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F. NAWELLS

2,320,462

CLOCK OPERATED SWITCH

Filed Sept. 27, 1940

Fig. 1.

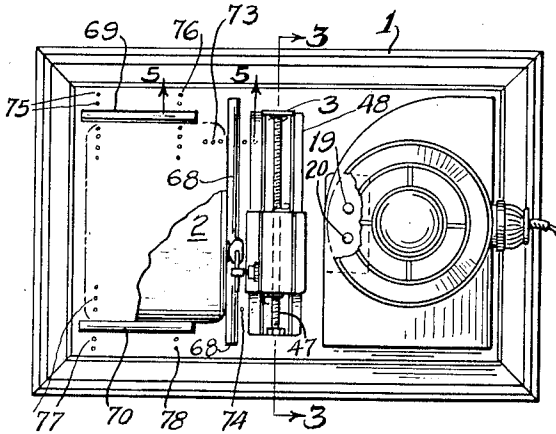


Fig. 3.

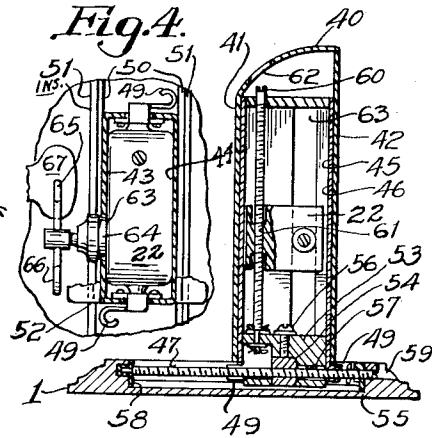


Fig. 4.

Fig. 2.

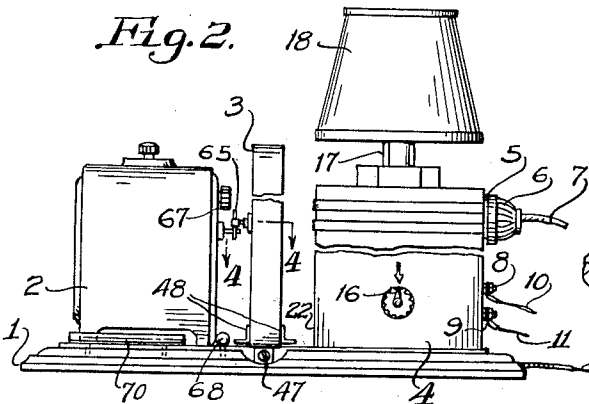


Fig. 5.

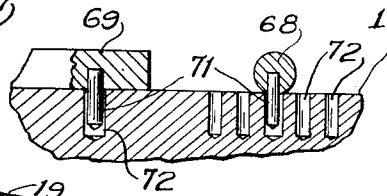


Fig. 7.

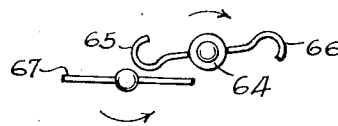
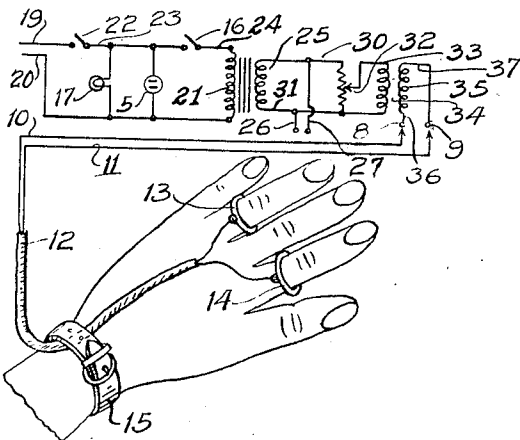


Fig. 6.



