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H. NEHLS

1,957,901

COIN RESET TIME PERIOD CONTROL DEVICE

Filed Dec. 4, 1931

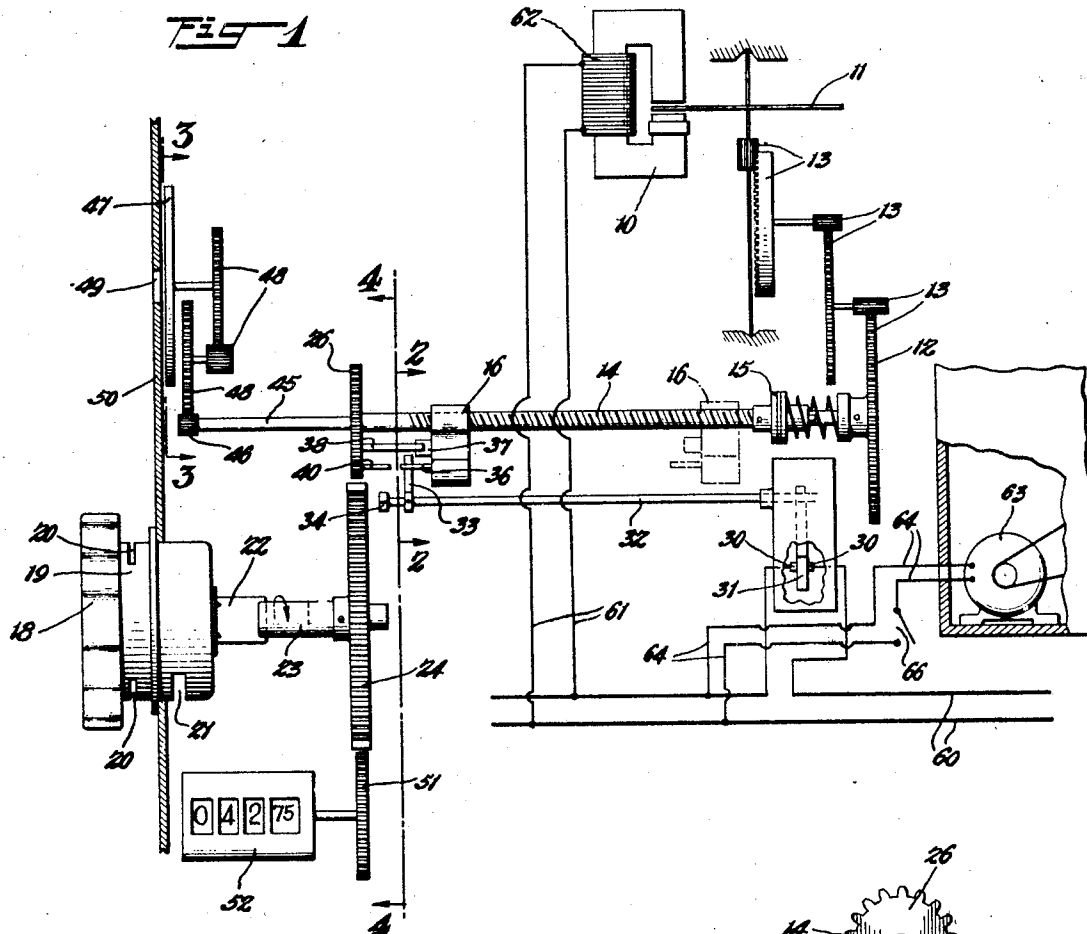


Fig 2

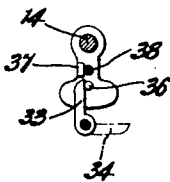


Fig 3

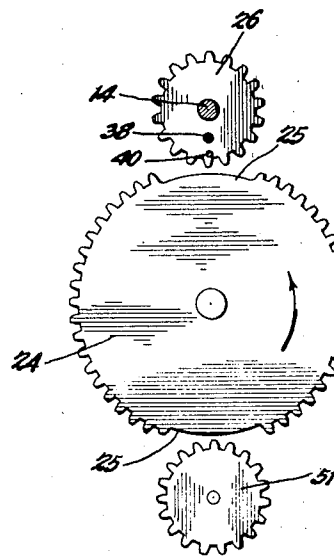
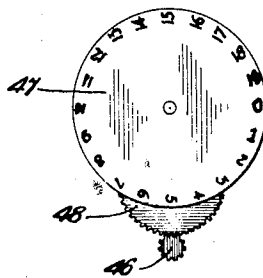


