T. T. CATER.

ELECTRIC CONTROLLER.

APPLICATION FILED FEB. 15, 1919.

1,328,126. Patented Jan. 13, 1920.

Fig. 1.

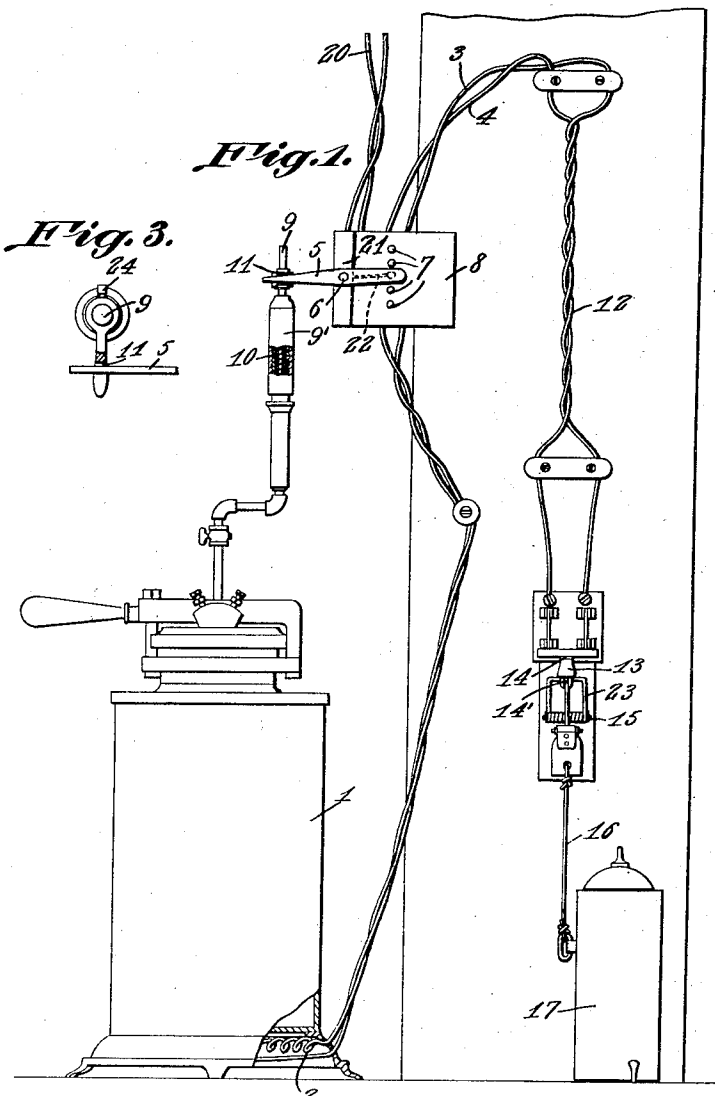


Fig. 3.

Fig. 2.

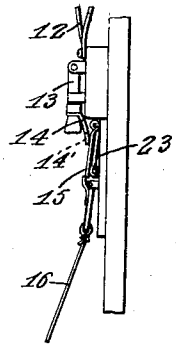


Fig. 4.

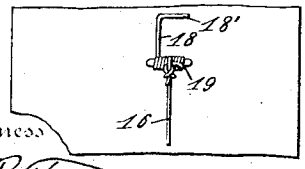
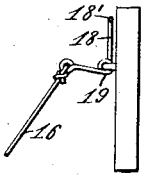


Fig. 5.



Witness

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ELECTRIC CONTROLLER.

1,328,126. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed February 15, 1919. Serial No. 277,219.

To all whom it may concern:

Be it known that I, THEODORE T. CATER, a citizen of the United States, residing at Aurora, in the county of Lawrence and State of Missouri, have invented a new and useful Electric Controller, of which the following is a specification.

This invention has reference to electrically operated controlling devices, and it is particularly intended to control and regulate the actuation of an instrumentality, such as a container in which certain changes of material are to be carried on, or of pieces of apparatus or machinery in such a manner that said actuation will proceed during a certain predetermined length of time, and under certain predetermined conditions. Among other uses my invention may be applied for the automatic regulation of the different degrees of pressure and heat and of other treating conditions in a container in which chemical and similar operations are to be carried out. It is one of the objects of my invention to provide a time regulated automatic cut-off, and controlling and regulating means operated by the particular conditions of the instrumentality referred to, and it is a further object of my invention to effect such time regulation by an ordinary alarm clock. My invention further contemplates the provision of a rheostat of ordinary construction in connection with said instrumentality for the purpose of regulating and controlling varying conditions thereof. Other objects and advantages of my invention will appear from the specification and drawing forming a part of said specification.

An embodiment of my invention is shown by way of example in the accompanying drawing which represents the invention as being applied to a pressure tank heated by electricity and which may be used for instance as a dental vulcanizer for vulcanizing plates and pieces of apparatus made from rubber or similar material.

Figure 1 is a view partly in elevation and partly in section. Fig. 2 is a side view of the switch mechanism used in connection with my invention. Fig. 3 is a fragmentary sectional plan view showing the connection of the rheostat lever and the movable pressure operated element. Fig. 4 is a modification of the switch operating part. Fig. 5 is a side view of Fig. 4.

