

[54] **POSITIVE TIME DEVICE**

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240/248 B

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[56] **References Cited**

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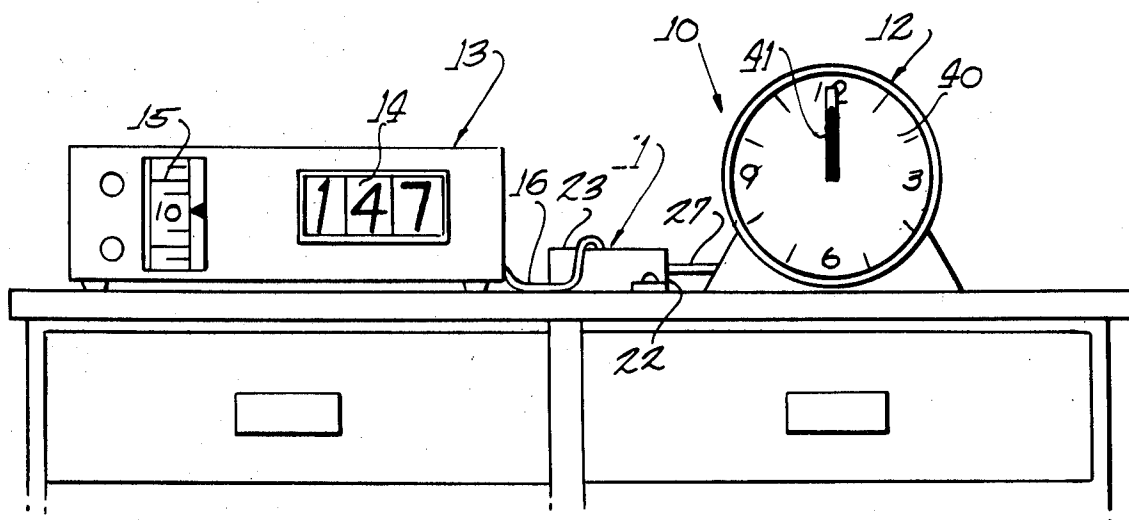
