J. A. OCA-BALDA.

TIME CONTROLLED STARTING AND STOPPING MECHANISM.

APPLICATION FILED AUG. 8, 1919.

1,368,828.

Patented Feb. 15, 1921.

2 SHEETS—SHEET 1.

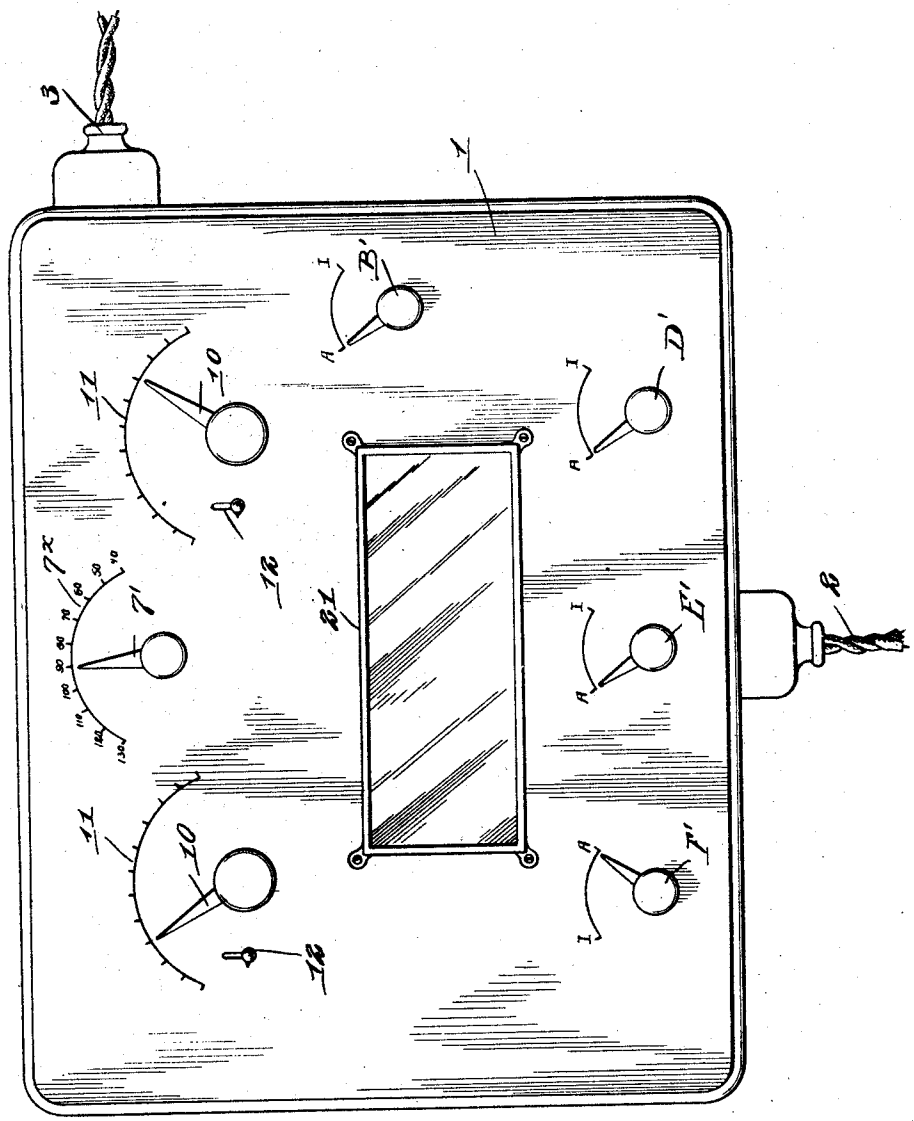


Fig. 1.