Fig 4

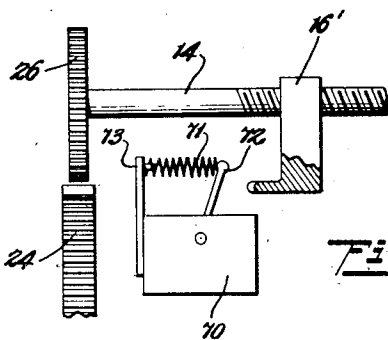


Fig 5

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1,957,901

COIN RESET TIME PERIOD CONTROL
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land

Application December 4, 1931, Serial No. 578,905

6 Claims. (Cl. 194-9)

The present invention relates to a new and improved coin reset time period control device and more particularly to such a device adapted for use in the control of energy consuming domestic utilities.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates two embodiments of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawing:

Fig. 1 is a diagrammatic view illustrating the present preferred embodiment of the invention.

Fig. 2 is a section taken on the line 2-2 of Fig. 1.

Fig. 3 is a detail view showing the accumulated reserve register in elevation.

Fig. 4 is a section taken on the line 4-4 of Fig. 1.

Fig. 5 is a fragmentary view, partly in section, showing a modification of the invention.

The present invention provides a coin reset automatically operating time-period control over the use of energy-consuming devices such as electrical refrigerators, ranges, washing machines, and other domestic utilities. By my invention such energy-consuming devices may be installed on a rental basis or installment plan requiring the deposit of a relatively small amount each day, and failing such deposit, the power normally supplied to such devices is automatically cut off by the control device. Where such energy-consuming devices are installed on an installment purchase plan, the daily cash deposits are required to be deposited until the accumulated deposits equal the agreed purchase price, whereupon the control device may be removed. The invention, in this particular use thereof, immediately and impersonally stops the use of the energy-consuming device upon any default in the daily payments, while the purchaser may immediately regain use of the machine merely by depositing additional coins.

The invention also provides for the deposit of a relatively large number of coins ahead of the

schedule requirements to constitute an accumulated reserve permitting proportionately longer continued use of the device, and in connection therewith, a register for indicating the amount of such reserve. Additional coins may be inserted at will, up to the capacity of the control device, irrespective of the phases or running of the control device.

In certain of its aspects the present invention is an improvement upon my pending application, Serial No. 566,053, filed September 30, 1931, although in other respects it is not so limited and is capable of wide and general application.

In the illustrative and exemplary embodiment of the invention, a spring-actuated switch is provided in the power circuit and controls both the energy consuming device as well as an electrically-driven time-measuring motor. A screw-threaded shaft is driven in one direction by means of said time-measuring motor through a friction clutch, and this shaft is reversely rotated a predetermined amount, such as one revolution, each time a coin is inserted in the coin-released knob. Normally, the coin-released knob is disengaged from the shaft and the shaft is free to rotate solely under influence of the time-measuring motor. Mounted on the screw-threaded shaft and adapted to be moved therealong as the shaft is rotated, is a switch-operating member, and when this member has been moved to one extreme end of the shaft, indicating an exhaustion of the coin reserve, the switch is opened by said member and interrupts the supply of energy to the energy-consuming utility. The use of the energy consuming device may thereafter be regained only by the insertion of additional coins, resulting in a reverse axial movement of the switch operating member. A register is also provided for indicating the amount of coins constituting the accumulated or unappropriated reserve, and this register is preferably driven directly from the screw-threaded shaft by the coin-release knob and in opposite direction by the time-measuring motor. A second register may also be provided and is driven solely by the coin-released knob to indicate the total value of the coins which have been deposited, that is, the amount which the consumer has paid towards the purchase of the utility or energy-consuming device.

