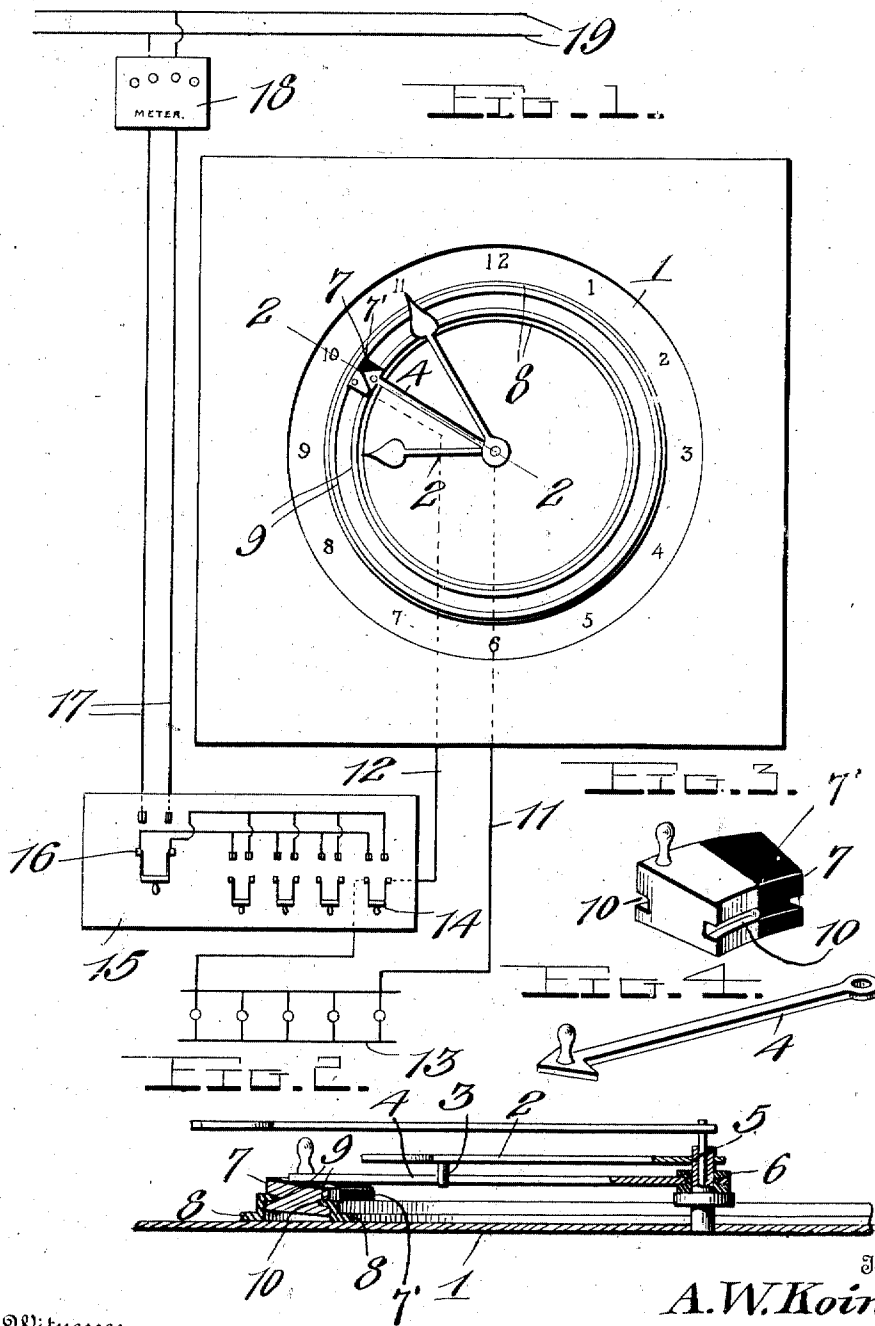


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TIME SWITCH.
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980,288.

Patented Jan. 3, 1911.



Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR W. KOINER, OF RICHMOND, VIRGINIA.

TIME-SWITCH.

980,288.

Specification of Letters Patent.

Patented Jan. 3, 1911.

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To all whom it may concern:

Be it known that I, ARTHUR W. KOINER, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Time-Switches, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in time switches, and more particularly a time controlled electrical cut out adapted for use in stores and buildings for extinguishing one or more electric lamps or series of lamps at a predetermined time, although the device may be employed for other purposes.

The object of the invention is to provide an improved cut-out or switch of simple and practical construction which may be conveniently set and when set will be entirely automatic in operation.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my improved time switch, the electric circuit being diagrammatically illustrated. Fig. 2 is a detail sectional view taken on the plane indicated by the line 2—2 in Fig. 1, and Figs. 3 and 4 are detail views of parts.

Referring more particularly to the drawing, 1 indicates a clock dial upon which my improved time switch is arranged. This switch is controlled by the hour hand 2 of the clock which carries a trip pin 3, which is adapted to engage and actuate a conductor arm 4, pivotally mounted to rotate about the hour hand shaft 5, from which it is insulated by means of a sleeve 6. The conductor arm 4 is thus mounted for movement independent of the time indicating hands and it is adapted to be adjusted to break the electric circuit at a predetermined time when engaged by the trip pin 3, as will now be set forth.