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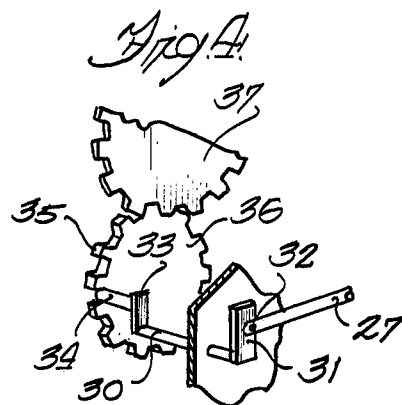
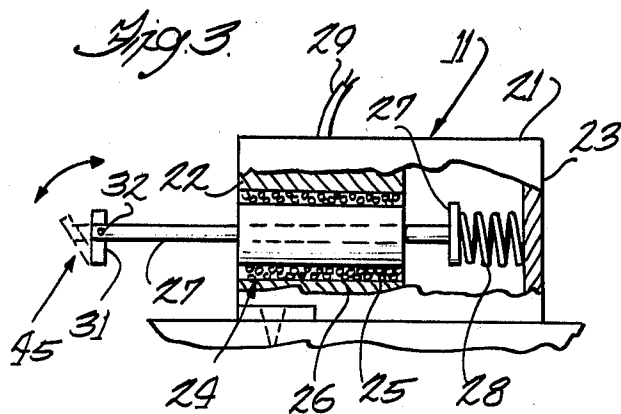
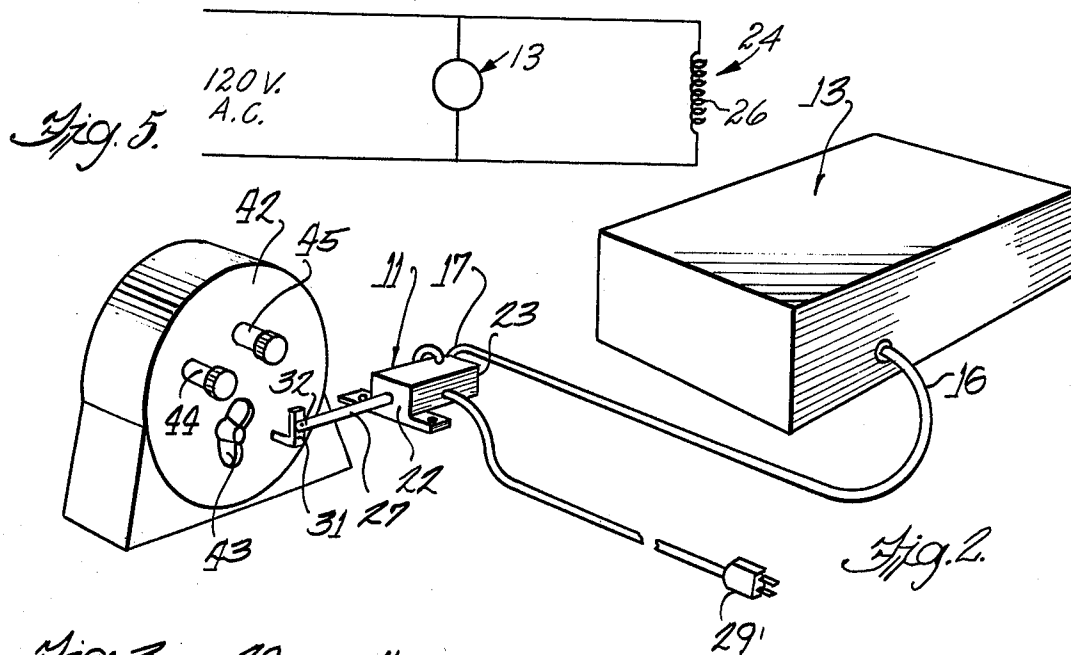
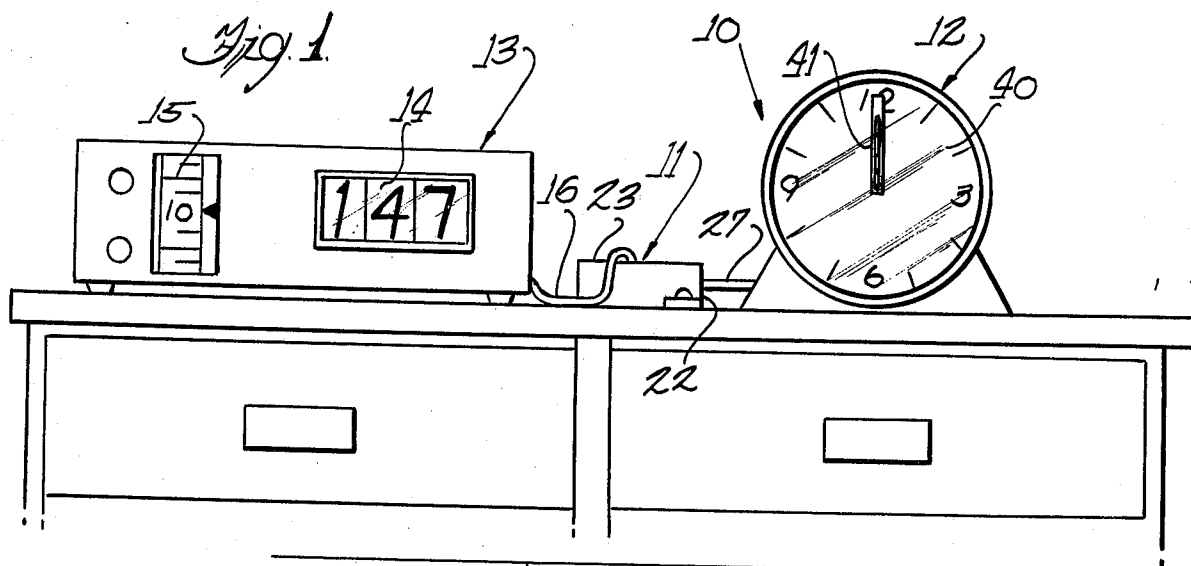
[57] **ABSTRACT**