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## UNITED STATES PATENT OFFICE

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## CLOCK OPERATED SWITCH

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8 Claims. (Cl. 200—35)

This invention relates to a clock controlled device which is useful for a variety of purposes; some of which are: To awaken heavy sleepers, and those who have impaired hearing, and to simultaneously illuminate the clock and room as well as turn on and off various devices such as waffle irons, coffee makers, radio, etc. The mechanism for accomplishing these advantages is simple, sturdy, economical to manufacture and dependable in operation.

The major parts of the invention include a base or common support for the device, adjustable stops on the base for centering any make of clock, a switch mechanism which is adjustable vertically and horizontally to be actuated by a part of the clock, and various electrical outlets to be operatively controlled by the clock.

Any one of several means may be employed for awakening the sleeper. Electrical shocking means may be attached to the device and operated by the clock at some particular set time; the sleeper wearing a portion of the shocking device upon his body so that when the device is operated by the clock, the sleeper will receive a slight shock. Instead of a shocking device, a small electrical vibrator may be substituted for the shocking device and arranged to be operative when the alarm of the clock is actuated. Although it is preferable to tie or clamp the ends of the shock wires or the vibrator to the wrist of the sleeper, they may be attached to other parts of the sleeper's body. Upon operation of the switch, hence shocking device or vibrator, one or more lamps may be illuminated along with other equipment which the sleeper desires to be put into operation, such as waffle irons, coffee percolator, toaster, radio, signs, etc.

An object of the invention is to present an awakening device which is fool proof, simple and economical to manufacture, and dependable for a variety of uses.

Another object is to provide an awakening device which is adjustable so that it can accommodate substantially any type of key wound alarm clock now on the market; and when combined with almost any type of clock, the entire assembly will be attractive and dependably useful.

Still another object is to convert any key wound alarm clock into a time control device for any electrical equipment, where a precision instrument, or high degree of accuracy is not essential or required, and where economy is the prime factor.

Other objects, advantages and features of my invention will appear from the accompanying

drawing, the subjoined detailed description, the preamble of these specifications and the appended claims.

Although illustrations and description relate to a clock-wise switch, for those clocks that wind to the left, it is understood that the invention also applies to counterclockwise switches for clocks that wind to the right.

In the drawing:

Fig. 1 shows the invention in plan view with parts broken away for the sake of clarity.

Fig. 2 is a side elevational view with parts broken away.

Fig. 3 is a cross sectional view taken substantially along the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 2.

Fig. 5 is a sectional view substantially along the line 5—5 of Fig. 1.

Fig. 6 is the schematic wiring diagram of a part of the invention.

Fig. 7 is an elevational view of a detail.

The reference character 1 indicates the base upon which the various units are arranged, one of the units being an alarm clock 2; another unit, the switching mechanism 3; and another unit, the electrical wires and transformer case 4. The base 1 and the case 4 may be of wood or any other desirable material, the case being attached to the base by screws, if desired, but may, however, merely rest upon the base and have dowel pins for assuring its proper position and preventing accidental displacement. Near the top of the case is a receptacle 5 designed to receive an electric plug 6 which has the usual twin pin electrical connectors and is shown in connection with the twin wired cable 7 which leads to any suitable electrical device to be automatically stopped or started, such as a waffle iron, radio etc. Near the bottom of the case are two outlet terminals 8 and 9 which have attached thereto wires 10 and 11 respectively which are twisted together in a cord 12 which leads to metallic rings 13 and 14 which are attached and are to be placed upon the hand of the sleeper as clearly shown in Fig. 6. The cord is attached to a wrist band 15 which is strapped to the wrist of the sleeper and holds the wires in place upon the hand. On one side of the case 4 is a manual rotary switch 16 and on the top of the case is a socket 17 adapted to receive a lamp and shade 18.

