driving lever and gear segment arm 49, as clearly appears in Fig. 3. At the time when this lost motion is taken up, the engaging end of the coupling pawl 109 will be held down by the end of the tooth of the star wheel 102 which is then in engagement with the pawl roller 116.

Soon after the end of the driving lever 98 has abutted against the end of the pawl 109 the pawl-operating tooth of the star wheel 102 will pass beyond the pawl roller 116. The coupling pawl 109 will then be maintained in engagement with the driving lever 98 against the tension of the spring 114 by reason of the driving pressure on the end of this pawl as the gear segment arm 49 is moved forward by the forwardly moving driving lever 98, as will be readily understood. For assuring that this driving connection will be maintained, the end of the

driving lever 98 is notched as shown (Fig. 3) to provide thereon an undercut driving face 117 at an acute angle to the radius of this lever and the engaging end of the coupling pawl 109 is correspondingly pointed at an acute angle complementary to this driving face. As the gear segment arm 49 is rocked forwardly by the driving lever 98, through the intermediary of the engaged coupling pawl 109, the gear segment arm carries with it the coupling pawl and moves the latter bodily away from the rear star wheel 102. At this time the moving coin, together with the spring-pressed stop roller 103, will have repositioned the star wheels 101 and 102.

The construction of the coupling pawl 109 to operate in the manner just described forms one of the features provided for assuring that the apparatus shall be in a non-operable condition until the gear segment arm 49 has returned to its normal position to complete a service-supplying operation which has been inaugurated, as will hereinafter clearly appear.

The manually operable means provided in carrying out the invention for rocking the driving lever 98 in the forward direction and for concomitantly moving the coin to impart a step of rotative movement to the star wheels 101 and 102, will now be described, together with the ancillary features controlling the operation of the coin controlled mechanism and thus of the service-supplying operation.

Near the top of its exposed central portion the front frame plate 2 has through it a slightly inclined coin slot 118. A normally ineffective freely idly movable rocking coin carrier 119 is fixed upon the forward end of the operating shaft 50, so that thereby the driving lever 98 and the coin carrier 119 are positively and rigidly connected together for concomitant unitary rocking movement. At its front the coin carrier 119 is provided with a pivot stud 120 (Figs. 1, 2 and 6) which is journaled in the front plate 2 in axial alignment with the operating shaft 50. The coin carrier 119 extends above and below its pivotal axis and is of substantially arcuate segmental shape towards the left, as viewed from the front in Fig. 1.

The arcuate periphery of the coin carrier 119 at the left of its axis is provided with a limiting lug 121 which may move between lower and upper stop lugs 122 and 123 provided on the main frame plate 1 for limiting the rocking movement of the coin carrier 119 and of the driving lever 98. At its top the coin carrier 119 is provided with a coin holding slot 124 and outwardly from this slot it carries a coin moving finger 125 to engage with substantially the center of the left side of a coin 126 ((Fig. 1) the lower edge of which is seated in the slot 124. This finger 125 wtll pass through the hole of a washer and cause it to be discarded. The coin holding slot 124 is normally in alignment with the lower portion of the coin slot 118 in the front plate 2 with the end of the finger 125 just at the left of the latter slot. The right hand inclined face of the upper stop lug 123 is substantially in alignment with and just clear of the upper part of the coin slot 118 and serves as a guide and support for the inserted coin 126.

A laterally curved horseshoe magnet 127 is pivoted at 128 in a notch provided in the top of the lower stop lug 122, where it is held in place by a screw pin 129. The upper spaced pole ends of the magnets arms extend at an upward inclination towards the right above and beyond the upper stop lug 123 and normally slightly overlap the upper portion of the coin slot 118. The magnet arms are yieldingly pressed against the stop lug 123, which is notched to receive them (Figs. 1 and 2), by a spring 130 which is carried by the magnet by means of a pair of lower and upper pins 131 and 132 with the upper end of this spring engaging against a lug 133 provided on the frame plate 1.

When a proper coin is pushed through the coin slot 118 its upper edge will engage the forward magnet arm to lift the ends of the magnet and as the coin passes inwardly it will be received at its upper edge between the spring-pressed magnet arms which will position the coin so that its forward edge will be clear of the coin slot 118 in the front plate 2 when the coin is moved away from this slot by the rocking of the coin carrier 119, so that thereby the magnet 127 forms a coin-positioning device for the inserted coin 126 (Figs. 1 and 2).

The spring-carrying magnet pins 131 and 132 also serve as journals for a pair of small lower and upper rollers 134 and 135 between the magnet arms. A cam projection 136 on the coin carrier lug 121 has its upper inclined face normally just below the lower roller 134. As the coin carrier 119 rocks forwardly this cam projection will successively engage and release the rollers 134 and 135, thereby causing a paramagnetic slug to be discarded by the coin carrier 119 coacting with the magnet 127.

