

R. S. SMITH.
ELECTRIC ALARM.
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1,148,411.

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Fig. 1.

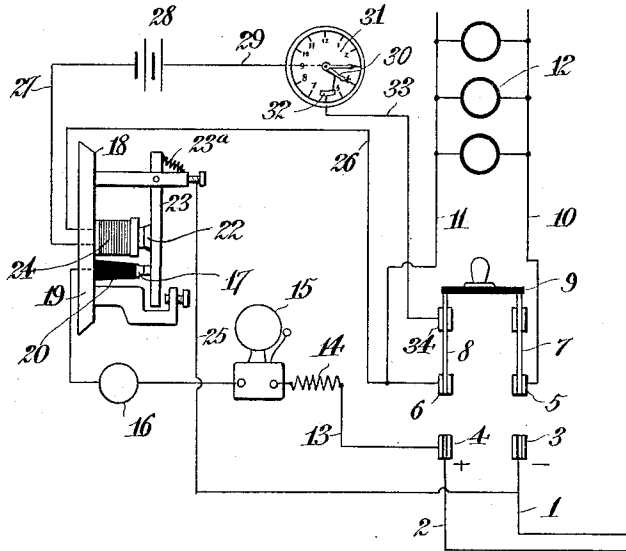
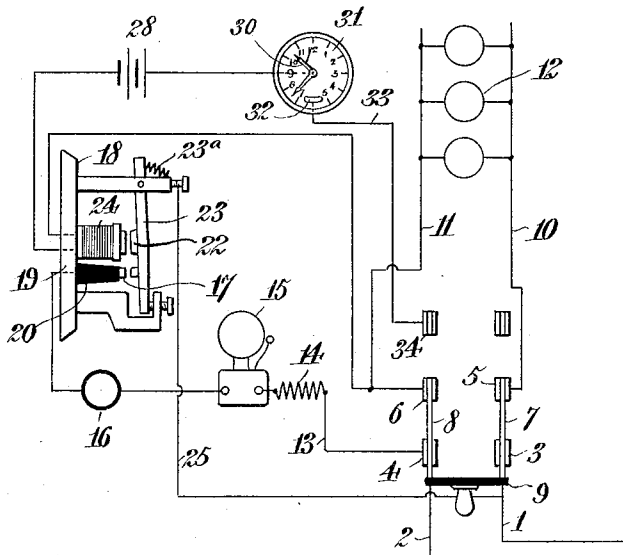


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ELECTRIC ALARM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD S. SMITH, a citizen of the United States, residing at Columbia, in the county of Marion and State of Mississippi, have invented new and useful Improvements in Electric Alarms, of which the following is a specification.

This invention relates to alarms, and in particular to an electrical apparatus of this character which is intended particularly for use by persons who must of necessity arise early in the morning at a predetermined time.

The primary object of the invention is to provide an apparatus of this nature which includes visual and audible alarm devices which are connected in normally open circuit with, and are adapted to be energized by the source of current for the house-lighting system, a time-controlled circuit-closer, a relay connected in series with the circuit of the alarm devices, the said relay being connected with the time-controlled circuit-closer in a primary electric circuit, which has a battery as its source, and a switch for the lighting system which is connected in such a manner with the primary circuit of the apparatus that it will serve as means for closing one side of the primary circuit when the switch is thrown to cut out the house lights. The audible and visual alarm devices are to be arranged preferably adjacent to the time-controlled circuit-closer, which may be embodied in an alarm clock, so that the visual alarm, which is in the form of an electric light, will serve to illuminate the clock dial whereby the party awakened by the audible alarm may ascertain the time conveniently.

A further object is to provide an apparatus of the class described, which is extremely simple in its composition and arrangement of parts so that it may be cheaply manufactured and installed, and will be efficient in operation and easy to regulate.

The invention consists in the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:

Figure 1 is a diagrammatic view of the

apparatus, showing the manually operable circuit-closer in one of its closed positions, whereby the house lights are cut out and the primary circuit of the alarm is closed, the time-controlled circuit-closer being closed also; and, Fig. 2 is a similar view showing the manually operable circuit-closer in its other closed position, wherein the house lights are in circuit and the primary alarm circuit is open and inoperative.

In the drawing, the numerals 1 and 2 designate the service wires of a house-lighting system, which are connected through the medium of the mains with a source of direct current (not shown). These wires are connected with two extreme poles 3 and 4 respectively, of a double-pole double-throw switch. The intermediate poles 5 and 6 of this switch, with which the insulated blades 7 and 8 of the movable element 9 of the switch are pivotally connected, are connected by means of conductors 10 and 11 respectively with the house lights 12. A conductor 13 leads from the pole 4 of the switch and connects a resistance element 14, the electro-magnet coil of an alarm bell 15, and an electric light bulb 16 in series to the fixed contact 17 of a relay 18, the said contact being insulated from the base 19 of the relay by means of a block 20 of insulating material such as fiber, rubber, or the like. The relay and these alarm devices are preferably mounted upon a common base (not shown) to render the apparatus neat and compact in form. A movable contact 22 is carried by the pivoted armature 23 of the relay and is adapted to engage the fixed contact 17 when the armature is in its depressed position as accomplished against the action of the armature-restoring spring 23^a by energization of its electromagnet 24. The armature 23 is connected by means of conductor 25 with the opposite pole 3 of the switch. The intermediate pole 6 of the switch is connected by means of conductor 26 with one terminal of the electro-magnet coil of the relay whereas the opposite end of the coil is connected by means of conductor 27 with one pole of a battery or other suitable source of current 28. The opposite pole of this battery is connected by means of

