Jan. 16, 1934. D. S. GOURLEY 1,943,598

ALARM MECHANISM FOR CLOCKS

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Fig. 1.

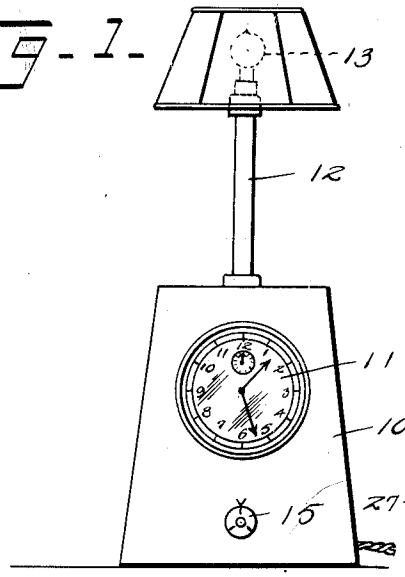


Fig. 8.

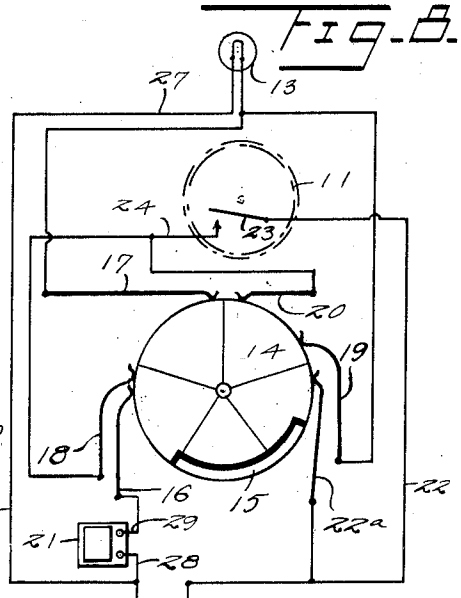


Fig. 2.

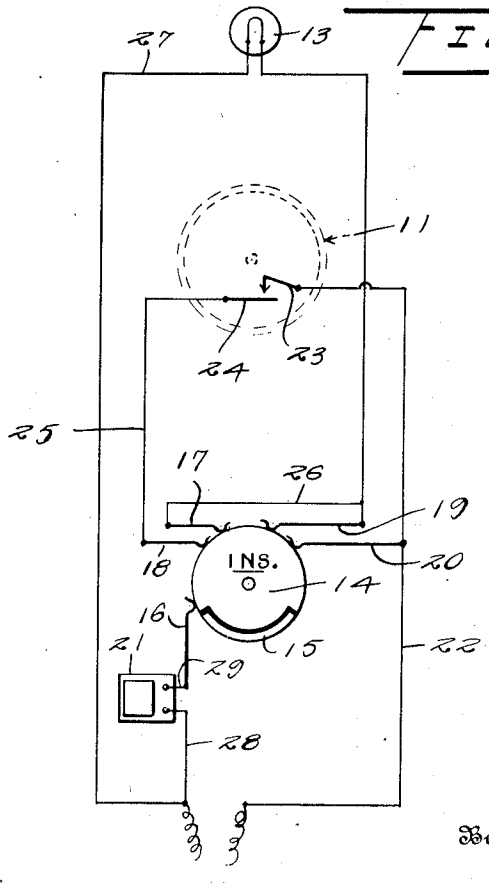


Fig. 5.

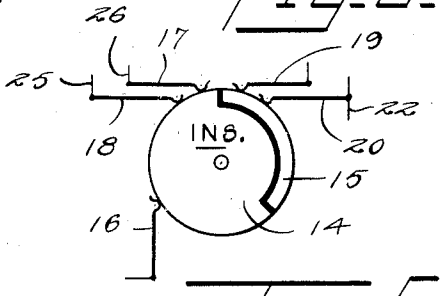
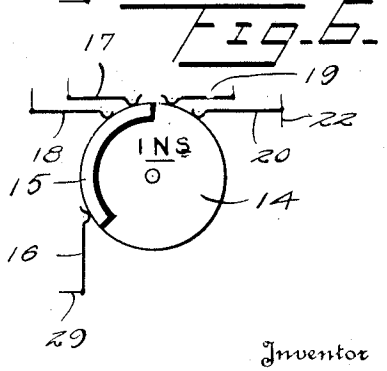


Fig. 6.



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Fig. 3.