A transversely extending coiled retractile return spring 137 for the driving lever 98 and the coin carrier 119 is anchored at one end to the end of a pin 138 secured in a forwardly projecting portion of the main frame plate 1 at the lower right hand corner thereof. The other end of the spring 137 is connected to the lower end of the coin carrier 119 through the intermediary of a bent or curved lever 139 located for the most part in a deep slot 140 in the right hand and lower portion of the coin carrier and pivoted to the lower end of the coin carrier by a pin 141. The return spring 137 is connected to the lever 139 below its pivot pin 141, so that thereby the upper

end of this lever normally abuts against the bottom of the slot 140. This upper end of the lever 139 is normally positioned just at the left of the coin holding slot 124 in the coin carrier 119 and forms a feeler for a coin in this slot.

The lower end of this lever 139 projects to the left and has pivoted thereon at opposite sides thereof, by means of a pin 142, a pair of reversible pawls 143, one of which appears in Fig. 1. These pawls are urged towards their intermediary position (Fig. 1) by a corresponding pair of small coiled retractile springs 144 connected to tails of the pawls and anchored to the pivot pin 141 of the feeler lever 139. An arcuate saw-tooth ratchet 145, shown as secured to the front of the main frame plate 1, is provided for the pawls 143.

When the coin carrier 119 is rocked substantially to its full extent the pawls 143, in both the forward and the return movements of the coin carrier, will wipe over the ratchet 145 and escape from the corresponding end thereof. In an idle movement of the coin carrier, when there is no coin in its slot 124, the pawls 143 may reverse on the ratchet 145 to permit the return of the driving lever 98 and the coin carrier 119 to their normal position, the upper end of the feeler lever 139 then passing across the empty coin holding slot 124 as these pawls reverse. A coin in the slot 124 will prevent the reversal of the pawls 143 on the ratchet 145, thereby compelling a full forward movement of the driving lever 98 and the coin carrier 119 before they can be returned to their normal position. This prevents the loss of coins in the apparatus.

In this connection, however, it should be noted that after the coin carrier 119 has begun its return movement the pawls 143 during their return movement on the ratchet 145, will be locked against reversal, so that thereby the coin carrier 119 cannot be again moved forward from a partially returned position, but is compelled to complete its return movement for the escape of these pawls from the lower end of the ratchet 145. This locking against forward movement of the coin carrier 119 results by reason of the locking toggle formed by the pawls 143 with the lower arm of the lever 139 between the pawl pivot 142 and the pivot 141 for the lever 139 on the coin carrier 119.

This locking of the coin carrier 119, by the pawls 143, against forward movement from a partially returned or intermediate position will likewise similarly lock the driving lever 98 against forward movement. This locking of the driving lever 98 has particular utility in the carrying out of the invention as one of the features in the means provided to prevent a second, or successive, service-supplying operation from being inaugurated before the first has been completed, as will presently clearly appear. It might be further noted in this connection that when the operating arm or gear segment 49 is coupled to the driving lever 98, as above described, the extent of forward movement imparted to this operating arm 49 by the driving lever 98 will be determined by the upper stop lug 123 for the coin carrier 119.

In view of the fact that the freely movable driving lever 98 and coin carrier 119, after having been rocked to their forward service-providing position following the insertion of a coin, will be immediately started on their return movement by the coin carrier spring 137, while the operating arm or gear segment 49 will be returned slowly to its normal position while the service is provided, it will be realized that unless some preventive means were provided, the driving lever 98 could be again rocked forward, either from a partially returned or from its fully returned position, a successive number of times, thereby again to rock forward the operating arm 49 from a partially returned position thereof and thus prolong the service rendered indefinitely without the insertion of any more than a single coin.

Obviously also it is desirable, as a safeguard to the customer after a coin has been inserted, that assurance of a complete service-supplying operation of the apparatus shall be provided. For this purpose, means are provided to prevent the apparatus from being restored to an operable condition until the gear segment arm 49, in its retarded movement, has fully returned to its normal position for discontinuing the service which has been paid for. Accordingly, in carrying out the invention, means are provided to prevent the return of the coin carrier 119 to its normal coin-receiving position until the gear segment 49 has completed its retarded return movement to its normal position.

In the construction shown, a three-armed stop pawl 146 for the driving arm 98 in its return movement is pivoted on a headed stud 147 which projects from a rear thickened portion of the main frame plate 1 (Figs. 1, 2 and 3). This stop pawl has an upstanding engaging arm, a tail arm projecting to the right and a releasing arm projecting to the left, as seen from the front in Figs. 1 and 3. This pawl is urged to rock in a clockwise direction, as viewed from the front (Figs. 1 and 3), by a coiled retractile spring 148 connected at its upper end to the end of the tail arm of the pawl and at its lower end anchored, by means of a screw 149, to a rearwardly projecting portion of the main frame plate 1. This pawl 148 is stopped in its spring-actuated movement by the abutting of its tail arm against a stop lug 150 which projects from the back of the frame plate 1.

The upper side of the releasing arm of this pawl is engaged by the lower end of a downwardly projecting operating screw 151 which is carried by and is adjustable in a lug 152 which projects from the front of the gear segment arm 49, which is widened at this point towards the left from its axis shaft 50. The stop end of the upstanding engaging arm of this pawl is normally positioned in adjacent overlapping relation with the end of the driving lever 98 in the normal position of the latter and is thus maintained by the operating screw 151 in the normal position of the gear segment arm 49 (Figs. 1 and 3). The driving lever 98, together with the coin carrier 119, thus may be rocked idly forward and back throughout the extent of their movement, or to a less extent, without the driving lever 98 having any engagement either with the coupling pawl 109 or the stop pawl 146.

