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TIME SWITCH OPERATING MECHANISM

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Fig. 1.

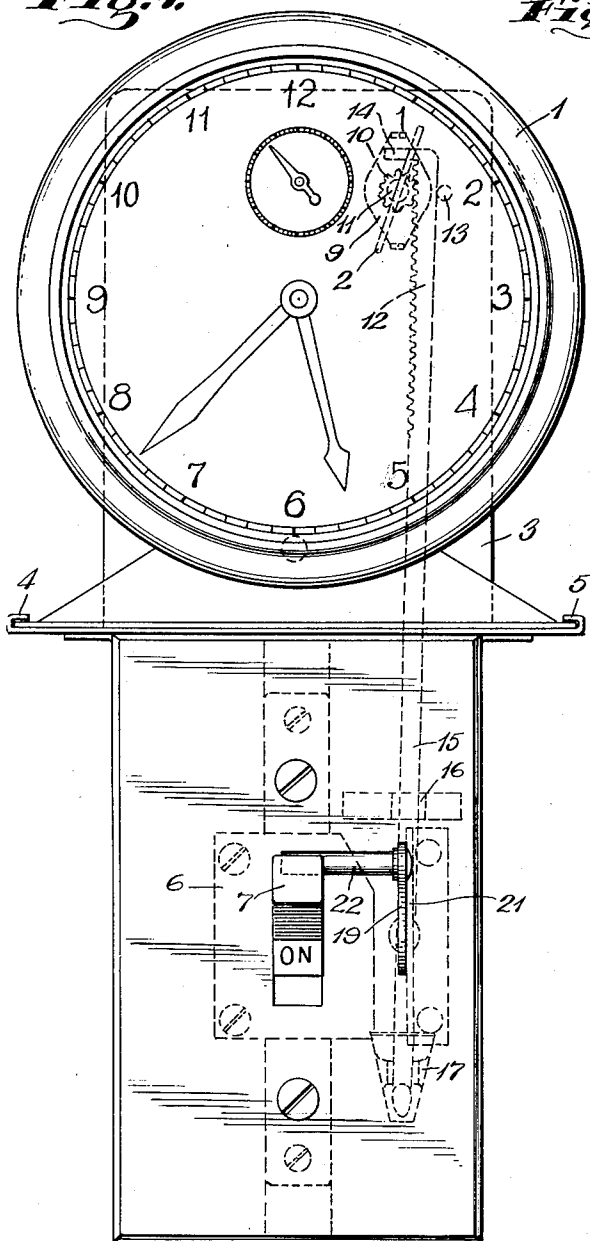
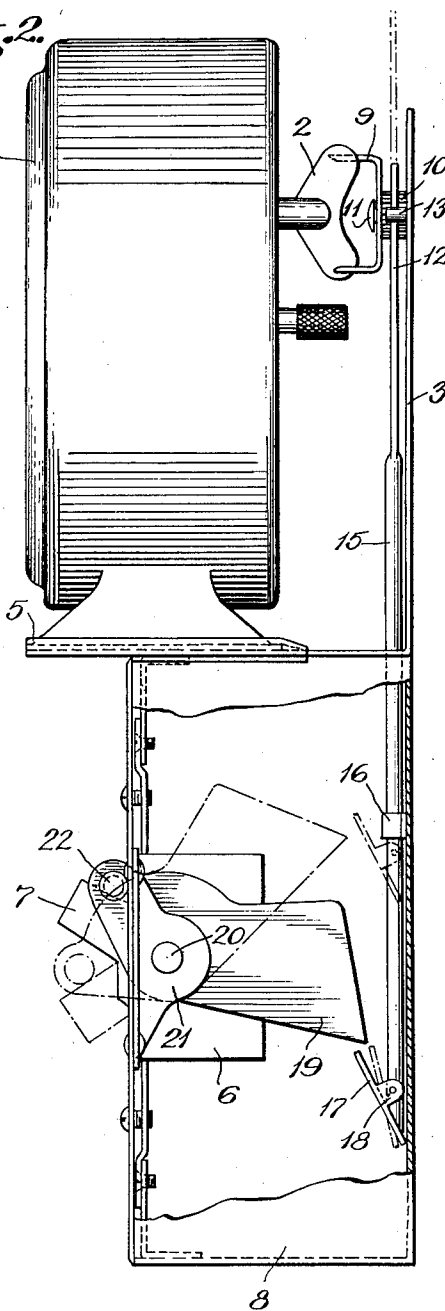
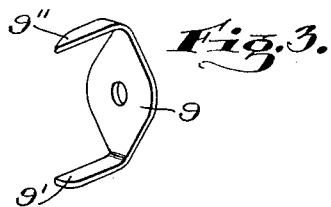


Fig. 2.



