Dec. 21, 1943. L. A. WILLIAMS 2,337,515

TIME SWITCH

Filed Aug. 27, 1941

Fig. 1.

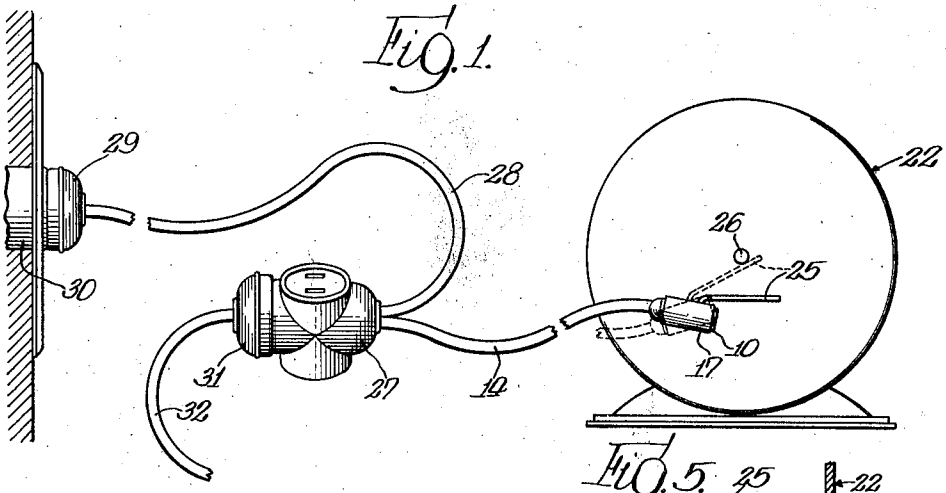


Fig. 5.

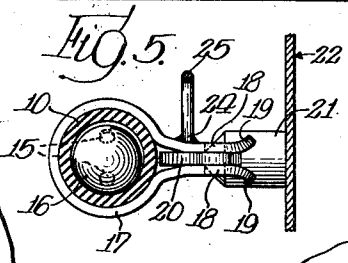


Fig. 2.

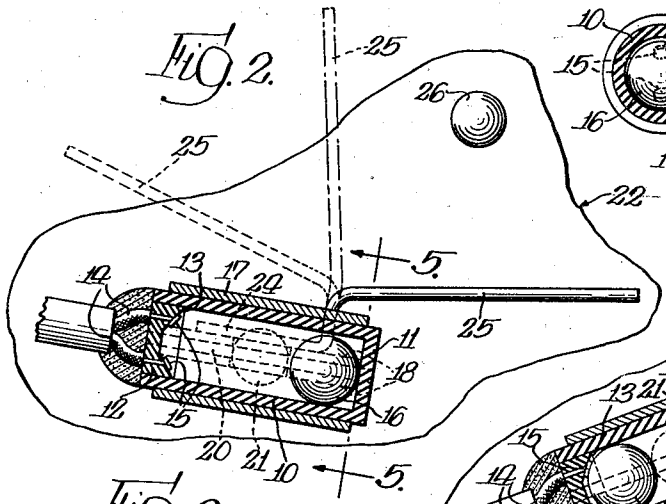
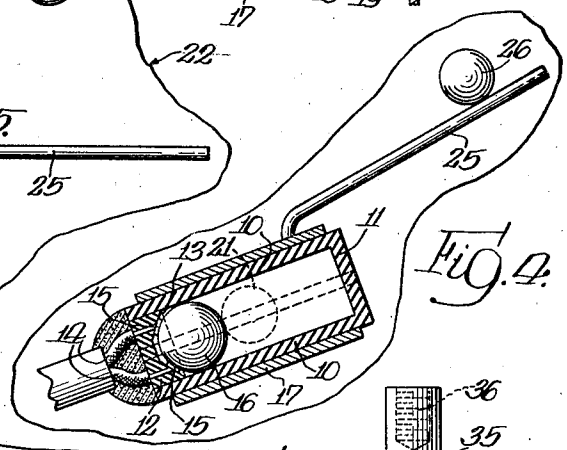


Fig. 3.

Fig. 4.