When the gear segment arm 49 is moved forward by the driving lever 98, following the insertion of a coin, it will lift the operating screw 151 away from the releasing arm of the pawl 146 and the pawl spring 148 will then become effective to move the stop end of this pawl into the terminal portion of the return path of the driving lever 98. When the driving lever 98 and the gear segment arm 49 have completed their forward movement, the coin carrier spring 137 becomes immediately effective for quickly returning the driving lever 98 and the coin carrier 119 towards their normal position, while the gear segment arm 49 is returning slowly. Towards the end of such return movement of the driving lever 98 the lower side of its outer end will abut against the stop end of the pawl 146, thereby arresting the return movement and preventing the full return of the coin-carrier 119 to its normal coin receiving position, whereby the coin controlled mechanism will be in a non-operable condition. During the terminal part of the retarded return movement of the gear segment arm 49, after the desired predetermined interval of time has elapsed, the operating screw 151 will come into engagement with the releasing arm of the pawl 146 and as the gear segment arm 49 completes its return movement it will rock the pawl 146 back to its normal position, out of engagement with the driving lever 98, whereupon the coin carrier spring 137 will complete the return movement of the driving lever 98 and coin carrier 119, so that the latter will be returned to its normal coin-receiving position and the coin controlled mechanism will thus be in an operable condition for a subsequent operation of the entire apparatus.

It will be noted of the particular construction shown and as already described that the cooperating relation existing between the stop pawl 146 and the coin carrier pawls 143 is effective to lock the driving lever 98 against forward movement while it is in engagement with the stop pawl 146, by reason of the fact that the coin carrier pawls 143 cannot then reverse on the ratchet 145 to permit such forward movement. This prevents the gear segment arm 49 from being rocked forward from some intermediate position of its retarded return movement, and thus prolong the service indefinitely following the insertion of a single coin.

It will also be noted of the particular construction shown that as soon as the driving lever 98 begins its rapid return movement it will release the coupling pawl 109 which then will be immediately snapped by its spring 114 to its uncoupling or disengaging position at a time when the gear segment arm 49 is at its forward position and is only beginning its retarded return movement. The coupling pawl 109 will thus be at an ineffective position throughout the return movement of the gear segment arm 49, so that forward movement of the driving lever 98 could be permitted and would then be ineffective to drive the gear segment, as the driving lever 98 could rock idly beneath the ineffective coupling pawl 109 at any time during the retarded return movement of the gear segment arm 49, as well as after it has returned to its normal position. Thus this coupling pawl construction in itself would be effective to prevent the prolongation of the service without the insertion of a coin.

It therefore becomes evident that, in the particular embodiment of the invention shown, either one or the other of these features for preventing undue prolongation of the service beyond the time paid for might be retained and the other omitted. Consequently, the particular construction shown has the advantage that it provides latitude for suitable modification in construction, which might be desirable in some instances.

For example, a slight modification of the feeler lever 139 in relation to its pawls 143 would permit the driving lever 98 and coin carrier 119 to be moved forward from an intermediate position of their return movement, in which case the particular pawl construction shown would prevent the driving forward of the gear segment arm 49. Also it is conceivable that some entirely different device other than the feeler lever 139 and its pawls 143 might be employed for preventing the loss of coins in the apparatus. Also the construction of the coupling pawl 109 may be changed in such manner that this pawl would then retain its effective or engaging position throughout the major portion of the return movement of the gear segment arm 49, and would then be moved to its ineffective position as the gear segment arm approaches the termination of its return movement to normal position. In such

case, the locked pawls 143 would be effective to prevent forward movement of the driving lever 98. Also in case the stop pawl 146 should be omitted and, for example, some different device employed for rendering the coin controlled mechanism inoperable, then the particular coupling pawl construction shown would permit the idle and ineffective rocking of the driving lever 98 to a forward position during the retarded return movement of the gear segment arm 49.

While the coupling pawl construction shown is particularly intended and designed to be employed in a coin controlled mechanism for a service-supplying device, such as shown, in which the service provided is extended over a period of time, it is to be noted that this construction of coupling pawl is also suitable to be employed in a different construction of the coin controlled mechanism for a different purpose, such, for example, as that disclosed in my above noted application for patent Serial No. 224,051 filed October 5, 1927, which is there shown as employed to operate a vending machine. This other application discloses the above noted different form of the coupling pawl, which as above noted, might be employed in carrying out the present invention.

At the completion of the forward movement of the coin carrier 119 when it carries a coin 126, as shown in Fig. 1, the coin may drop upon an inclined ledge 153 provided on the forward face of the main frame plate 1, from which it will slide and drop upon the lower inwardly turned end portion of the baffle plate 10 and thence into the money pan 11. A coin disengaging or kick-off pawl 154 is provided to assure the disengagement of of the coin from the coin carrier. This pawl is privoted at the front of a thickened portion of the frame plate 1 on a pin 155 and normally rests on the top of the magnet spring lug 133, against which it is pressed by a bent wire spring 156. This pawl extends over the coin carrier 119 and has its free end inclined downwardly, to be lifted by the advancing coin and upon the return movement of the coin carrier to engage and dislodge the coin.