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TIME SWITCH OPERATING MECHANISM

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3 Claims. (Cl. 200—39)

The object of the present invention is to provide a time switch operating mechanism which is adapted to be used in connection with a clock and an electric switch, both of standard construction, which shall be neat and attractive in appearance, reliable, made up largely of standard parts and which may be manufactured at a low cost.

The invention has to do only with the construction of the mechanism which connects the standard clock with the standard switch. Consequently, the details of construction of the clock and switch have been omitted and the illustration directed to the operating mechanism.

Among the features or advantages provided or made possible by the use of my invention may be mentioned the removable mounting for the clock which positions the same in operative position to effect the actuation of the operating mechanism when desired while, at the same time, permitting the clock to be removed and used in the usual manner, as a time piece only. In a like manner, no special switch is required, as the mechanism is designed and adapted to be used in connection with any of the standard tumbler switches usually installed in existing circuits and, furthermore, when the mechanism is mounted in connection therewith, the switch may be operated by hand in the usual manner, without disturbing or dis-connecting any mechanism therefrom. The advantages of this will be apparent, especially in cases where it is desired only to use the automatic mechanism at certain times, as at night to turn off lights in show windows, etc.

In carrying out the objects of the invention, I provide a frame upon which the clock is removably mounted, as a separate unit, a rotatable clutch member positioned to operatively engage an intermittently controlled rotating part of the clock when in position upon the frame, such as the alarm winding thumb-piece common to all such clocks which is turned in one direction to wind the alarm mechanism of the clock and when the alarm is released, at the predetermined time set, rotates in the opposite direction. A pinion is rotated by this clutch member, which, in turn operates a rack at the end of a rod which extends to a point adjacent the switch and carries a latch which engages an operating lever which extends through a slot in the face plate of the switch and engages the operating lever of the switch. These operating parts of the mechanism return by gravity to their original positions when the clock is removed from the frame, for rewinding, etc.

By simply reversing the switch mounted upon

the face plate, the automatic mechanism may be used either to open or close the circuit at a predetermined time.

In the drawing in which an operative embodiment of my invention is shown, as illustrative of the same, like parts in the several views have been given the same reference numeral.

Fig. 1 is a front elevation of the device; Fig. 2 is a side elevation of Fig. 1 with part of the casing broken away to show the mechanism; Fig. 3 is an enlarged detail view of the clutch member.

A clock of standard construction is shown at 1 and the alarm wind thumb piece at 2. A frame 3, which may be made of pressed sheet steel, is provided with inturned lips 4 and 5 arranged to receive the outer edges of the base of the clock, permitting the same to be slid into or out of position upon the frame 3.

A switch of the tumbler type, standard construction, is indicated at 6 and is provided with the usual operating lever 7, which projects through the face plate of the switch. The electrical connections and switch mechanism are not shown, as these are of the usual and well known construction.

An enclosing box, which may also be of pressed steel, is shown at 8, enclosing the switch 6 and lower part of the mechanism for automatically operating the same. This box 8 may be attached to the clock frame 3, thus forming one unit for mounting upon the wall, etc., as desired.

The clutch member which operates the mechanism from the clock is shown at 9, also in detail at Fig. 3. It will be seen that this clutch member is in the form of a U-shaped device with the extending arms, 9' and 9'', tapered at their outer ends. This member is mounted upon the frame 3 in such position that when the clock is slid into position the arms 9' and 9'' will embrace the thumb piece of the alarm winding mechanism, 2, and when the alarm wind thumb piece rotates, upon the release of the alarm mechanism at the predetermined time, this clutch member will be rotated, being mounted upon a stud 11 carried by the frame 3. A pinion 10 is attached to the clutch member 9 and is rotated therewith. A rack 12 is positioned in operative engagement with the pinion 10, being held thereagainst by the pin 13, and as the pinion 10 is rotated the rack is moved upwardly. The rack 12 may be formed by flattening one end of the rod 15 and the upper end thereof bent over, as shown at 14, to form a stop to limit the downward movement. A guide 16 is provided for the lower portion of the rod 15, which also acts as a stop to

limit the upward movement of the same. A latch 17 is pivotally mounted at 18 at the lower end of the rod 15, normally standing in the position shown in full lines in Fig. 2 by the action of gravity.