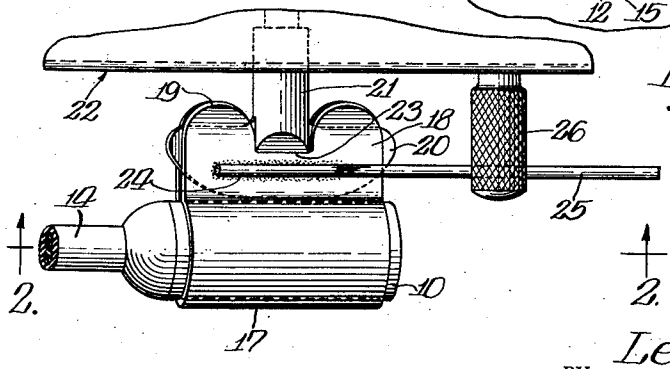
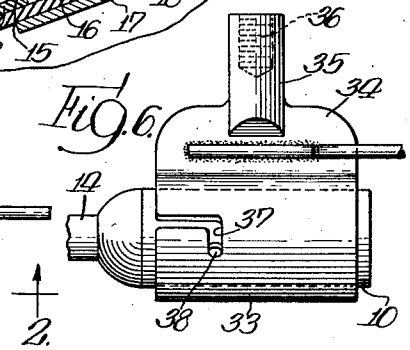


Fig. 6.



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Patented Dec. 21, 1943 2,337,515

UNITED STATES PATENT OFFICE

2,337,515

TIME SWITCH

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Application August 27, 1941, Serial No. 408,481

1 Claim. (Cl. 200—35)

The present invention relates generally to time switches, but more particularly to a simple and quick detachable time switch construction which may be easily attached to or detached from any form of conventional alarm clock without changing or altering the construction of the clock.

Another object of the invention is to provide a simple, compact and economical construction of a time switch which is provided with a detachable clamping means so that the same may be attached to or detached from the alarm key or winding stem of a conventional alarm clock.

A further object of the invention is to provide a novel and improved construction of a time switch which is adapted to be detachably secured to the conventional alarm winding key or stem of an alarm clock and be wholly supported thereby.

A still further object of the invention is to provide a simple, compact as well as economical construction of a time switch or circuit breaker in which the switch thereof is wholly supported on the conventional alarm winding key in such a manner that a laterally projecting arm carried by the switch is adapted to engage one of the posts projecting from the alarm clock to stop the rotary action of the key and switch to either open or close the circuit of the wire connections connected to the switch.

These and other objects are accomplished by providing a construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claim.

Referring to the drawing:

Fig. 1 is a diagrammatic view illustrating one manner in which my improved time switch may be connected to one form of conventional alarm clock;

Fig. 2 is an enlarged fragmentary cross sectional view taken on the line 2—2 in Fig. 3 illustrating the construction of my improved switch;

Fig. 3 is an enlarged fragmentary top plan view illustrating the manner in which the switch is detachably mounted on the winding key of a conventional alarm clock;

Fig. 4 is an enlarged fragmentary cross sectional view showing the manner in which the switch is actuated to close the circuit;

Fig. 5 is a cross sectional view taken on the line 5—5 in Fig. 2; and

Fig. 6 is a modified form of my invention showing the bracket which carries the switch provided with a threaded socket which may be substituted for the conventional alarm winding key of the alarm clock.

For the purpose of illustration, I have shown one embodiment of my invention as comprising a simple ball switch which includes a cylindrical casing 10 which is preferably made of insulated material of plastic or of fibre form. One end of this casing is closed as shown at 11. The other end of the casing 10 is open and is provided with a disc 12 which is secured therein in any well known manner. The inner surface of the disc 12 is provided with a tapered or conically shaped concavity as shown at 13. The disc 12 is preferably made of insulated material and has extending therethrough the terminal ends of the wires 14. The inner ends of these wires 14 have flat contact heads as shown at 15. These contact heads 15 are adapted to be engaged by a contact ball 16 in order to close the circuit. The ball 16 is reciprocally mounted within and is of smaller diameter than the bore of the casing 10. Obviously from the above description, when the casing 10 is tilted to the position shown in Fig. 2, the ball moves to one end of the casing shown in this figure to break the circuit while when the casing is tilted in the position shown in Fig. 4, the contact ball 6 contacts the terminal heads 15 to close the circuit. Embracing the casing 10 and secured thereto in any well known manner, is a clamping bracket 17. Formed integrally with the clamping bracket 17 and extending laterally therefrom are spring-like spaced apart ears 18. The outermost ends of these ears are curved outwardly or diverging as shown at 19 so as to permit the bracket 17 to be detachably fastened to the flat portion 20 of the conventional winding key 21 usually found on the rear wall of a conventional alarm clock generally indicated by the reference character 22. These clamping ears 18 have a cut-out portion as shown at 23 so that the same can embrace the barrel portion of the key and permit the bracket 17 to be more rigidly held in position when the same is detachably fastened to the key.