The manually operable means shown as provided in carrying out the invention for imparting forward rocking movement to the driving lever 98 and the coin carrier 119 against the tension of their return spring 137 will now be described. Within a large slotted opening in the coin carrier 119 there is provided on the coin carrier an internally toothed arcuate rack 157. A shaft 158 passes through this opening and is journaled at its ends in the frame plates 1 and 2. A pinion 159 fixed on the shaft 158 engages the coin carrier rack 157 and at its forward end has connected thereto a spur gear 160 at the front of the coin carrier 119. The gear 160 is engaged by a similar gear 161 which is rotatable on a headed journal stud 162 projecting inwardly from the front plate 2. These gears 160 and 161 are contained in a recess formed in the inner face of the front frame plate 2, as shown in Fig. 2. In view of the fact that these gears are at the front of the plane indicated by the section line 1—1 on Fig. 2, these gears are shown by broken lines in Fig. 1, and are also similarly shown in Fig. 6.

The gear 161 is an idler or intermediate transmission gear which is engaged and driven by a tubular pinion 163. The rear end of this pinion 163 is smooth and is journaled in a bearing 164 formed on the front of the main frame plate 1, through which the end of this pinion extends. The forward end of this pinion has thereon a head 165 which is journaled in the front frame plate 2 in a bearing 166 forming a front boss on this frame plate. A handle knob 167 has its hub 168 journaled in the outer end of the bearing boss 166 and is fixed upon the outer end of a handle shaft 169 which extends inwardly loosely through the pinion 163 and projects some distance beyond the rear end thereof. A clutch element 170, journaled within the bearing boss 166, is connected to the hub 168 of the handle knob 167 to be positively rotated in either direction by the latter. The pinion head 165 forms a cooperating clutch element with this handle-driven clutch element 170. These clutch elements 165 and 170 are shown (Fig. 2) as provided with complementary inclined interengaging clutch teeth so as to form a one-way driving clutch of the ratchet type.

The inwardly projection portion of the handle shaft 169 carries a coiled compression spring 171 which acts between the handle shaft 169 and the inner end of the handle pinion 163 for maintaining a positively acting one-way driving connection between the clutch elements 165 and 170. The forward end of this clutch spring 171 bears against a washer 172 which bears against the inner end of the pinion 163. The inner end of this clutch spring bears against a nut 173 screwed on the inner end of the handle shaft 169 and by which the tension of this spring may be adjusted. The inclined clutch teeth of the clutch elements 165 and 170 are shown (Fig. 2) as disposed or directed so that clockwise rotation of the handle knob 167 (Fig. 6) will positively drive the pinion 163, while rotation of the handle knob 167 in the opposite direction will cause the handle-connected clutch element 170 to yield and rotate on the pinion clutch element 165, thereby apprising the customer that the handle knob 167 is being rotated in the wrong direction.

When the handle knob 167 is rotated in the forward or clockwise direction, the driving lever 98 and the coin carrier 119 will be positively rocked in the forward direction against the tension of their spring 137, through the

intermediary of the above described driving connections comprising the clutch elements 165 and 170 and the power-multiplying toothed gearing, beginning with the pinion 163 and ending with the coin carrier 157. When the coin carrier 119 carries a coin the operating arm or gear segment 49 will then also correspondingly be rocked to its forward position, to inaugurate the service by which, in the construction shown, a supply of electric current becomes available, and at the same time during this forward movement of the gear segment 49 to wind the spring 66, which after the predetermined period of time, under the control of the speed-retarding timing device, as above described, will discontinue the service which has been provided.

While the gear segment arm 49 is being thus rocked forward the handle knob 167 may, if desired, be released at any time to obtain a fresh grip thereon, or it may be rotated alternately forward and back without releasing the grip of the hand thereon, in either case the engaged coin carrier pawls 143 then preventing reverse or return movement of the gear segment arm 49, driving lever 98 and coin carrier 119 from their partially advanced position, thus maintaining them and permitting their forward movement only, as has been already described.

The operation of the coin controlled mechanism shown has been already for the most part described, and will now be summarized. When the coin carrier 119 carries no coin, it and the driving lever 98 may be freely idly rocked to their forward position or to any intermediate position and then will be idly returned to normal position by the coin carrier spring 137. In the construction shown, the limited forward movement of the driving lever 98 and the coin carrier 119 will be completed with about one complete rotation of the handle knob 167. When the coin carrier 119 carries a coin, as shown in Fig. 1, the forward rocking movement of the coin carrier 119 will at first idly move the coin 126 beyond or out of alignment with the coin slot 118 in the front plate 2, and at this time the pawls 143 will become engaged with the ratchet 145 to prevent return movement of the coin carrier 119, driving lever 98 and operating arm 49.