A manual spring wound clock device adapted for use

with an electrically operated clock and operable upon a power failure to initiate the operation of the manual mechanical clock such that an individual could readily tell the correct time by adding the last time indicated on the electric clock to the elapsed time indicated on the mechanical clock, and further, should an individual return home after such a power failure the same would be evident from the time indicated on the mechanical clock such that the electrical clock may be adjusted accordingly for indicating the correct time. The device includes a mechanical clock having an operating lever movable between an on and an off position by an electrical spring loaded solenoid having its coil connected in parallel with the electrical clock such that a power failure will de-energize the solenoid to permit the spring to manually operate the mechanical clock by shifting the operating arm to the on position, and with return of the power effecting the reactivation of the solenoid to return the operating arm to the off position such that the mechanical clock would accurately indicate the elapsed time of the power failure which may be added with the time indicated on the electric clock to obtain the correct time.

3 Claims, 5 Drawing Figures





POSITIVE TIME DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to time keeping devices and more particularly to a novel device for shifting time keeping responsibility to a mechanical clock from an electrical clock during times of a power failure such that an individual may add the reading of the mechanical clock to that of the electrical clock to obtain the correct time at any moment.

2. Description of the Prior Art

Among the most commonly used of appliances in the home today is the clock, with electric clocks having come into prominence due to the fact that they are more convenient than mechanical clocks since they do not have to be wound and since they maintain accurate time without having to constantly be reset by the individual using the same. However, a difficulty with electric clocks is that individuals living in areas that incur occasional power failures on a regular basis causes some difficulty with the use of electrical clocks in that the power failure de-energizes the clock with later activation of the power starting the clock again with the individual perhaps not being aware of such power failure so as to feel that the electric clock indicates the correct time when, in essence, it has been de-activated for a period of time due to the power failure. Thus, an individual may labor under the misconception of the incorrect time which may result in the individual being late for an appointment or for work.

SUMMARY OF THE INVENTION

The present invention recognizes the difficulties of use of an electric clock in those areas where power failures may occur on a regular basis, and provides a novel solution thereto in the form of an auxiliary mechanical clock having an operating arm shiftable between an "on" and on "off" positions for controlling the activation and deactivation of the same, with the operating arm being connected to an electrical solenoid electrically wired in parallel with an electric clock and operable in a manner to activate the mechanical clock promptly upon power failure to the electrical clock, and to de-activate the mechanical clock promptly upon the return of power to the electric clock such that the mechanical clock indicates the elapsed time of the power failure so that the correct time is always attainable by merely adding the reading from the face of the electric clock to the reading of the face of the mechanical clock.

It is a feature of the present invention to provide a device intended for use with any electric clock and operable in a manner such that an individual could readily tell the correct time should a power failure occur which would de-energize the electric clock by adding the last time indicated on the electric clock to the elapsed time indicated on a mechanical clock such that the correct time is always available to an individual using the device.

A further feature of the present invention provides a device for determining the correct time upon a power failure for an electric clock and which is intended for use with any type of electric clock so as to convert any present day electric clock without requiring any special skills or expertise in a manner to provide individuals with correct time determining devices in conjunction

with their present electric clocks such that an individual could readily tell the correct time should a power failure occur which would de-energize the electric clock by adding the last time indicated on the electric clock to the elapsed time indicated on a mechanical clock.

Among the further features and advantages of the present invention is the provision of a positive time device which is relatively simple in its construction and which therefore may be readily manufactured at a relatively low cost and by simple manufacturing methods; one which is possessed of few parts and which therefore is unlikely to get out of order; one which is of a rugged and durable construction; one which is easy to use and reliable and efficient in operation; one which is of an aesthetically pleasing and refined appearance; one which may, in its entirety, be manufactured and installed as part of the original equipment of a new electric clock, or which may be readily attached to any type of electric clock later as an accessory item so as to be readily attached to the millions of electric clocks presently in use; and one which is otherwise well adapted to perform the services required of it.

Other features and advantages of this invention will be apparent during the course of the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings forming a part of this specification, and in which like reference characters are employed to designate like parts throughout the same:

FIG. 1 is a front elevational view of an electric clock having the mechanical clock and device of the present invention associated therewith;

FIG. 2 is a rear perspective view of the electric clock with the operating device and mechanical clock of the present invention shown associated therewith;

FIG. 3 is an enlarged front elevational view of the operating control partially broken away to illustrate interior details thereof; and

FIG. 4 is an enlarged fragmentary perspective view of the interior details of a portion of the mechanical clock showing the operating arm associated therewith.

