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AUTOMATIC COIN-OPERATED TIME CONTROL SWITCH MECHANISM

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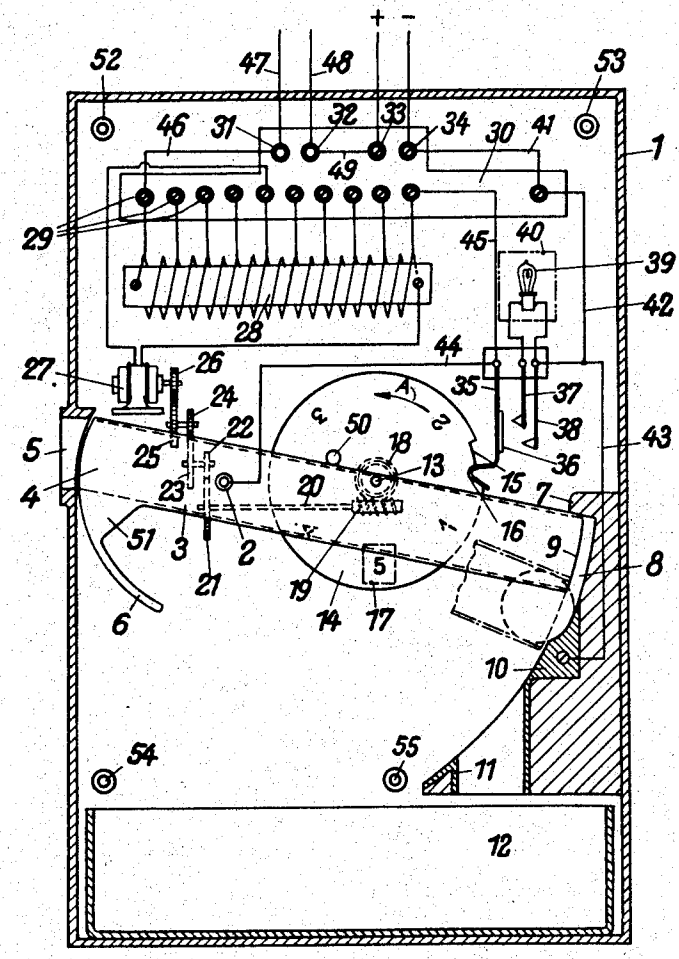

Inventor:
Ludwig Grünbaum
By Knight Bros
His Attorneys

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AUTOMATIC COIN-OPERATED TIME CONTROL SWITCH MECHANISM

Ludwig Grünbaum, Charlottenburg-Berlin, Germany

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The present invention relates to an improvement in automatic coin-operated time control switch mechanisms, the consumer current circuit of which—after being closed by the dropping coin—is interrupted when the consumption of electricity has reached the coin value by the operation of an electric motor running in dependence on the consumer current, through the medium of a contact device.

The invention includes as one of its features an arrangement whereby shortly prior to complete consumption of the current paid for a resistance is switched into the consumer circuit to dim the lights in the consumer circuit.

The accompanying drawing shows a form of execution of the object of the present invention.

A coin channel 3 is arranged swinging upon a pivot 2 within a casing 1, and the upper end 4—which is suitably electrically insulated—of this coin channel 3 stands opposite the coin slot 5 in the casing 1. This upper end 4 of the coin slot 3 has a projection 6 concentric to the pivot 2, and this projection covers the coin slot 5 as soon as the coin-channel 3 moves in the clockwise rotation. A rotation of the coin channel in opposite direction is prevented by an abutment 7, integrally connected with the right-hand wall of the casing 1. This abutment 7 consists of an insulating piece having a running surface 8 concentric to the pivot 2. An intermediate space is arranged between this running surface 8 and the right-hand end 9 of the coin channel 3, and this space narrows downwards suddenly and leads over into a metallic guide 10 integral with a coin discharge opening 11 arranged directly above a cash-box 12.

A circular disc 14 is rotatably mounted upon a shaft 13 and has two recesses 15 and 16 of different depths. This disc 14 carries numbers on its front face so arranged as to be readable through a window 17 in the front wall of the casing 1. This window 17 is covered by a projection (not shown) arranged upon a spring 35 during the time when this spring is in engagement with the recess 16. The numbers on the disk indicate the value of the current yet to be consumed, before the switch will be opened. For instance, if the device is designed to be operated by 50-cent pieces, each number on the disk indicates the number of ten cents worths of current still available. A worm wheel 18 is mounted upon the shaft 13 of the disc 14 and this worm wheel 18 operates by engagement with the worm 19, which by means of a shaft 20 is connected with a gear wheel 21 operated through intermediate wheels 22, 23, 24, 25 and 26 by an electric motor 27. This motor is connected in parallel to a resistance 28, the coils of which are tapped. The individual taps are connected by wires with contact screws 29 on a board 30 of insulating material. Above the contact screws 29 are two contact screws 31 and 32, to which are connected the consumer circuit wires 47 and 48; also two other contact screws 33 and 34 to which are connected the supply wires + and —. A leaf spring 35 bears at its end upon the edge of the disk 14, and this leaf spring is provided with a contact surface 36 opposite the points of two spring contacts 37 and 38. The recess 15 of disk 14 holds the leaf spring 35 in position to close contact with spring contact 37, but not with contact 38. The second recess 16 allows the leaf spring 35 to move out of contact with contact 37. An antifriction roller (not shown) may be provided on the leaf spring 35 to bear on disk 14. Between the spring contacts 37 and 38 is a circuit including a red signal lamp 39, which is visible from outside through a casing window 40.