conductor 29 with the movable contact member 30 of the time-controlled circuit-closer 31, the fixed contact member 32 of this circuit closer being connected by means of conductor 33 with one of the opposite terminal poles 34 of the light switch, which is disposed opposite to the pole 4 in this instance.

It being intended that the primary circuit of the apparatus shall be closed for a considerable length of time, when the apparatus is in use, the fixed contact of the time-controlled circuit-closer must necessarily be constructed and arranged, with reference to the movable contact member, in such a manner that the latter will remain in engagement with the fixed contact for the desired period. In the present instance, the hour hand of a clock is shown as being the movable contact member, and an arcuate bar, which is adapted to be engaged by the hour hand throughout a sufficient portion of its sweep, constitutes the fixed contact member, but it is to be understood that this is merely one expedient which may be adopted and that I do not limit myself strictly to its use.

The operation of the apparatus will now be explained. At night, when it is time to switch off the house lights, the movable element 9 of the light switch is thrown into one of its closed positions, as shown in Fig. 1 of the drawings, wherein the switch blade 8 will be engaged within the pole 34. The lights will thus be extinguished, and one side of the primary alarm circuit will be closed by the blade 8. The movable contact member 30 of the time-controlled circuit-closer will eventually become engaged with the fixed contact 32 whereupon the primary circuit will be completed and the electro-magnet 24 of the relay will be energized so as to attract the armature 23 and thus bring the contact 22 into engagement with the contact 17. In this manner the secondary circuit, which is supplied with current from the light source, will be closed, thus ringing the bell 15 and lighting the lamp 16. The resistance element 14 will serve to prevent the high-tension lighting-current from burning out the bell coils. The alarm devices will continue to be actuated as long as the armature of the relay remains in its operative position, which depends upon the time during which the movable contact member of the time-controlled circuit closer will remain in contact with the fixed contact member of the same. The alarm devices are preferably positioned close to the clock which constitutes the time-controlled circuit-closer in order that the person awakened by the audible alarm may be enabled to read the dial of the clock readily. The manually operable light switch will also be illuminated by the light bulb 16 so that the operator will have no difficulty in finding the switch in order

to throw the same and thus cut in the house lights. This operation of the switch will open the primary circuit of the alarm, provided that the said circuit has not been opened previously by the operation of the time-controlled circuit-closer. It should be apparent that as soon as the primary circuit is opened, the relay armature will be restored to inoperative position by its spring and will thus open the secondary alarm circuit.

What is claimed is:

1. The combination with the service wires of a lighting system, a source of direct current connected therewith, and a manually operable switch therefor, of an electric alarm device connected in normally open circuit with the service poles of the switch, the movable blades of the switch being adapted when in operative position to connect the lights of the system in circuit, a normally open circuit closer for the secondary circuit in which the alarm device is connected, and means capable of rendering the said circuit closer operative when the light switch is in its inoperative position, said means including one blade of said switch.

2. The combination with the electric wiring of a lighting system, a source of direct current therefor, and a manually operable switch connected with the said wiring, a relay including a fixed contact, a movable contact insulated from the said fixed contact, yieldable means for normally maintaining the movable contact in spaced relation to the fixed contact, and an electro-magnet associated with the movable contact, means for connecting the said relay contacts with the light wires at the service side of the switch in a normally open, secondary alarm circuit in parallel with the light circuit, an auxiliary source of direct current, means for connecting the said source in a primary alarm circuit with the coil of the relay magnet, the said magnet being adapted when energized to move the movable contact of the relay into engagement with the fixed contact thereof, and means by which the primary circuit may be closed.

3. The combination with the electric wiring of a lighting system, a source of direct current therefor, and a manually operable switch connected with the said wiring, a relay including a fixed contact, a movable contact insulated from the said fixed contact, yieldable means for normally maintaining the movable contact in spaced relation to the fixed contact, and an electro-magnet associated with the movable contact, means for connecting the said relay contacts with the light wires at the service side of the switch in a normally open, secondary alarm circuit in parallel with the light circuit, an auxiliary source of direct current, means for connecting the said source in a primary alarm

circuit with the coil of the relay magnet, the
said magnet being adapted when energized
to move the movable contact of the relay
into engagement with the fixed contact there-
of, means associated with the light switch
5 whereby one side of the primary alarm cir-
cuit may be closed when the switch is in
inoperative position wherein the lights are

cut out, and time-controlled means for com-
pletely closing the primary circuit.

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

RICHARD S. SMITH.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."