When the rod 15 is moved upwardly, as heretofore described, the latch 17 engages the inner end of a lever 19, which is pivotally fulcrumed at 20 in a support 21 attached to the inner side of the face plate of the switch 6. The opposite end of the lever 19 extends through a slot in this face plate and carries a pin 22 projecting over the switch lever 7 and as the inner end of the lever 19 is engaged by the latch 17 it is moved upwardly, about its pivot or fulcrum 20, moving the outer end carrying the pin 22 downwardly to the dotted position shown in Fig. 2, engaging the switch lever 7 and throwing the switch from "on" to "off" position, or vice-versa, according to the mounting of the switch mechanism on the face plate, as will be understood by reference to the drawing.

As the inner end of the operating lever 19 is swung about its pivot 20 to its upper position, indicated by the dotted outline in Fig. 2, it is disengaged from the latch 17, which has then moved to the position, indicated in dotted outline, against the stop 16. As the inner portion of the operating lever 19 is heavier than the outer portion, it falls by gravity from its upper to its lower or normal position, shown in full lines in Fig. 2, as soon as disengaged from the latch 17, thus leaving the switch lever 7 free for manual operation, independently from the automatic time mechanism, if desired.

The bevel provided at the ends of the arms 9' and 9'' of the clutch member 9 are to permit the clock to be slid into place regardless of the relative positions of the clutch 9 and the alarm wind 2, avoiding the necessity of turning one or the other in event they happen to stand in the same plane.

As the clock is removed for rewinding or setting, the clutch member 9 is released and the rack 12, rod 15 and latch 17 fall by gravity into their normal positions, shown in full lines in Fig. 2, and the mechanism is in position for operation.

It will thus be seen that an automatic operation of an electric circuit may be had without the necessity of altering the existing circuit or switch mechanism, other than to cut a slot in the face plate of the switch, utilizing any standard clock for effecting the time control and operation thereof.

What I claim as new and desire to secure by Letters Patent is:—

1. A time switch operating mechanism adapted for use in connection with a clock and an electric switch of standard construction, consisting of a frame upon which the clock is removably mounted as a separate unit, a rotatable clutch member mounted upon said frame in position to operative-

ly engage an intermittently controlled rotating part of said clock when in position upon said frame, a pinion attached to and rotatable with said clutch member, a rack operatively engaged with said pinion and forming part of a rod extending downwardly adjacent said switch, a latch pivotally mounted upon the lower end of said rod, and an operating lever fulcrumed in a mounting attached to the face plate of said switch and positioned with its inner end adapted to be engaged by said latch and its outer end extending through a slot in said switch face plate and adapted to engage the operating lever of said switch.

2. A time switch operating mechanism adapted to be used in connection with a clock and an electric switch of standard construction, consisting of a frame upon which the clock is removably mounted as a separate unit, a rotatable clutch member mounted upon said frame in position to operatively engage an intermittently controlled rotating part of said clock when in position upon said frame, a pinion attached to and rotatable with said clutch member, a rack operatively engaged with said pinion and forming part of a rod extending downwardly adjacent said switch, a latch pivotally mounted upon the lower end of said rod, and an operating lever fulcrumed in a mounting attached to the face plate of said switch and positioned with its inner end adapted to be engaged by said latch and move said switch lever from its upper to its lower position, thereby automatically effecting the operation of opening or closing said switch mechanism.

3. A time switch operating mechanism adapted to be used in connection with a clock and an electric switch of standard construction, consisting of a frame upon which the clock is removably mounted as a separate unit, a rotatable clutch member mounted upon said frame in position to operatively engage an intermittently controlled rotating part of said clock when in position upon said frame, a pinion attached to and rotatable with said clutch member, a rack operatively engaged with said pinion and forming part of a rod extending downwardly adjacent said switch, a latch pivotally mounted upon the lower end of said rod, and an operating lever fulcrumed in a mounting carried by the face plate of said switch with its inner end extending into the path of said latch and engaged thereby as said latch is moved upwardly moving said operating lever to its upper position and the latch then passing and releasing the said inner end of the lever permitting the lever to fall by gravity to its lower or original position, the outer end of said lever being simultaneously moved downwardly and engaging and moving the switch lever from its upper to its lower position, thereby automatically effecting the operation of opening or closing the switch mechanism and, upon release of the said operating lever by said latch, permitting the manual operation thereof.

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