When a coin is dropped through the slot 5 it rolls down to the lower end 9 of the coin channel 3 until it comes into contact with the circular insulated surface 8 or by its weight brings into contact a contact spring which is not shown in the drawing. The coin channel 3 is then swung around the pivot 2 by the weight of the coin, until the coin is held up by the abutment 10 or by a clamping spring not shown, so that the coin channel 3 will remain in its dotted line position and the pivot 2 is then electrically connected to the abutment 10. Owing to this operation, the current consumers will be electrically connected to the circuit by means of the conduits 41, 42 and 43, and by means of the coin and the coin channel 3, furthermore over the conduits 44, 45 and the resistance 28 and over the conduits 46, 47, 48 and 49. The electric motor 27 is then shunted to the resistance 28 and begins to rotate, thus starting slowly to turn the disc 14 in the direction of the arrow A through the gearing 26, 25, 24, 23, 22, 21, 20, 19 and 18. Thereby the spring 35 will be forced out of engagement with the recess 16, whereby its contact surface 36 comes first into contact with the spring 37 and then with the spring 38, thus closing the circuit between the conduits 42 and 45. In the further rotation of the disc 14 a pin 50 on this disc is pressed in its downward movement against the upper wall of the coin channel 3 in such way that the latter swings upon its pivot 2 in clockwise direction, whereby the coin is forced backwards in the coin-

channel 3, until the end 9 for this coin channel comes above the coin channel 11. Then the coin drops through this channel 11 into the cash-box 12, and now the conduits 42 and 45 will only be connected by the parts 35—38. When the disc 14 proceeds to turn further, and the pin 50 moves upwards again, the coin channel 3 goes back to its original position under the influence of a counterweight 51 arranged at the end 4 of the coin channel 3 in such way that the coin-slot is again uncovered to allow of inserting another coin. While this turning operation of the disc 14 takes place, the contact-spring 35 drops again into the recess 15, thus liberating its contact with the contact-spring 38, leaving only the spring 37 in connection with contact-face 36. In this way the red lamp 39 is brought into the circuit of all current consumers and lights up while simultaneously all the other connected bulbs will burn darker than before. This calls the attention of the consumer to the early total consumption of the electricity supply corresponding to the value of the inserted coin, and allows him to drop in another coin, if desired, to prevent the automatic disconnection of the current supply, thereby bringing the coin-channel 3 again in the above-described manner into the dotted line position bridging-over lamp 39 by means of the conduits 43 and 44. If, however, no new coin is inserted, the lower end of the spring 35 will finally snap into the recess 16, thus also interrupting the contact between the spring 37 and the contact face 36, and thereby disconnecting all current consumers until, by the insertion of a new coin in the above-described manner, the springs 35 and 38 by means of the conduits 43 and 44 as well as by the coin-channel 3, the coin and the contact-piece 10 will again be bridged-over. The motor 27 is shown in the present form of execution of this invention, as illustrated in the accompanying drawing, as connected to the first and sixth contact screws 29 counted from the right hand. To fit the device to any other current tariff or to any other voltage or kind of current, another one of these contact screws 29 may be selected for connection to the motor whereby the speed of the motor 27, and thereby also the running time of the disc 14, may be adjusted to requirement.

If several kinds of coins of various denominations are to be used, a special slot or a special coin-channel and a special contact may be provided for each denomination whereby each closed contact connects the one motor conduit with a resistance corresponding to the value of the coin. An indicating device may be provided allowing of recognizing which kind of coin has been last inserted.

The casing of the apparatus may be secured firmly to the wall by four openings 52, 53, 54 and 55 in the casing in such a way that the removal of the apparatus can only take place after opening the locked casing which should be suitably sealed. The cash-box 12 containing the coins is arranged so as to allow of its easy removal, after unlocking the cover of the main casing, to be replaced again after having been emptied. The cover of the casing might suitably consist of 2 parts, the upper part of which could be secured to the casing by a sealed screw while the lower part may be hinged and provided with a lock for allowing the emptying of the cash-box.

Having thus described the present invention with reference to the accompanying drawing, what is asked to be protected by Letters Patent is:—

1. In a device for controlling the supply of electricity to a consumer circuit, a switch for disconnecting the consumer circuit from a supply line, motor operated means for closing said switch and holding the same closed during a definite number of revolutions of said motor, said motor being connected in series with the consumer circuit so that its starting is controlled and its speed varied in direct proportion with the supply of electricity to the consumer circuit, and a circuit for temporarily bridging said switch to start said motor, including a movable coin channel and contact means at one end thereof in position to be electrically connected to said chanel by a coin in the channel, and means moved by said motor for shifting said channel to a position to discharge the coin and interrupt said bridging circuit.

2. In a device for controlling the supply of electricity to a consumer circuit, a switch for disconnecting the consumer circuit from a supply line, means to hold said switch closed to supply a definite amount of electricity to the consumer circuit, an auxiliary circuit containing a resistance, and means controlled by said switch holding means for cutting said resistance in series connection with the consumer circuit a short time prior to the opening of said switch.

LUDWIG GRÜNBAUM.