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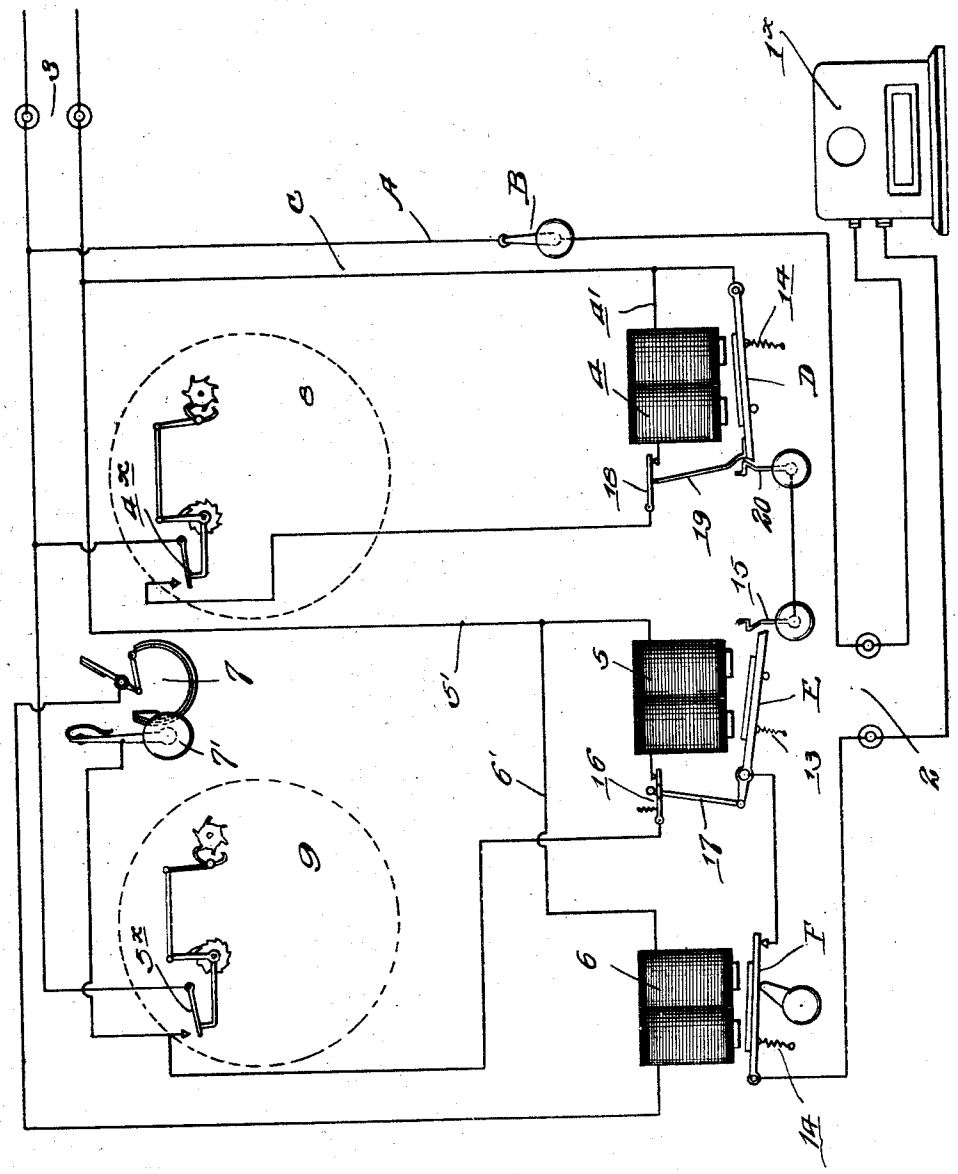


Fig. 2.

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TIME-CONTROLLED STARTING AND STOPPING MECHANISM.

1,368,828. Specification of Letters Patent. Patented Feb. 15, 1921.

Application filed August 8, 1919. Serial No. 316,190.

To all whom it may concern:

Be it known that I, José A. Oca-Balda, a citizen of Argentina, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Time-Controlled Starting and Stopping Mechanism, of which the following is a specification.

This invention relates to circuit controlling devices and the purpose of the invention is to provide means whereby the circuit may be completed at a predetermined time and other means for breaking the circuit at a predetermined time thereafter so that the mechanism may be set to turn on the current to the electric apparatus some time in the future and then turn off the current after the elapse of a predetermined time.

Another object of the invention is to provide thermostatic means for controlling the circuit, after it has been completed by the above mentioned means, so as to keep the temperature of the electric apparatus uniform.

The invention includes time controlled mechanism for completing the circuit, time controlled means for breaking the circuit, means for setting both of the time controlled means, means for setting the thermostatic means to operate at any desired temperature and switch means for rendering inactive the controlling means.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a face view of the cabinet or box which incloses the mechanism forming the subject matter of the present invention and showing the same attached to the source of supply and to the apparatus.

Fig. 2 is a diagrammatic view of the mechanism within this box or cabinet.

In these views #1 indicates the box or cabinet which is provided with the lower pair of terminals 2 and the upper pair of terminals 3. One pair of these terminals is adapted to be connected with the electrical apparatus, shown at $1^{\times}$, while the other pair is to be connected to the source of supply. One terminal of each pair is connected with a terminal of the other pair by the conductor A in which is located a switch B and the other terminals are connected together by the conductor C in which are located the switches D, E and F. The switch B is provided with a finger B′ which is located outside of the box and the switches D, E and F are provided with fingers D′, E′ and F′ which are also located outside the box so that the switches may be manually operated. These switches are also operated by the magnets 4, 5 and 6. The magnet 4 is connected with the terminal 3 by the circuit 4′ and the magnet 5 is connected with said terminal by the circuit 5′. The magnet 6 is in parallel with the circuit 5′ as at 6′. A thermostatic device 7 of any desired construction is located in the circuit 6′ and the movable contact of this thermostat is suitably connected with the finger 7′, located on the face of the cabinet, so that when said finger is adjusted said contact will be also adjusted in accordance with the movement of said finger over the arc-shaped dial $7^{\times}$ on the face of the cabinet. In this way the thermostatic device may be made to close the circuit 6′ at the temperature at which the finger 7′ is set. The circuit 4′ is provided with a switch $4^{\times}$ and the circuit 5′ is provided with a switch $5^{\times}$. The switch $4^{\times}$ is controlled by the clock mechanism 8 and the switch $5^{\times}$ is controlled by the clock mechanism 9.