As the coin carrier advances, the coin will immediately engage the adjacent lower tooth of the coin-driven front star wheel 101, which it now rotates, together with the rear star wheel 102. As the coin thus moves it lifts and passes beyond the end of the kick-off pawl 154. The rotating rear star wheel 102 immediately depresses the engaging end of the coupling pawl 109 against the tension of its spring 114. While the coupling pawl 109 is maintained in this position by the rotating rear star wheel 102, the forwardly rocking driving lever 98, having taken up the intervening lost motion, is brought into engagement with the end of the coupling pawl 109, and thus drives the gear segment arm 49 in its forward rocking movement. While the star wheels 101 and 102 are being driven forward by the moving coin, the coupling pawl 109, in its engaged condition, is carried bodily away from the rear star wheel 102 as the gear segment arm 49 is rocked forwardly by the driving lever 98. In the initial portion of its forward movement the gear segment arm 49 releases the stop pawl 146.

As the gear segment 49 is driven forward by the driving lever 98 it rotates the pinion 65, thereby, through the pinion shaft 63, to wind the spring 66. In the construction shown, just following the completion of a rotation of the shaft 63, it carries the clutch tooth of the retarding clutch disc 68 beyond the end of the spring-pressed pawl 69 of the gear wheel 67, preparatory to engagement with this pawl for operating the timing device having the air paddle 84 and the counter having the number wheels 89. As the forwardly driven gear segment arm 49 approaches the termination of its forward movement, its left hand operating screw 53 comes into engagement with the service-controlling operating lever 40 and rocks the latter to close the electric switch, which is shown conventionally in Fig. 5 as the switch arm 43 and contact member 41. The customer will be apprised of the completion of this part of the operation by the coin carrier 119 reaching the limit of its forward movement, whereby the engaged driving clutch elements 165 and 170 will stop the further forward rotation of the handle knob 167. The power-multiplying gearing driving connecton makes the winding of the spring 66 easy.

When the handle knob 167 is released at the completion of its forward driving movement, the coin carrier spring 137 immediately returns the driving lever 98 and the coin carrier 119 to the point where the driving lever 98 abuts against the stop pawl 146. Immediately upon the beginning of this return movement of the driving lever 98 it releases the coupling pawl 109, whereupon this pawl is immediately snapped to its disengaging position by its spring 114. The gear segment 49, now having been set free, is slowly rocked backwardly and is finally returned to its normal position by the reversely rotating pinion 65, which is now driven by the unwinding of the spring 66, through the shaft 63. As this shaft 63 is thus rotated reversely it carries with it the gear 67, by reason of the engagement of the tooth of the clutch disc 68 with its pawl 69, whereby the air paddle 84 opposes the spring 66 and delays the return of the gear segment 49 to its final normal position over the desired predetermined period of time, which in the particular construction shown will be in the neighborhood of ten

minutes. During this period of time while the gear segment arm 49 is returning, electric current will be supplied for heating the hair curler 22 and for lighting the electric lamp 27.

As the gear segment arm 49 approaches the limit of its retarded return movement its right hand operating screw 57 will come into engagement with the service-controlling operating lever 40 and will rock this lever in the opposite direction, which will operate the switch to open the electric circuit. Also as the gear segment arm 49 approaches the limit of its return movement, its pawl-operating screw 151 will come into engagement with the stop pawl 146 and release the latter from its engagement with the driving lever 98, whereupon the coin carrier spring 137 will immediately snap the coin carrier 119 back to its normal coin-receiving position relatively to the coin slot 118 in the front plate 2. This, together with the extinguishing of the lamp 27, will apprise the customer that the current has been cut off and that the apparatus is now in condition for a seubsequent operation by the insertion of another coin. The completion of the operation will be indicated by the number wheels 89, through the gear connection by which they are driven from the gear 67 as the latter is rotated by the spring 66.

The illustrated embodiment of the invention has operated successfully and satisfactorily in use. It is obvious, however, that various modifications may be made in the construction shown in the drawings and above particularly described, within the principle and scope of the invention as defined in the appended claims.

I claim:

1. A coin controlled mechanism having, in combination, an initial operating member mounted for to and fro movement, a second operating member mounted to have to and fro movement, a lost motion operating connection between said members by which the initial operating member as it approaches the termination of its forward and backward movements will impart corresponding movements to the said second operating member, an energy storing device to be stored with energy by the forward movement of the initial operating member thereby to be effective for urging this member to return movement, a retarding device for the initial operating member in its return movement so that a predetermined interval of time will elapse between the forward and the backward movements of the second operating member while the said lost motion is being taken up, and a normally ineffective manually operable device made effective by a coin so that movement of the manually operable device will then transmit forward operating movement to the initial operating member and will store energy in the energy storing device, whereby such forward movement of the initial operating member will operate the said second operating member in the forward direction of its movement and the subsequent retarded return movement of the initial operating member will operate the said second operating member in the backward direction of its movement after the desired period of time has elapsed.

2. A coin controlled mechanism having, in combination, an initial operating member mounted for to and fro movement, a second operating member mounted to have to and fro movement, a lost motion operating connection between said members by which the initial operating member as it approaches the termination of its forward and backward movements will impart corresponding movements to the said second operating member, an energy storing device to be stored with energy by the forward movement of the initial operating member thereby to be effective for urging this member to its return movement, a retarding device for the initial operating member in its return movement so that a predetermined interval of time will elapse between the forward and the backward movements of the second operating member while the said lost motion is being taken up, a normally ineffective freely idly movable manually operable device including a handle and a coin carrier, and a normally ineffective coupling device made effective by a coin moved by the coin carrier to connect the said manually operable device to the said initial operating member so that movement of the manually operable device will then transmit forward movement to the initial operating member, whereby such forward movement of the initial operating member will operate said second operating member in the forward direction of its movement and the subsequent retarded return movement of the initial operating member will operate said second operating member in the backward direction of its movement after the desired period of time has elapsed.