FIG. 5 is an electrical schematic diagram of the parallel connection of the solenoid with respect to the electric clock.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail there is illustrated a preferred form of a positive time device constructed in accordance with the principles of the present invention and designated generally in its entirety by the reference numeral 10 and which is comprised of an operating switch 11 and a mechanical wind-up type clock 12 which are adapted for use with any type of electric clock, such clock being generally designated by reference numeral 13 and being of the digital type having an hour and minute read-out face 14 and a second read-out face 15. The clock 13 is provided with an electrical cord 16 having a plug end 17 which is normally plugged into an electrical receptacle of a home, but in the present invention the same is plugged into a suitable receptacle (not shown) provided in a side of the operating switch 11 from which it receives its power for energization of the clock.

The operating switch 11 is comprised of a hollow box-like housing 21 having a front end 22 and a back end 23 with there being disposed therein axially oriented between such front and back ends an electrical solenoid 24 having a cylinder 25 about which are wrapped electrical wires 26 to provide electrical energization to the solenoid, and having a piston rod 27 passing through the front face 22 of the housing and extending axially through the cylinder 25 to terminate at one end in a spring holding member 27 disposed inwardly of the housing. A coiled compression spring 28 is disposed intermediate spring holder member 27 and housing back surface 23 and is retained in a compressed position by the energization of the solenoid 24 which draws piston rod 27 inwardly of the housing, the de-energization of the solenoid permitting the spring 28 to drive the piston rod 27 outwardly of the housing in a manner to thus effect the operation of an operating arm 30 having a lever handle portion 31 with the end thereof pivotally attached by pivot pin 32 to the projecting end of the piston rod 27. The operating arm 30 is disposed in the mechanical clock 12 as will be later described.

The coils 26 are connected by suitable electrical wiring to a cord 29 terminating in an electrical plug 29' adapted to be plugged into a suitable source of electrical energy such as provided by a normal household receptacle. In addition, the receptacle in the switch housing and into which plug end 17 of electric clock 13 is inserted is connected in parallel with the solenoid coil 26 by suitable electrical wires such that energization of the clock effects the simultaneous energization of the solenoid with de-energization of the clock effecting the simultaneous de-energization of the solenoid, this connection of the solenoid with respect to the electric clock being diagrammatically illustrated in FIG. 5.

The mechanical clock 12 is provided with a conventional face 40 and time indicating hands 41, with the back surface 42 of the clock having the conventional wind-up handle 43, a knob 44 used for resetting the time indicating hand 41, and a knob 45 used for setting an alarm or the like if so desired. In addition there is provided an end portion of operating arm 30 projecting exteriorly of back surface 42 and terminating in lever handle 31. The opposite end of operating arm 30 projects interiorly of the clock and terminates in a radially extending arm 33 which in turn has a stop pawl, 34 affixed thereto and projecting outwardly therefrom in a direction substantially parallel to the operating arm and engaging teeth 35 of a sprocket wheel 36 which is interengaged with a sprocket wheel 37, the pawl preventing rotation of the sprocket wheel 36 and thus preventing activation of the spring motor within the mechanical clock.

From FIGS. 3 and 4 the operation of the device is obvious in that while solenoid 26 is activated the spring is compressed and the lever handle 31 is in a position retaining stop pawl 34 in engagement with sprocket wheel 36, and upon de-energization of the solenoid 24 the spring 28 drives piston rod 27 outwardly of cylinder 25 thus effecting the pivotal movement of lever handle 31 to the position designated in phantom configuration by reference numeral 45 in FIG. 3, this effecting the pivoting of operating arm 30 about its axis in a direction to move stop pawl 34 outwardly from the teeth 35 of the gear 36, this permitting the gear 36 to rotate in a manner to effect the operation of the mechanical

clock 12 and the time indicating hands 41. This would be the case upon a power failure when both the electric clock 13 and solenoid 24 were simultaneously electrically de-energized. Upon the power returning to the electric clock 13 then the solenoid 24 is simultaneously energized to withdraw piston 27 inwardly of the housing thus compressing spring 28 and returning lever handle 31 to its "off" position with stop pawl 34 engaging teeth 35 of sprocket 36 once again in a manner to stop the operation of the mechanical clock 12, and in this stopped position the indicating hands 41 indicate on clock face 40 the elapsed time of the power failure permitting an individual to add the time to the reading on electric clock face 14 to obtain the correct time and thus reset the electric clock to the exact correct time. Further, it is to be understood that the individual can readily tell the time during the power failure since, at any moment, the correct time is the reading on electric clock face 14 having the reading on mechanical clock face 40 added thereto.