It will be understood that the foregoing general description and the following detailed description as well as the following detailed description of the invention but are not restrictive thereof. Referring now in detail to the illustrative em-

embodiment of the invention shown in Figures 1 to 4 of the accompanying drawing, the time-measuring motor comprises a synchronous, or other substantially constant speed, motor 10 having a rotor 11 which is connected in driving relation with gear 12 by means of gearing 13, the gear ratio being such that the gear 12 is rotated one revolution each day or other convenient period. Gear 12 is rotatably mounted at one end of a screw-threaded shaft 14 and is coupled thereto by means of friction clutch 15. Screw-threaded shaft 14 is formed with a relatively coarse thread of sufficient length to provide for a relatively large number (20 to 30) of threads. Mounted on said shaft and axially movable therealong as the shaft rotates, is a weighted rider 16 provided near its upper end with a correspondingly threaded portion, and held by gravity in the position shown in Fig. 2.

Means are provided for rotating screw-threaded shaft 14 in a direction opposite to the direction in which it is moved by the time-measuring motor, and these means comprise a coin-recognizing device, such as a coin-released knob, by which the shaft 14 may be rotated a full revolution or other predetermined amount for each coin deposited. As embodied, the coin-released knob is of conventional construction and comprises a hand grip portion 18 connected with a rotatable shell 19, slotted at 20 to receive the coins of predetermined value, and normally held against rotation by a locking mechanism. This knob is released and can be rotated through a one-half revolution by the insertion of a coin of predetermined value in one of the slots 20, and on completion of the half revolution the coin is discharged through the opening 21 into a coin-receiving receptacle (not shown). Connected with the shell 19 and adapted to be rotated by rotation of the knob, is a blade 22 received within the slotted end of shaft 23. On shaft 23 is fixed a gear 24, having a pair of diametrically opposed mutilated portions 25 normally positioned adjacent to the gears driven by gear 24. On rotation of the knob 18 and gear 24, gear 26 fixed on screw-threaded shaft 14 is rotated a complete revolution for each one-half revolution of the gear 24.

The current control means for interrupting the supply of current to the energy-consuming utility as well as the time-measuring motor, connected in parallel, comprises a pair of spaced-apart contacts 30, insulated from each other and adapted to be closed by means of a movable knife blade 31 operatively connected to shaft 32 and moved thereby. Shaft 32 extends parallel to screw-threaded shaft 14, and at one end is provided with a pair of angularly-disposed levers 33 and 34, one of which is normally in an upright position. Lever 33 constitutes the switch-opening lever while lever 34 serves to turn shaft 32 to close the switch.

Switch 30, 31 is interposed in one side of the lines 60 through which power is supplied from the mains, and is connected ahead of lines 61 which lead to the coil 62 of the time-measuring motor and is also ahead of the motor 63 of the energy-consuming utility, which is connected by lines 64. As is usual with many utilities, such as electric refrigerators, a switch 66 is provided in the motor circuit and is independently operated by means of a thermostat or pressurestat. The operation of the control device is wholly independent of the operation of the utility, although by suitable connection this condition

might be altered if that were necessary or desirable.