Within the case 4, the receptacle has attached thereto, in the usual manner, insulated wires 19 and 20. Wire 20 connects with one side of the lamp socket 17 and to one side of receptacle 5

and to one side of the primary winding 21. The other wire 19 connects with one side of switch 22, and the other side of the switch connects with the wire 23, which has connection with the other side of lamp 17 and receptacle 5, also to one side of switch 16, the other side of this switch connects with the wire 24, which has connection with the other side of primary 21. By electrical induction, a secondary 25 of the first transformer receives energy and its ends have connections 26 and 27 for an electrical vibrator, its ends also connect with terminals of potentiometer 28 via of the wires 30 and 31. The sliding arm 32 of the potentiometer connects to one side of the primary 33 of the second transformer 34, and the other end of the primary 33 connecting with wire 31. The secondary 35 of this latter transformer has its wires 36 and 37 connected to binding posts 8 and 9 respectively. By this arrangement, the lamp 17 and receptacle 5 are provided with current whenever switch 22 is closed, and the closing of switch 16 will provide primary 21 with current when switch 22 is closed, thus energizing coils 25, 33 and 35 and the potentiometer 28 so as to cause a regulated shocking voltage to pass through the hand of the sleeper whenever the rings 13 and 14 are positioned as shown, the amount of the voltage will vary in accordance to the setting of the potentiometer arm 32.

The switch mechanism 3 comprises a shell having a top wall 40, narrow side walls 41 and 42, and broad side walls 43 and 44. The narrow side walls have strips of insulating material 45 to insulate metallic strips 46 from the walls, the strips being held to the wall by any suitable insulation cement or attaching device. The narrow side walls extend down to the top of a groove 47 of the base 1.

The sides of the walls 43 and 44 have attached at their bottoms, flanges 48 to coact with the top surface of the base and steady the unit 3. The bottom ends of metallic strips 46 are bent as shown in Fig. 4 to form electrical current collector springs 49 which make constant contact with side strips 50 extending along the groove 47. These strips 50 are insulated from the walls of the groove by insulation 51 which may be any good insulating material suitable for the purpose. The strips 50 have electrical connection with wires 19 and 23, and the switch 22 has spring side brushes 52 which stay in constant contact with the strips 46.

Fixed to the bottom walls of the switching unit 3 is a stepped insulating block 53 which has its sides securely fixed to the walls 41 to 44 inclusive of the unit. In one of the steps of the block is a metallic element 54 having a central threaded bore in threaded engagement with an elongated machine screw 55. The element is securely fixed to the block by one or more screws 56 as shown. A bore 57 passes through block 53 and is of greater diameter than screw 55 so as not to interfere therewith. The groove 47 has a heavy liner 58 with bearings at its ends to support the screw 55 in rotary motion. A bore 59 is provided in the base to accommodate the end of a screw driver so that the screw 55 can be turned and the switching unit support 3 moved along the groove.

Through the shortest step of the block 53 pass an elongated screw 60 having one end thereof fixed to the step but free to turn therein. The screw is threaded to the bore 61 of a solid section of the switch 27 and extends nearly to the top wall 40; a hole 62 in the wall 40 allows the entrance of a screw driver end to rotate the screw

and move the switch 27 vertically along the strips 46. An elongated slot 63 extends vertically along the switching unit to accommodate the switch arm 64. The outer end of the rotary switch arm is provided with diametrically opposite hook-levers 65 and 66. The switch unit 3 is adjusted upon the base by manipulating the screws 55 and 60 until hook 65 is positioned with respect to the winding key 67 of the alarm clock, as shown in Fig. 4 and Fig. 7. When the alarm operates, at the time set, the key 67 will turn as indicated by the arrow in Fig. 7 and hence close or open the switch 27 depending upon whether the operator wishes to start the various function of the device or stop them.

Although the winding key 67 of the clock is not shown in the drawing as being engaged by the hook in its cavity portion, it is to be understood that this may be done. To accomplish this, it is only necessary to shift the clock to the right (Fig. 7), so that the edge of the key is enveloped by the hook. When the hook so envelopes or surrounds the key end, the key will turn only a short ways (about one eighth revolution) and then automatically be stopped by the hook so as to prevent continuous sounding of the alarm.