3. In a coin controlled mechanism for controlling a service-supplying device, the combination of a service-controlling member for such device mounted for to and fro movement to render the service available upon the forward movement of said member and to discontinue such service upon the return movement of said member, an operating member mounted for to and fro movement, a lost motion operating connection between said members through which the operating member in its forward and return movements imparts corresponding forward and return movements to the service-controlling member as the operating member approaches the end of its respective movements, an energy storing device to be stored with energy by the

forward movement of the said operating member and then being effective to impart return movement to this member, a speed-retarding timing device for the said operating member in its return movement so that a predetermined interval of time will elapse between the forward and the backward movements of the said service-controlling member while the said lost motion is being taken up, a freely idly movable driving member, a freely idly movable coin carrier, means including a handle for moving the driving member and the coin carrier, and a normally ineffective coupling device made effective by a coin moved by the coin carrier to connect the said operating member to the said driving member so that forward movement of the driving member will impart forward operating movement to the operating member, whereby such forward movement of the driving member and the operating member will inaugurate the service which after the desired period of time has elapsed will be discontinued by the said operating member as it terminates its retarded return movement.

4. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a normally ineffective freely idly movable rocking driving lever, a freely idly movable rocking coin carrier, means connecting the driving lever and the coin carrier together for concomitant unitary rocking movement, stop means for limiting such rocking movement, means including a handle for rocking the driving lever and the coin carrier, a return spring for the coin carrier and driving lever, a rocking operating arm forming an initial operating member for the service-supplying device and normally disconnected from the driving lever, stop means for limiting the return movement of the operating arm, a return spring for the operating arm, a normally ineffective one-way coupling device actuated by a coin moved by the coin carrier to connect the operating arm to the driving lever in the forward movement of the latter so that the driving lever will impart forward movement to the operating arm against the tension of its spring, a rocking service-controlling lever connected to the service-supplying device to inaugurate the service by its forward movement and to discontinue the service by its return movement, a lost motion operating connection between the operating arm and the service-controlling lever by which the latter lever is shifted to its forward service-supplying position during the terminal portion of the forward movement of the operating arm and is returned to its service-discontinuing position during the terminal portion of the return movement of the operating arm, and a timing device for retarding the return movement of the operating arm so that when the service has been inaugurated it will be continued over a predetermined period of time before it is discontinued.

5. The invention defined in claim 4, in combination with an automatically engaging pawl to prevent the full return movement of the coin carrier to its normal position and to be released by the said operating arm in the final portion of the retarded return movement of the latter for thereby permitting the coin carrier to return to its normal coin-receiving position for a subsequent service-supplying operation of the coin controlled mechanism.

6. The invention defined in claim 4, in combination with a spring-pressed stop pawl to move automatically into the path of return movement of the said driving lever so as to prevent the full return of the coin carrier to its normal position and to be engaged and released by the said operating arm during the final portion of its retarded return movement thereby to permit the coin carrier to return to its normal coin-receiving position so as then to be operable for a subsequent service-supplying operation of the coin controlled mechanism.

7. The invention defined in claim 4, in combination with an automatically engaging stop pawl to prevent the full return movement of the coin carrier to its normal position and to be engaged and released by the said operating arm during the final portion of the return movement of the latter for then permitting the coin carrier to return to its normal position preparatory to a subsequent operation, and a pawl-and-ratchet device to prevent the forward movement of the said driving lever while the said stop pawl is engaged and thereby locking both the coin carrier and the said driving lever against movement in either direction until the said operating arm has substantially completed its retarded return movement, whereby the coin controlled mechanism is in a non-operable condition until the service-supplying operation inaugurated thereby has been completed.

8. The invention defined in claim 4, in which the said normally ineffective coupling device includes a coupling pawl to form the operating connection between the said driving lever and the said operating arm, and means to move the said pawl to its ineffective disengaging position immediately upon the beginning of the return movement of the driving lever and the operating arm and for thereafter so maintaining said pawl at its ineffective disengaging position throughout the return movement of the operating arm and normally thereafter.

9. The invention defined in claim 4, in which the said normally ineffective coupling device comprises a coin-driven star wheel device some one of the star wheel teeth of which is always normally positioned to be

engaged by a coin moved by the coin carrier to impart a step of rotative movement to the star wheel device, a yieldably spring-pressed stop device engaging between the teeth of the star wheel device thereby yieldably thus to position the star wheel device, and a normally ineffective coupling pawl pivoted on the said operating arm and normally spring-pressed out of the path of movement of the said driving lever and to be engaged by a tooth of the rotating star wheel device so as to be moved thereby into the path of and be engaged by the driving lever in its forward movement, said engaged pawl then being released by the star wheel device when the latter has been normally repositioned so that said pawl will be again moved by its spring to its ineffective disengaging position as soon as it has been released by the beginning of the return movement of the driving lever, whereby said driving lever will be ineffective to impart forward movement to the said operating arm until the latter has been restored to its normal position preparatory to a subsequent normal operation following the insertion of a coin.