The means whereby these clock mechanisms control the switches may be of any desired construction though I prefer to use the ratchet arrangement operated by the alarm mechanism of the clock as described in a co-pending application filed by me on July 25, 1919, Serial No. 313,153. The alarm mechanism of each clock may be adjusted from the exterior of the cabinet as described in said application, the exterior parts of such means being shown in Fig. 1 and consisting of the fingers 10 and the arc-shaped dials 11. It will be understood that by setting the alarm mechanism of the clocks to operate at any desired time, when this time arrives the alarm mechanism will actuate the ratchet mechanism and thus close the switch. Each clock is also provided with means for returning the ratchet mechanism and the switches $4^{\times}$ and $5^{\times}$ to their normal inoperative positions, the exterior part of these means being indicated at 12.

If clock 9 is set to operate, say at 6 o'clock in the morning and clock 8 at 10 o'clock in the evening, then at 6 a. m. the alarm mechanism of clock 9 will begin to actuate and thus the ratchet mechanism will close switch 5× so that current is supplied to the magnet 5. This magnet will lift the switch E and thus close the circuit between the electric apparatus and the source of supply. Switch E is normally held in open position by the spring 13 while switches D and F are normally held in closed position by springs 14. As soon as switch E is closed by its magnet it will be held in closed position by the latch 15 and as soon as this switch is closed the switch 16 and circuit 5′ will be opened by a part 17 actuated by said switch E so that the circuit to the magnet will be broken as soon as the switch E is closed. Current will continue to flow to the electric apparatus during the day, but at 10 o'clock p. m. the alarm mechanism of clock 8 will begin to actuate and thus switch 4× will be closed so that current will flow to magnet 4 and thus the switch D will be opened to break the circuit to the electrical apparatus. As this switch D rises the switch 18, in the circuit 4′ will be raised by means of a part 19 on switch D. This switch D will also be held in raised position by a latch 20 so that the circuit 4′ will remain broken by switch 18 as long as switch D is in raised position. As before stated, the switches, D and E are reset or released from their latches by the fingers D′ and E′.

If the temperature of the electrical apparatus should rise beyond that for which the thermostatic device is set, this device would close the circuit 6′ so that the magnet 6 will receive current and thus the switch F will be raised and the circuit to the electrical apparatus broken. As soon as the temperature drops the thermostat 7 will return to its normal position and thus the circuit 6′ will be broken and switch F returned to its closed position to again complete the circuit to the electric apparatus.

Instructions for the use of the device may be arranged on the top of the cabinet as shown at 21.

If the device is used for controlling the circuit to a radiator, for instance, the starting clock may be set the night before to supply current some time the next morning and the stopping clock may be set at the same time or later to cut off the current some time the next evening. Thus the current will be turned on and off without requiring any attention from the operator.

The invention may be used for controlling the circuits of radiators, motors, lighting systems or in fact in any case where it is desired to automatically complete the circuit at any predetermined time and then break the circuit after a predetermined time.

I desire it to be understood that the thermostat may be arranged outside of the box with detachable connections to the parts within the box. In this way the thermostat may be located within or adjacent to the apparatus itself. Such apparatus may be an oven or a heating chamber or the like. The box to be located outside the apparatus in any desired place. In this way we can have constant temperature inside of the chamber during a predetermined period of time. In this case the setting means 7′ and 7× would not be used.

If the device was used in a room, however, the setting means may be used.

The device may be used on any kind of electric apparatus. For instance, it may be used to control the valve of a steam radiator by attaching a motor to the valve thereof and controlling the motor by this apparatus.

If the device is applied to a fireless cooker it may be set the night before to turn the heat on early in the morning. It may also be used for operating the ventilating means at any desired hour and for a predetermined period of time, and it may be used with or without the thermostat.

What I claim is:—

Circuit controlling mechanism comprising a casing having terminals thereon adapted to be connected with the source of supply and with the electric apparatus, circuits within the casing and connected with said terminals, a switch in each circuit, a time controlled mechanism for controlling each switch, thermostatic means, a circuit therefor in parallel with one of the other circuits, magnetic means located in each of the three circuits, switch means located in each of the three circuits, switch means actuated by said magnetic means, means for manually actuating said switches from outside the casing, means for setting the time controlled mechanisms from outside of the casing and means for breaking the circuit to the magnetic means when the switch means are actuated by said magnetic means.

In testimony whereof I affix my signature.

JOSÉ A. OCA-BALDA.