A contact block 7 is arranged for movement between the concentric stationary non-conducting rings 8 which are secured upon the face of the dial in any well known manner. These rings are formed of any suitable insulating material. The rings 8 are of angular cross sectional form to provide the track flanges 9 which engage in the grooves 10 in

the opposite edges of the contact block 7. It will be noted from reference to Fig. 2 of the drawing that the flanges 9 of these rings are slightly inclined, the flange of the inner ring being disposed nearest the face of the clock dial. The upper and lower surfaces of the contact block 7 when in position between the flanges 9 are therefore also inclined toward the center of the dial. The block 7 is formed in two sections, one of which is composed of copper or other electric conducting material, and the other of rubber or any well known insulation as indicated at 7'. These block sections may be cemented or otherwise secured together, and the metallic section is provided with a suitable finger piece as shown at Fig. 3 whereby the block may be easily moved between the concentric insulation rings 8, to any desired point of the clock dial, at which time it is desired to break the circuit and extinguish the lights. The end of the arm 4 is then positioned upon the upper inclined surface of the block 7. This arm is sufficiently resilient to cause the same to retain its position upon the block 7 in any position of the clock. The sleeve 6 upon which the inner end of the arm 4 is mounted is fitted upon the shaft 5 so as to prevent outward movement of the arm toward the casing of the dial whereby secure frictional contact of the end of the arm with the block 7 after it is released is insured.

After the block has been properly positioned and the arm engaged therewith, the circuit is connected, and when the hour hand 2 reaches the time set for extinguishing the lights, the pin 3 carried thereby engages the arm 4 and moves the same from the timing section of the block to the insulated section 7' thereof, thereby breaking the circuit, and the said arm 4 continues to move with the hand until it clears the insulated section of the block and drops therefrom upon the non-conducting rings 8. By providing the insulation section 7', in the event that the arm 4 should drop back against the end of the block, the circuit would still be disconnected. The conducting wires 11 and 12 of the circuit are connected to the inner end of the arm 4, and to the metallic section of the block 7 respectively. The lamps 13 are included in the circuit together with a cut out switch 14. One or more of said switches may be mounted on a panel board 15 which is provided with a main switch 16, controlling the switches 14, and including

an electric circuit 17 containing a meter 18, which is connected to a source of current supply by means of the wires 19, which latter may be the usual street line of an electric light company supplying the current to the building in which the switch is arranged. While this is one manner in which the switch may be connected up and used, it will be obvious that the invention may be utilized in many other ways and for a great number of different purposes. The circuit wire 17 need not necessarily pass through the casing which incloses the clock and switch mechanism, when connected in series before switch 16. Furthermore, it will be readily understood that the wire 12 may be directly connected to the circuit wires 17 and the controlling switches 14 and 16 located at a point distant from the time switch when all lights are simultaneously extinguished.

In the use of the invention, as above stated, the block is moved to the desired point and the resilient arm 4 lifted and disposed upon the same. At the proper time, the pin 3 engages said arm and moves the same off of the block 7 and breaks the circuit and extinguishes the lights. After the arm moves off of the block, the resiliency of the same causes it to engage upon the flanges 9 of the non-conducting rings whereby it is disposed below the end of the pin 3, thus remaining stationary while the hour hand 2 continues its movement. The arm 4 is also provided with a finger piece similar to that carried by the block 7 whereby it may be readily lifted and engaged upon the contact member. It will of course be understood that when the block and arm 4 have been properly adjusted, the switches 14 and 16 are closed, so that the electric circuit is connected. It will be understood that in practice the handles on the block 7 and on the conducting arm 4 will be made of insulating material so as to render it safe to handle the device. It will also be understood that should it become necessary, suitable means will be provided to hold the block 7 against movement between the rings 8.

From the foregoing, it is believed that the construction and operation of my improved switch will be readily understood and while I have specifically described and shown the preferred construction and arrangement of the various parts, it will be understood that

the device is susceptible of many minor modifications without departing from the essential feature or sacrificing any of the advantages of the invention.

I claim:—

1. In apparatus of the class described, in combination with a clock dial having a pair of insulating guide rings thereon disposed concentrically with reference to the hand shaft, a conducting block movable between the said guide rings and projecting from the outer faces thereof, hands on the hand shaft, one of the said hands being provided with a pin which projects toward the dial and a conducting arm pivotally mounted on the hand shaft and for disposition with its outer end on the said conducting block to dispose the said conducting arm in the path of the said pin of the said hand, the said conducting arm being a spring arm and adapted thereby when moved from the said conducting block to move out of the path of the said pin.

2. In apparatus of the class described in combination with a clock dial having a pair of concentrically disposed non-conducting rings on the outer side thereof, spaced apart and provided on their opposing sides with flanges, a conducting block mounted for movement between the said guide rings and having grooves in its sides engaged by the flanges thereof, said conducting block projecting beyond the outer sides of said guide rings and being also provided with a non-conducting section at one end thereof, a hand shaft projecting from the dial, hands on the hand shaft, one of the said hands being provided with a pin which projects toward the dial, and a spring conducting arm mounted on the said hand shaft for movement around the dial, and to bear on the said block, the said conducting arm when thus disposed on the block being in the path of the said pin of the said hand, the said conducting arm when moved from the said block dropping upon the inner guide ring, and hence getting out of the path of the said pin for the purpose set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ARTHUR W. KOINER.

Witnesses:

G. W. KOINER,
CHAS. A. MILLER.