10. The invention defined in claim 4, in which the said lost motion operating connection includes means for adjustably varying the extent of the lost motion provided between the said operating arm and the said service-controlling lever in both the forward and backward movements of the operating arm, whereby both the extent and the time of movement of the service-controlling lever may be varied as desired.

11. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a normally ineffective freely idly movable rocking driving lever, a freely idly movable rocking coin carrier, means connecting the driving lever and the coin carrier together for concomitant unitary rocking movement, stop means for limiting such rocking movement, means including a handle for rocking the driving lever and the coin carrier, a return spring for the coin carrier and driving lever, a rocking gear segment forming an initial operating member loosely pivoted coaxially with the coin carrier and driving lever and normally disconnected from the latter, stop means for limiting the return movement of the gear segment, a normally ineffective one-way coupling device actuated by a coin moved by the coin carrier to connect the gear segment to the driving lever in the forward movement of the latter so that the driving lever will impart forward movement to the gear segment and the driving lever and the coin carrier may be returned independently by their spring, a pinion engaged by the gear segment and rotated thereby in the forward direction of its movement, a convolute spring wound up by the forward rotation of the pinion, a speed-retarding timing device having a rotatable part, an automatic one-way clutching connection between the rotatable part of the timing device and the pinion by which the timing device remains idle during the forward rotation of the pinion and then becomes effective against the tension of the wound spring to retard the reverse rotation of the pinion thereby retarding the spring-actuated return to normal position of the gear segment over a predetermined interval of time, a rocking service-controlling lever connected to the service-supplying device to operate the latter, and a pair of spaced operating lugs on the gear segment forming a lost motion operating connection between the gear segment and the said service-controlling lever by which the latter will be rocked to a forward service-supplying position by the forward movement of the gear segment and the gear segment in its retarded return movement will rock the said service-controlling lever in the opposite direction after the desired period of time has elapsed thereby to discontinue the service.

12. The invention defined in claim 11, in which the said lost motion operating connection includes a pair of operating screws respectively adjustably screwed into the said lugs on the gear segment for engaging alternately the opposite sides of the said rocking service-controlling lever for thereby varying the amount of the lost motion in each direction of the rocking operating movement of the gear segment.

13. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a rotable handle, a freely idly movable rocking coin carrier, positive driving connections between the handle and the coin carrier comprising a train of power-multiplying toothed gears and a positively acting one-way driving connection for rocking the coin carrier in its forward direction of movement, stop means for limiting such rocking movement, a return spring for the coin carrier, a shaft upon which the coin carrier is fixed, a normally ineffective driving lever fixed on said shaft, a rocking gear segment loosely journaled on said shaft and normally disconnected from the driving lever, stop means for limiting the return movement of the gear segment, a coin-driven star wheel some of the teeth of which is always normally positioned to be engaged by a coin moved by the coin carrier to impart a one-tooth step of rotative movement thereto, a star wheel shaft upon which this star wheel is fixed, a second similar star wheel fixed on the star wheel shaft adjacent to the gear segment, a yieldably spring-pressed stop device engageable with the teeth of one of the star wheels thereby yieldingly to position both of the star wheels, a normally ineffective one-way coupling pawl pivoted on the gear seg-

ment and normally maintained out of the path of movement of the driving arm and made effective by a tooth of the rotating second star wheel to move into the path of forward movement of the driving lever to be engaged thereby so that then the driving lever will positively drive the gear segment in its forward direction of movement, a pinion engaged by the gear segment to be rotated thereby in a forward direction as the gear segment moves forward, a spring-winding timing shaft upon which the pinion is fixed, a convolute spring connected to the latter shaft to be wound up thereby in the forward rotation of the shaft and then becoming effective to rotate the pinion in the opposite direction for thereby returning the gear segment to its normal position, a rotatable speed-retarding timing device, an automatically acting one-way clutching connection between the spring-winding timing shaft and the timing device by which the timing device remains idle during the forward rotation of the shaft and then becomes effective in opposition to the tension of the wound spring to retard the spring-actuated return to normal position of the gear segment over a predetermined interval of time, a rocking service-controlling lever connected to the service-supplying device to operate the latter, and a pair of opposed adjustably spaced operating members carried by the gear segment to engage alternately with the opposite sides of the said service-controlling lever and forming therewith a lost motion operating connection by which the gear segment as it terminates its forward movement will rock the said service-controlling lever to a forward service-supplying position and by which the gear segment as it terminates its retarded return movement will rock the said service-controlling lever back to its normal position thereby to discontinue the service after the desired period of time has elapsed.

14. The invention defined in claim 13, in combination with an electric current controlling switch connected to the said rocking service-controlling lever to close an electric circuit in the forward position of this lever and to open such circuit in the returned normal position of this lever.

15. The invention defined in claim 2, in combination with an electric current controlling switch connected to the said second operating member to close an electric circuit upon the forward movement of this member and to open such circuit upon the backward movement of this member.

16. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a rotatable handle, a freely idly movable rocking coin carrier, positive driving connections between the handle and the coin carrier including a positive one-way clutching connection for rocking the coin carrier in its forward direction of movement, stop means for limiting such rocking movement, a return spring for the coin carrier, a shaft upon which the coin carrier is fixed, a normally ineffective driving lever fixed on said shaft, a rocking operating arm loosely journaled on said shaft and normally disconnected from the driving lever, a normally ineffective coupling device made effective by a coin moved by the coin carrier to connect the said operating arm to the said driving lever so that movement of the driving lever will impart operating movement to the said operating arm, a service-controlling member connected to the service-supplying device to be actuated by the manually imparted forward movement of the said operating arm to inaugurate the service, a spring for actuating the service-controlling member to discontinue the service and to be tensioned by the manual forward movement imparted to the said operating arm, and a timing device for delaying the service-discontinuing actuation of the said service-controlling member by the spring until a predetermined period of time has elapsed.

17. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a rocking loosely pivoted gear segment, stop means for limiting the return movement of the gear segment, a pinion engaged by the gear segment to be rotated thereby in its forward direction as the gear segment moves forwardly, a combined spring-winding and timing shaft upon which the pinion is fixed, a convolute spring connected to the said shaft to be wound up thereby in the forward rotation of the shaft and then becoming effective to rotate the pinion in the opposite direction for thereby returning the gear segment to its normal position, a rotatable speed-retarding timing device, an automatically acting one-way clutching connection between the spring-winding timing shaft and the timing device by which the timing device remains idle during the forward rotation of the shaft and then becomes effective in opposition to the tension of the wound spring to retard the spring-actuated return movement to normal position of the gear segment over a predetermined interval of time, a rocking service-controlling lever connected to the service-supplying device to operate the latter, a pair of opposed spaced operating members carried by the gear segment to engage alternately the opposite sides of the said lever and forming therewith a lost motion operating connection by which the gear segment as it terminates its forward movement will rock the said lever to its forward service-supplying position and by which the gear segment as it terminates its retarded return movement will rock the said lever back to its normal position thereby to discontinue the service after a desired period

of time has elapsed, a normally ineffective freely idly movable manually operable device including a handle and a coin carrier, and a normally ineffective one-way coupling device made effective by a coin moved by the coin carrier to connect the said manually operable device to the said rocking gear segment so that movement of the manually operable device will then transmit forward rocking movement to the said rocking gear segment for thereby inaugurating the service-supplying operation which will be discontinued after the predetermined period of time by the retarded return to normal position of the said gear segment.

18. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a freely idly movable coin carrier, a freely idly movable driving member, means including a handle for moving the driving member and the coin carrier, an operating member normally disconnected from the said driving member, a normally ineffective coupling device made effective by a coin moved by the coin carrier to connect the said operating member to the said driving member so that movement of the driving member will impart operating movement to the operating member, a service-controlling member in control of the service-supplying device to be actuated to inaugurate the service by the manual movement thus imparted to the said operating member, an energy storing device for actuating the said service-controlling member to discontinue the service and to be stored with energy by the same manual movement imparted to the said operating member, and a timing device in control of the said energy storing device for delaying the discontinuance of the service until a predetermined interval of time has elapsed.

19. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a normally ineffective freely idly movable rocking driving lever, a freely idly movable rocking coin carrier, means connecting the driving lever and coin carrier together for concomitant unitary rocking movement, stop means for limiting such rocking movement, means including a handle for rocking the driving lever and the coin carrier, a return spring for the coin carrier and the driving lever, a rocking operating arm forming an initial operating member for the service-supplying device and normally disconnected from the driving lever, stop means for limiting the return movement of the said initial operating arm, a return spring for the said operating arm to be tensioned by the forward movement thereof, a normally ineffective one-way coupling device to be made effective by a coin carried by the coin carrier to connect the said initial operating arm to the said driving lever in the forward movement of the latter so that the driving lever will impart forward operating movement to the initial operating arm and tension its spring, a service-controlling member connected to the service supplying device to be actuated by the forward movement of the said initial operating arm to inaugurate the service and to be actuated by the return movement of the said initial operating arm to discontinue the service, and a timing device for delaying such service-discontinuing return movement of the initial operating arm over a predetermined period of time.

20. In a coin controlled mechanism for controlling the operation of a service-supplying device, the combination of a normally ineffective freely idly movable rocking driving lever, a freely idly movable rocking coin carrier, means connecting the driving lever and the coin carrier together for concomitant unitary rocking movement, stop means for limiting such rocking movement, means including a handle for rocking the driving lever and the coin carrier, a return spring for the coin carrier and driving lever, a rocking operating arm normally disconnected from the driving lever, a normally ineffective coupling device made effective by a coin moved by the coin carrier to connect the said operating arm to the said driving lever so that movement of the driving lever will impart operating movement to the operating arm, a service-controlling member connected to the service-supplying device and actuated by the forward rocking movement of the said operating arm to inaugurate the service, a spring for actuating the service-controlling member to discontinue the service and to be tensioned by the forward movement of the said operat- arm, and a timing device for delaying the service-discontinuing actuation of the said service-controlling member by the spring until a predetermined period of time has elapsed.

In witness whereof, I hereunto subscribe my signature.

LOUIS H. MORIN.