Secured to one of the ears 18 of the bracket 17 as shown at 24 is an upwardly and laterally projecting arm or wire 25 which is adapted to move upon the rotation of the key in the path of and engage the clock hand setting post 26 of the conventional alarm clock 22. The engagement of this arm 25 with the post 26 stops the counterclock rotation of the alarm winding key 20 in its unwinding operation when the alarm is being rung so as to stop the switch casing 10 in the position shown in Fig. 4 of the drawing.

thereby actuating the contact ball 16 to engage the contact points 15 to close the circuit and thereby turn on a light or turn on a radio or start the coffee percolator in operation or do all of these things at the same time.

The wires 14 from the switch casing extend through a multiple plug connection as shown at 27 and has an extension thereof as shown at 28 which in turn is connected to a conventional plug 29. The plug 29 is adapted to be connected to the usual outlet 30 so as to connect the time switch to a source of electrical energy. By a suitable plug 31 and wire connection 32, radios, lights, percolators and other electrical attachments or apparatus may be plugged into the multiple outlet 27 for connection with the time switch.

In connection with the use of my improved time switch mechanism, I have found that certain conventional types of alarm clocks have the winding stem or keys of the alarm turn both in clockwise and counterclockwise direction when the alarm is being rung. When such is the case, the stop arm or wire 25 may be bent to various positions as shown in broken lines in Fig. 2 so that the device may be operated or attached to the winding key of the alarm clock regardless of the direction in which the key turns when the alarm is rung. In this connection it will also be noted by reversing the position of the clamp and switch with respect to the key, the time switch may be used to turn off the electricity at a specified time, such for example, turning off the lights in a show case or show window or the like at a predetermined time.

In Fig. 6 of the drawing, I have illustrated a modified form of my invention in which the casing 10 in this instance is provided with a bracket 33 which frictionally engages the casing and has a laterally projecting flange 34 formed integrally therewith. This flange 34 has secured thereto a post 35 having a centrally threaded bore 36. This modified form of the bracket is adapted to be substituted for the conventional key 20 mounted by merely removing the key and substituting the bracket therefor in the regular alarm clock. The bracket in this instance is provided with a keyhole slot as shown at 37. The keyhole slot is adapted to be engaged by a lug 38 formed on the casing 10 for detachably securing the casing in the bracket 33.

While in the above specification I have described my improved time switch as being adapted to be detachably connected to the winding key or stem of the alarm of a conventional alarm clock and in which the arm 25 stops the rotation of the switch by engaging the hand setting post of the clock, it will of course be understood that in various types of conventional alarm clocks the winding key of the alarms are located in various positions on the rear of the clock and that various other posts, such as the alarm set post, or other projecting parts, may be used to form the stop for the arm 25. By bending or adjusting the arm 25 to its proper position such as indicated by broken lines in Fig. 3 of the drawing, the position of the switch may be controlled so as to close or open the circuit.

While in the above specification I have described one embodiment and one modification which my invention may assume in practice, it will of course be understood that various other modifications may be made without departing from the spirit and scope of the invention as expressed in the following claim.

I claim:

The combination with an alarm clock having an alarm winding key projecting from the rear thereof, an electric switch detachably and wholly supported by said key, a member projecting from the rear of said clock, a bendable arm carried by said switch adapted to engage said member for limiting the movement of said switch to close an electric circuit, and means whereby the position of said arm may be changed to engage said member for limiting the movement of said switch to open said electric circuit.

LEE A. WILLIAMS.