In order to prevent the alarm clock 2 from sliding away from its proper position with relation to the switching mechanism 3, a bar 68 is provided at the rear of the clock, and bars 69 and 70 at the sides of the clock. These bars are adjustable upon the base plate 1 so that the base of most any alarm clock can be properly positioned for operating the levers of the switch. Near each end of the bars are pins 71 adapted to fit into any one of a plurality of holes 72 in the base 1. Near the ends of the bar 68 are shown two rows of holes 73 and 74 so that the bar 68 can take any one of a plurality of positions parallel to the groove 47. To one side of the base 1 are the rows of holes 75 and 76 and similar rows of holes 77 and 78 on the other side of the base, the first pair of rows for the bar 69 and the second pair of rows for the bar 70. Hook 65 is white to turn set on, hook 66 is black to turn set off, the bulge on the hooks give an additional upward thrust when clock key rotates as shown in Fig. 7.

The clock is first positioned and centered correctly on the base so that its winding key 67 will turn the switch on or off, the bars 68, 69 and 70 are arranged juxtaposed to the base of the clock so that the clock can be easily removed and replaced for winding and setting without losing its correct position.

Having thus described my invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a switching unit, a standard having a slot, a rotary switch having a portion thereof in the slot and screw means for shifting the switch along the slot, a switch arm extending from the switch, a hook element extending from an end of the arm and adapted to receive the winding key of an alarm clock.

2. In a switching unit, a standard having a slot, a rotary switch having a portion thereof in the slot, and screw means for shifting the switch along the slot, a switch arm extending from the switch, a hook element extending from the arm and adapted to receive the winding key of an alarm clock, a base supporting the unit, adjustable screw means cooperating with the base for positioning the unit across the base.

3. In a switching unit, a base, a horizontal

screw journaled to the base, a standard having a slot and a base threaded to the screw, a vertical screw journaled to the standard, a switch threaded to the vertical screw and having a shaft extending through the slot, and hook means on the shaft for engagement with a key of an alarm clock.

4. In a switching unit, a standard having a slot, a rotary switch having a portion thereof in the slot and screw means for shifting the switch along the slot, a switch arm extending from the switch, a hook element extending from the arm and adapted to receive the winding key of an alarm clock, a base supporting the unit, screw adjustable means cooperating with the base for positioning the unit on the base, adjustable bar means on the base for positioning an alarm clock.

5. In combination, a base plate, switching unit support, alarm clock, and a case; an elongated groove across the plate having a long screw journaled therein in threaded engagement with said support, adjustable bar means to one side of the groove for positioning the clock with respect to the support and upright electrical connectors extending from the base on the opposite side of the groove for attachment of the case, all for the purposes described.

6. The combination recited in claim 5 wherein the groove has a metallic strip along each side thereof and the unit has a metallic strip along

each side thereof, said strips of the groove and of the unit having opposite polarity, said strips along the sides of the unit having resilient extensions engaging the strips of the groove in matched polarity, all for the purposes described.

7. In combination, a base plate, switching unit, alarm clock, and a case; an elongated groove across the plate having a long screw journaled therein in threaded engagement with said unit, adjustable bar means to one side of the groove for positioning the clock with respect to the unit, and resilient electrical connectors extending from the base on another side of the groove for attachment of the case, the groove having a metallic strip along each side thereof and the unit having a metallic strip along each side thereof, said strips of the groove and of the unit having opposite polarity, said strips along the sides of the unit having resilient extensions engaging the strips of the groove in matched polarity, said unit including a long screw having a switch block threaded thereto, a slot extending the major length of the unit, said block having a rotary switch with the switch arm thereto extending through the slot.

8. The combination recited in claim 7 wherein the switch arm has diametrically attached hook levers for engagement with the alarm key of the clock.

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