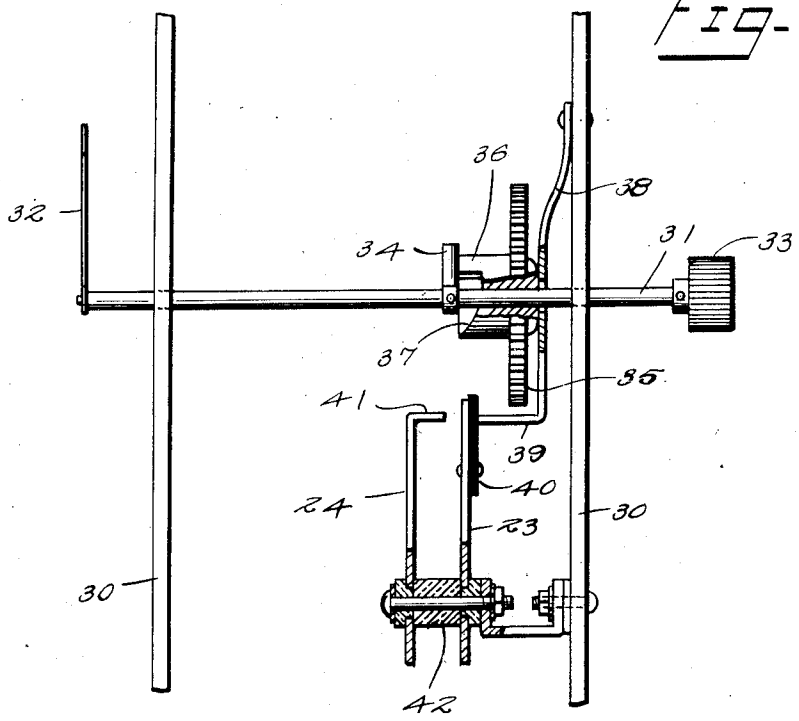


Fig. 4.

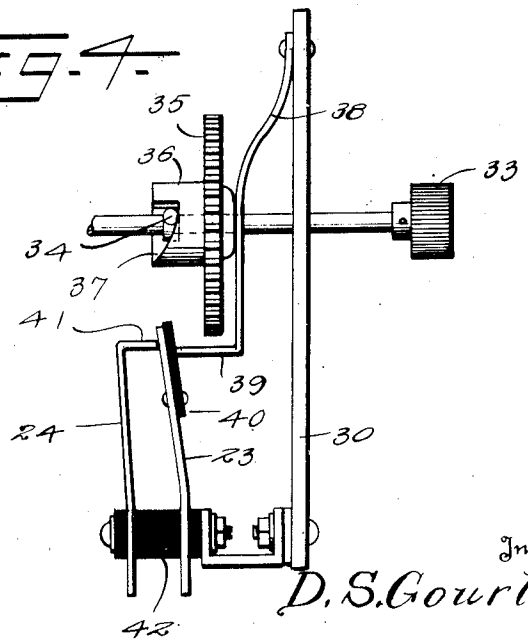
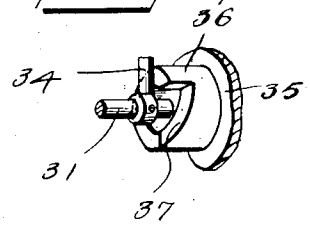


Fig. 7.



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UNITED STATES PATENT OFFICE

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ALARM MECHANISM FOR CLOCKS

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Application April 30, 1931. Serial No. 534,033

1 Claim. (Cl. 58—19)

This invention relates to alarm producing clocks and particularly to clocks having both a visual and an audible alarm signal.

The general object of my invention is to provide means whereby the ordinary clock mechanism may be used in connection with a certain switch, to be hereafter stated, to sound either an audible alarm at a predetermined instant of time or to turn on a light, as for instance an electric light, or perform both of these operations or either of them at the predetermined instant of time.

A further object is to provide means whereby either one of these alarm mechanisms may be disposed in operative relation to the clock mechanism so that either one may be actuated at the predetermined time or whereby both of these alarm mechanisms may be prevented from actuation.

A further object is to provide improved means whereby the alarm sounding mechanism may be set to go off at a predetermined instant and another object is to provide a clock case having mounted therein an ordinary clock of any suitable construction, the clock case containing or supporting a buzzer or other audible alarm, and also supporting a lamp stand and electric light carried thereby, together with mechanism before stated whereby either the electric light or the buzzer or both may be actuated at a predetermined time.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a front elevation of a clock constructed in accordance with my invention;

Figure 2 is a diagrammatic view of the control mechanism;

Figure 3 is an elevation of the clock case, the outside of the case being removed, certain of the parts being broken away, the figure showing the time actuated switch in its open position;

Figure 4 is a like view to Figure 3, but showing the time actuated switch in its closed position;

Figure 5 is a diagrammatic view of the manually operable switch in one position;

Figure 6 is a like view to Figure 5, but showing the switch in another position;

Figure 7 is a detailed fragmentary perspective view of a portion of the time actuated switch mechanism.