It is to be understood that a primary feature and advantage of the present invention is the ability of adding the invention to the millions of electric clocks presently in use so that individuals are encouraged to purchase the same for use with their present clocks, many of which have built in clock radios and other expensive components which individuals would not readily discard, thus providing a massive market for the present invention which should be well received by individuals throughout the country.

It is to be understood that the form of this invention herewith shown and described is to be taken as a preferred example of the same, and that this invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction as to shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention, the scope of the novel concepts thereof, or the scope of the sub-joined claims.

I claim:

1. A positive time indicating device intended for use with conventional electrical clocks and adapted to be automatically activated upon a power failure to the electric clock and then de-activated upon return of power to the electric clock such that the correct time at any moment is always apparent upon an adding together of the time indicated by the electric clock and the elapsed time indicated by the mechanical clock, the device comprising:

an operating switch including an electrical solenoid, a piston rod disposed axially in said solenoid for movement relative thereto, and spring means operatively connected to said piston rod to bias the same in a single direction;

a mechanical clock having a spring wound motor for driving indicating hands relative to a time indicating clock face, and mechanical clock operating means adapted for connection to said operating switch piston rod effective to activate the mechanical clock mechanism upon movement of the piston rod in one direction and to de-activate the mechanical clock mechanism upon movement of the piston rod in the opposite direction; and

means adapted to connect said operating switch to said electric clock and to said source of electrical energy wherein said solenoid is connected by suit-

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able electrical wiring into electrical parallel relationship with said electric clock for simultaneous energization and de-energization of said solenoid with said electric clock.

2. The device as set forth in claim 1 wherein said operating switch comprises a hollow box-like housing having a front end wall surface and a back end wall surface, a cylindrical solenoid having a bore extending axially therethrough and having a multiplicity of electrical wires wrapped about the cylindrical side surfaces thereof, said solenoid mounted in said housing with said bore extending longitudinally in the direction between said front and back end wall surfaces, a longitudinally elongated piston rod passing freely through said bore from said housing face surface to project outwardly of said bore inwardly of said housing, said piston being freely slidable in opposite directions in said bore, said inwardly projecting end of said piston rod having a spring retaining member thereon, a coiled spring disposed intermediate said spring retaining member at one end and the interior surface of said housing back end surface at the opposite end and biasing said piston rod in a direction outwardly of said housing, said solenoid coils connected by suitable electrical wiring to an electrical cord adapted to be plugged into a suitable source of electrical energy, said solenoid when activated operable to withdraw said piston rod inwardly of said housing to compress said spring, said solenoid when deactivated releasing said piston rod to permit said spring to urge said piston rod outwardly of said housing, and said free end of said piston rod adapted to be connected to the operating handle of said mechanical clock for effecting the activation of said mechanical clock upon de-energization of said solenoid and for effecting the de-activation of said mechanical clock upon

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energization of said solenoid whereby said mechanical clock will only operate during those periods of time when no power is provided to the operating switch and electric clock connected in parallel thereto.

3. The device as set forth in claim 2 wherein the mechanical clock comprises an operating arm rotatably supported in the back surface of said mechanical clock and having a first end portion disposed interiorly of said mechanical clock and a second end portion projecting exteriorly of said mechanical clock, said second end portion terminating in an operating lever handle member having one end affixed to said operating arm with the opposite end projecting radially outwardly therefrom and adapted to be pivotally attached to said free projecting end of said piston rod, said first portion of said operating arm terminating in a lever arm projecting radially relative thereto, said lever arm having a pin member affixed thereto and projecting outwardly therefrom defining a stop pawl adapted to engage the teeth of a sprocket wheel associated with the drive mechanism of the mechanical clock, said operating arm being pivotable about its axis by action of said piston rod between an "off" position where said solenoid is energized and said pawl engages said sprocket to prevent activation of mechanical clock mechanism, and an "on" position where said solenoid is electrically de-energized permitting said spring to drive said piston rod outwardly of said housing to pivot said operating arm about its axis in a manner to disengage said stop pawl from said sprocket wheel thus permitting rotation of the sprocket wheel in a manner to permit operation of said mechanical clock mechanism for time indicating purposes.

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