In the drawings:—1 is a pressure tank or the vulcanizing chamber. 9 is a piston rod which is reciprocated in the pipe conduit 9′ connected to the interior of said chamber, and which may be operated by the pressure in the interior of said chamber. 10 is an encircling spring surrounding said piston rod 9 and regulating the movement of the same in the well known manner. 8 is a rheostat or similar device containing different electric resistances. 3 and 4 are conducting wires electrically connected to said rheostat and operatively connected to the tank 1. 2 is a conventional diagrammatic representation of a heating coil or the like arranged in or beneath the tank, and electrically connected to the rheostat. 7 represent contacts mounted on said rheostat. 5 is a lever fulcrumed at 6 made chiefly of non-conducting material such as hard rubber and the like and movable over a metal contacting piece 21 which is electrically connected to the source of electric energy by means of the leads 20. A metal rod, wire or the like 22 leads off from the conducting piece 21 and establishes connection with any of the rheostat contacts 7. A fork 11 or a similar link connection is provided on the spring actuated piston rod 9, and engages the lever 5 so as to move said lever in accordance with the movement of said piston rod which is governed by the conditions at the inside of the tank 1. A switch 13 of any approved construction is provided in connection with the extension 12 of the leading in wires 3, 4.

The numeral 15 indicates generally a tripping or tilting device adapted to engage with the switch 13 and capable of throwing said switch in or out of operation, as the case may be, when released. As a device adapted for the purpose in question I may use for instance, an ordinary mouse trap which is set in such a manner that its spring actuated tripping staple or yoke 23 engages under a projection 14′ of the switch arm 13. A cord or other flexible connection 16 connects the trip operating means of the mouse trap to the alarm of a time piece 17,

so that when this alarm is operated the trap is released, and the switch is accordingly operated, thus controlling the admission of current from the lead wires 20 and through the rheostat to the pressure tank 1.

A modification of the switch releasing tripping mechanism is shown in Figs. 4 and 5 of the drawing. A spring actuated lever 18 is provided which is pivoted at 19 to some stationary point, and is preferably of bell-crank or similar shape, and has an angular projection 18′ adapted to engage with the switch arm 13 or with the projection 14 thereof.

The construction of the time piece is not material for my invention, and it is obvious that any kind of time piece possessing releasing means operated at a predetermined relative position of the parts of the time piece may be used in connection with my invention.

The length of the part 22 of the lever 5 which establishes the connection with the contacts of the rheostat will be arranged in accordance with the distance of said contacts, and in accordance with the operative throw of the piston rod 9 which depends upon the particular conditions which it is desired to maintain at the interior of the tank 1.

My invention is not limited to the particular construction and manner of assembling the parts shown in the drawings, but it is capable of modifications to suit the various conditions of usage to which the invention is applied, and within the scope of the claims hereunto appended.

A screw 24 may be provided for the adjustment of the fork or clamp 11 which engages the lever 5 or may be clamped thereto by alligator clamping jaws or by equivalent means not shown on the drawing. The contact points 7 of the rheostat are preferably arranged in accordance with the compression of the spring 10 so as to cut the various resistances in and out of circuit in accordance with the pressure prevailing in the tank, or in accordance with the temperature prevailing therein. The lever may also be actuated by the change of temperature in the tank or by the temperature indicating means connected therewith. One of the contacts 7 may be so arranged as to cut off the heat entirely by breaking the circuit, while when the pressure in the tank commences to go down, the spring 10 that is antagonizing the pressure will connect the circuit again at one of the rheostat contacts thus preventing the blowing out of the fuses which are not shown in the drawing and automatically resuming the vulcanization which latter may go on for forty-five or fifty minutes or for any length of time required depending upon the nature and the thickness of the material to be treated.

Having described my invention what I claim is:—

1. An electric controlling and regulating device comprising the combination with an operating instrumentality and a moving part operably connected to said instrumentality, of rocking means engageable with said moving part, a series of electric contacts selectively engageable with said rocking means, an electric circuit connected to said contacts, a switch in said circuit, tripping means engageable with said switch, a time piece operably connected to said tripping means, and spring means for operating said rocking means in conjunction with said contacts at a predetermined time.

2. The electric controlling and regulating device, specified in claim 1, having additionally a flexible connection between said time piece and said tripping means.

3. An electric controlling and regulating device comprising the combination with a tank and a spring actuated movable part operatively connected to said tank, of rocking means engageable with said movable part, a series of electric contacts selectively engageable with said rocking means, an electrically conducting portion on said rocking means, an electric circuit operably connected to said contacts, a switch in said circuit, means engageable with said switch and operating the same, a time piece operably connected to said switch-operating means to release the same.

4. In an electric controlling device as specified in claim 3, electric heating means in said circuit and operably connected to said tank.

5. An electric controlling and regulating device comprising the combination with a tank and a spring actuated movable part operatively connected to said tank, of an electrically insulated rocking switch engageable with said movable part, a series of electric rheostat contacts selectively engageable with said rocking switch, an electrically conducting portion on said rocking means, an electric circuit operably connected to said conducting portion and to said contacts, a switch in said circuit, tripping means engageable with said switch and operating the same, a time piece, a flexible connection between said time piece and said tripping means, and electric heating means in said circuit and operably connected to said tank.

6. A vulcanization-controlling and regulating device comprising the combination with a vulcanization tank and a spring actuated movable piston rod operably connected to the interior of said tank, of an electrically insulated rocking lever engageable with said piston rod, a series of electric rheostat contacts selectively engageable with said rocking lever, an electrically conducting portion on said lever, an electric circuit

operably connected to said conducting portion and to said rheostat contacts, a switch in said circuit, tripping means engageable with said switch and operating the same, a time piece, a time controlled releasing part on said time piece, and an operating connection between said releasing part and said tripping means.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THEODORE THOMAS CATER.

Witnesses:
R. P. BRACHO,
W. L. DEANE.