Means are provided for operating the switch when all of the deposited coins have been appropriated, thereby interrupting the supply of current to the utility device. As embodied, rider 16 is provided with a forwardly-extending pin 36, and a lug 37. Gear 26 is also provided with a pin 38 extending rearwardly and adapted to be moved into contact with lug 37 at such time as all of the coins have been appropriated. Lug 37 is offset and as rider 16 is moved forwardly by the time-measuring motor, it is positioned at one side of pin 37. On continued rotation of shaft 14 and gear 26 carrying pin 38, pin 38 is moved into engagement with lug 37 and causes a slight rotation of rider 16 against gravity. This rotation of rider 16 also moves pin 36 into contact with lever 33, rotating shaft 32 to open the switch, at the same time raising lever 34 into a position where it will be engaged by a shorter pin 40 on gear 26 by reverse rotation of the shaft 14. When the consumer releases knob 18 by the insertion of coins and rotates said knob, gear 26 is rotated to move the rider 16 in a reverse direction, at the same time moving pin 40 into engagement with lever 34 to preliminarily close the switch.

For indicating the accumulated reserve of unappropriated coins, shaft 14 is provided with a forwardly-extending portion 45 on which is fixed a pinion 46 to drive disc 47 through reduction gearing 48. Disc 47 is provided with a row of consecutive numbers near its circumference, and one of these numbers is visible through an aperture 49 in the casing 50. As shown, the gear ratio between shaft 14 and disc 47 is twenty-to-one, and correspondingly twenty consecutive numbers are provided on the disc. Disc 47 is preferably so positioned that the numeral zero is visible through opening 49 when there is no accumulated reserve and the switch is open. On insertion of coins in the knob, and by turning the knob, the disc is advanced by one numeral for each coin, and likewise the disc is reversely moved by the running of the time-measuring motor.

Means are also provided for indicating the total number of coins which have been deposited in the control device, thereby giving the consumer a current indication of the number of coins or the amount of money he has deposited, applicable towards the purchase price of the utility device. As embodied, a pinion 51 is provided adjacent to gear 24 and diametrically opposite gear 26, and normally out of driving relation with the gear 24 due to the position of the mutilated portion 25. Gear 51 is connected with a totalizing register 52, and is rotated one complete revolution for each half revolution of the gear 24. Register 52 may be of any desired or convenient construction, but as embodied, indicates the total value of the coins deposited.

In accordance with the modified embodiment of the invention, illustrated in Figure 5 of the drawing, the switch comprises a toggle, snap switch 70 normally held in closed position by means of a compression spring 71, compressed between the actuating lever 72 and a bar 73 secured to one end of the switch box. Means are provided for opening the switch upon exhaustion of the coin reserve and for this purpose rider 16' is provided and is axially movable along screw-threaded shaft 14, as in the previous embodiment. At its lower end, rider 16' is provided with a forwardly-extending forked portion adapted to engage the operating lever 72 between its divergent

sides, and is so positioned on shaft 14 that the opening of the switch coincides with exhaustion of the coin reserve. In other respects the construction and operation of this embodiment may be the same as that previously described.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a threaded shaft driven slowly thereby, a threaded member to be moved by and axially of the shaft, a switch to be operated by movement of said member to one position, means for reversely moving said shaft including a mutilated gear.

2. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a shaft driven slowly thereby through a friction coupling, a member axially movable on said shaft, a switch to be operated by said member when moved to one position, and means for moving said member reversely and normally disconnected from said shaft.

3. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a shaft driven slowly thereby through a friction coupling, a member axially movable on said shaft, a switch to be operated by

said member when moved to one position, and means for reversely moving said member to close said switch.

4. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a shaft driven slowly thereby through a friction coupling, a member axially movable on said shaft, a switch to be operated by said member when moved to one position, and means for reversely moving said member to close said switch and connected to said member by means including a mutilated gear normally maintained out of operative connection with said shaft.

5. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a shaft driven slowly thereby through a friction coupling, a member axially movable on said shaft, a switch to be operated by said member when moved to one position, a member for reversely moving said member to close said switch and connected to said shaft by means including a normally disconnected coupling.

6. A prepayment time-control for energy-consuming devices including in combination a time-measuring motor, a shaft driven slowly thereby through a releasable coupling, a weighted member axially movable on said shaft, a switch to be operated by said member in moving to and from one position, a member for reversely moving said member to close said switch and connectible for moving said weighted member.

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35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150