Fig. 8 is a diagrammatic view of a modified circuit arrangement of the control mechanism.

Referring to these drawings, it will be seen that I have illustrated my mechanism in connection with a clock stand or case designated 10 having therein clock mechanism, the face of which is designated 11. Mounted upon the base or case 10 is a lamp 12 carrying the usual electric light bulb 13. For the purpose of controlling the character of the alarm which shall be actuated at a predetermined time or preventing actuation of this alarm at all, I provide a switch 14 shown as approximately cylindrical in form and rotatable by means of a handle 15.

The switch is of insulating material and has approximately one-third of its periphery formed with a segment 15 of conductive material, as for instance brass. This switch may be in the form of a cylinder or of a disk. Coacting with the face of the switch is a contact 16, a pair of contacts 17 and 18 and an opposed pair of contacts 19 and 20. These contacts may bear upon the periphery of the cylinder if the switch is cylindrical in form or bear against the face of the switch if the switch is disk-like in form. This switch has three operative positions. When the switch is in the position shown in Figure 2, the contacts 17 and 18 will bear against an insulated portion of the switch as will the contacts 19 and 20 and the contact 16. When the switch is in the position shown in Figure 6, the contact 16 and the contacts 17 and 18 will bear against a metallic portion of the switch while the contacts 19 and 20 will bear against the non-conductive portion of the switch.

In the position shown in Figure 5, the contacts 19 and 20 are electrically connected through the metallic segment 15, the contacts 16, 17 and 18 bearing against the non-conductive portion of the switch.

Disposed within the case 10 or mounted upon the exterior of the case, if desired, is an audible alarm designated generally 21 which may be a buzzer, as for instance, an A. C. 110 volt, 60 cycle buzzer. The electrical connections for the switch are clearly shown in Figure 2. An extension cord having two terminals leads from the casing 10 and one of these leads is connected by a lead-in conductor 22 to the contact 20 and to a movable time operated switch contact 23. From the fixed switch contact 24 extends a conductor 25 which leads to the contact 18. The contacts 17 and 19 are both connected by a conductor 26 to the light 13 and from the light 13 extends a return conductor 27 which connects with the other wire of the extension cord. A conductor 28 connects the wire 27 with the buzzer and from the other contact of the buzzer extends a conductor 29

which engages the contact 16. It will be seen that when th switch is in the position shown in Figure 2, all of the contacts of the switch are open, but the switch may be turned either to the right or to the left to make the desired contacts. When the switch is in the position shown in Figure 6, the contacts 17 and 18 are electrically connected with each other and with the light and the source of current and the buzzer circuit is also completed. In the position shown in Figure 5, the buzzer circuit is cut out, but the contacts 19 and 20 are connected to complete a circuit through the light. In this position, the light will be turned on and the light will not be affected by the making or breaking of the circuit through the contacts 23 and 24. When the switch is in the position shown in Figure 5, however, the circuit through the light and buzzer will be broken at the contacts 23 and 24, but when these contacts are closed by clock mechanism to be described, then the circuit through the light and buzzer will both be completed and the light will be energized and the buzzer energized simultaneously.

The clock operated switch is shown more particularly in Figures 3 and 7. In this figure, 30 designates the walls of the clock case. 31 indicates the alarm setting shaft carrying on it the alarm setting hand 32 and a knob 33 whereby the alarm may be set. Mounted upon the shaft is a pin or radially projecting arm 34. Loosely mounted upon the shaft is a gear wheel 35 carrying upon it the collar 36 having therein a segmental cut-out portion 37 into which the pin 34 is adapted to fit when this cut-out portion 37 and the pin come into coincidence.

The wheel 35 is driven by the usual clock mechanism and makes one rotation in twelve hours. The collar which carries this gear 35 is loose upon the shaft 31 and is urged toward the pin 34 by means of a leaf spring 38 mounted upon one wall of the clock case and bearing against this collar 36. The spring is extended beyond the gear wheel 35 and is angularly bent as at 39. Also mounted in any suitable manner upon the clock case is a contact arm 23 having an insulating strip 40 attached adjacent its free end and contacted by the angular extremity 39 of the spring 38. Disposed opposite to the arm 23 is a contact 24 having an angular end 41 which is normally spaced from the contact arm 23. These arms 23 and 24 are insulated from each other by insulation 42 and are electrically connected, as illustrated in the diagram in Figure 2.

When the clock mechanism has brought the collar 36 to a position where the pin 34 can enter the opening 37, the collar turning in the direction of the arrow in Figure 7, the spring 38 will shift the collar and the gear wheel 35 toward the left in Figure 7, thus permitting the spring 38 to shift the free end of the flexible arm 23 into engagement with the angular end 41 of switch arm 24, thus closing a circuit through the light and through the buzzer if the switch has been set to a proper position, or closing a circuit through the buzzer alone if the switch has been set for this. Of course, after a predetermined time, during which the buzzer sounds and the light 13 is energized, the pin 34 will continue its movement against the inclined face of the recess 37 and thus force this collar 36 laterally outward, withdrawing the spring 38 from its engagement with the arm 23 and permitting the arm 23 to separate from the arm 24, thus breaking the circuit through the light and through the buzzer.

It will be seen that by properly operating the switch in the construction shown in Figures 1 to 6, the light may be turned on at a predetermined time and the buzzer sounded or the light may be turned on manually without, of course, sounding the buzzer or the switch may be shifted to an entirely inoperative or neutral position. In Figure 8, I show another circuit arrangement essentially the same as the circuit shown in Figure 2, but so arranged that the buzzer may be sounded at a predetermined time without turning on the light, the light may be turned on at a predetermined time, with or without operating the buzzer, the light may be turned on, as for instance, for reading purposes without connecting the buzzer and lamp with the time controlled switch, or the manually controlled switch may be turned to a neutral position. In this figure, the same reference numerals are used for the same parts. The contact 20 is disposed between the contacts 17 and 19. In this case, the rotatable switch 14 carries a segment 15 which is slightly greater in length than one-fifth the circumference of the switch and the contacts are so arranged that when the switch 14 is placed in the position shown in Figure 8, the switch is in neutral position, that is, in the same position shown in Figure 2. When the switch is turned to the left or clockwise in Figure 8, so that the segment 15 engages the contacts 18 and 16, the buzzer will be automatically sounded at a predetermined time but without illuminating the lamp.

When the switch is turned to carry the segment 15 into engagement with the contacts 18, 16 and 17, the buzzer will be automatically sounded at a predetermined time and the lamp 13 will be energized.

When the switch has been turned to carry its segment into engagement with the contacts 17 and 20, the lamp 13 will be energized at a predetermined time by the closing of the switch 23 and when the switch 14 has been turned another step in a clockwise direction, the switch will engage the contacts 22*a* and 19 and the circuit will be completed through the lamp alone, cutting out the automatic switch, the buzzer, etc. Thus there will be five different positions for the rotatable hand operated switch 14. Attention is called to the fact that once the segment 15 has been shifted to a position where it connects the light with the source of current, the switch can be continued in its rotation without at any time breaking the contact and causing the lamp to flicker, that is, the switch 14 may be turned in a clockwise direction from the third position of the switch to the position where it is in engagement with the contacts 20 and 19 alone without breaking the contact through the lamp and causing the lamp to flicker.

While I have illustrated a certain specific wiring, it is obvious that this wiring may be changed in many ways without departing from the spirit of the invention and, therefore, I do not wish to be limited thereto except as defined in the appended claim.

My mechanism is also adapted to be used with any type of clock, either mechanical or electric and I do not wish to be limited to any particular type of clock.

It will be apparent also that while I have shown a certain form of casing and a special arrangement of the various mechanisms therein, my invention is not necessarily limited to these details and various changes in and modifications of the

construction shown and described may be made, within the scope of the appended claim, without departing from the spirit of my invention or sacrificing its advantages.

I claim:—

In a structure of the character described, a time controlled switch, a lead-in wire therefor, a return wire, a manually rotatable switch, an electric lamp, an electrically actuated alarm, the alarm on one side being electrically connected to the return wire and on the other side being connected to an alarm contact, the electric light being connected on one side to the return wire and on its other side to two spaced lamp contacts, the time controlled switch being connected on one side to the lead-in wire and on its other side to a contact, all of the contacts coacting with and bearing against the rotatable switch, the rotatable switch having a metal segment of a length such as in one position of the switch to electrically connect the alarm contact and the return contact of the time switch, in another position to electrically connect the return contact of the time switch, one of the lamp contacts and the alarm contact, and in another position of the switch to electrically connect one of the lamp contacts to the lead-in wire and the time switch contact.

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