Oct. 22, 1940. W. DE FRANK 2,218,950

AUTOMATIC TIME CONTROLLED SWITCH MECHANISM

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Fig.1.

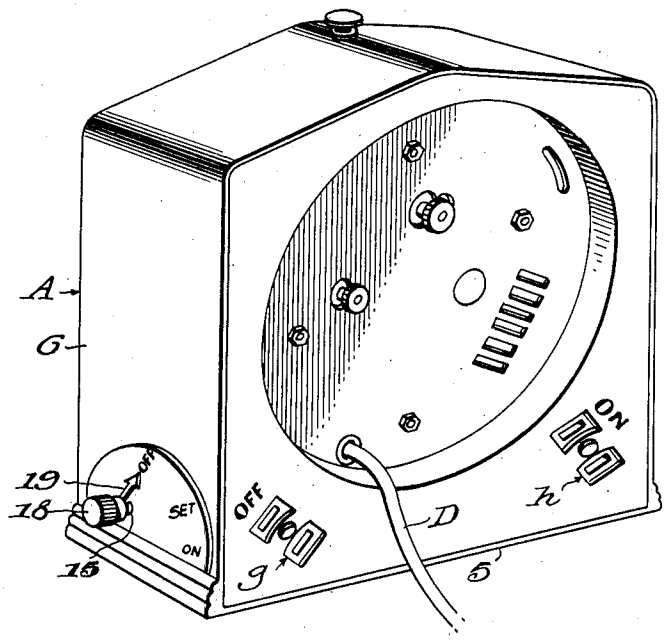
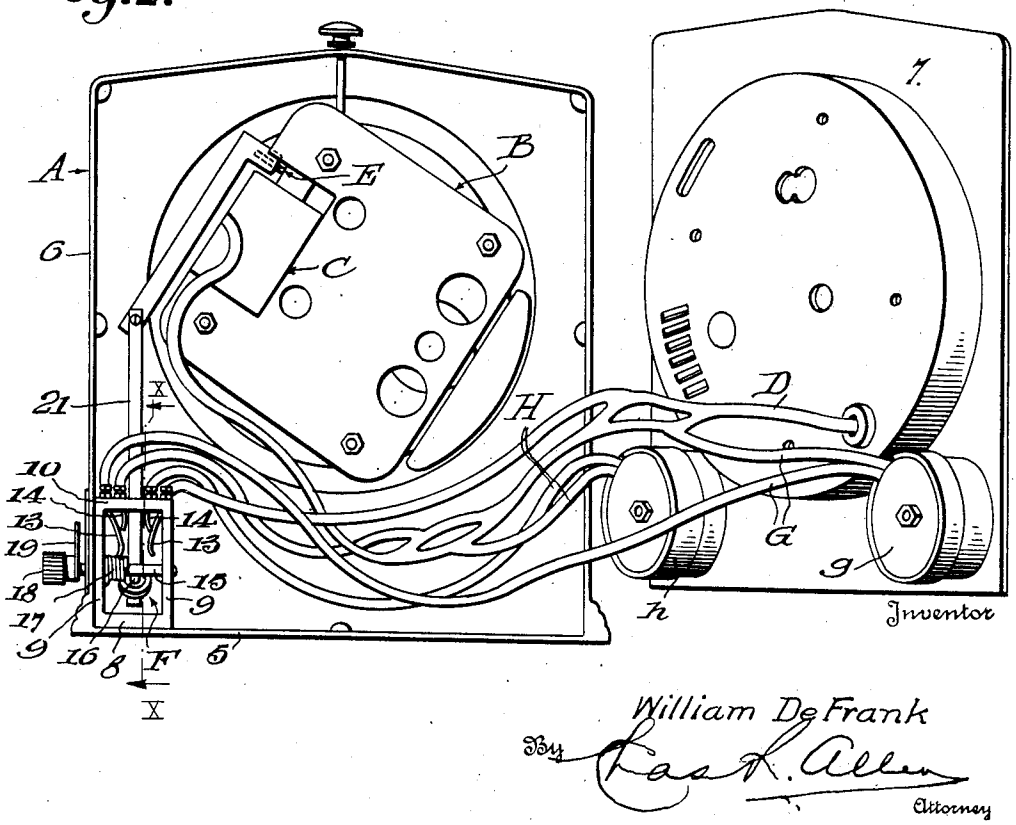


Fig.2.



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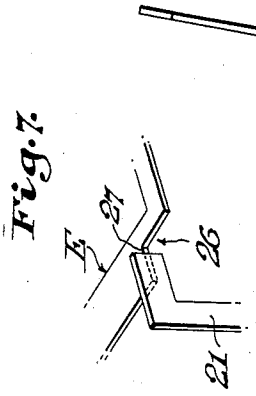


Fig. 7.

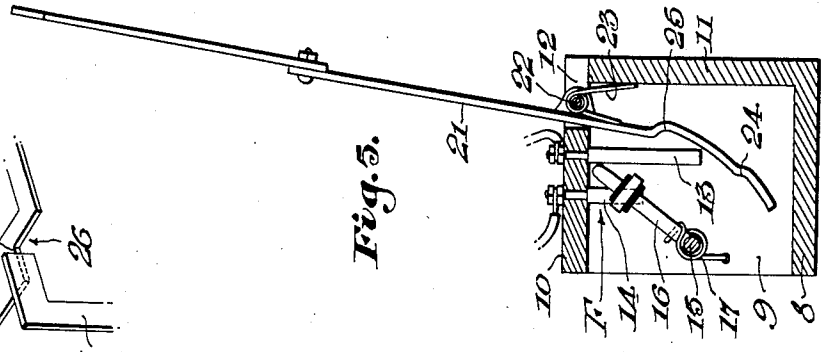


Fig. 5.

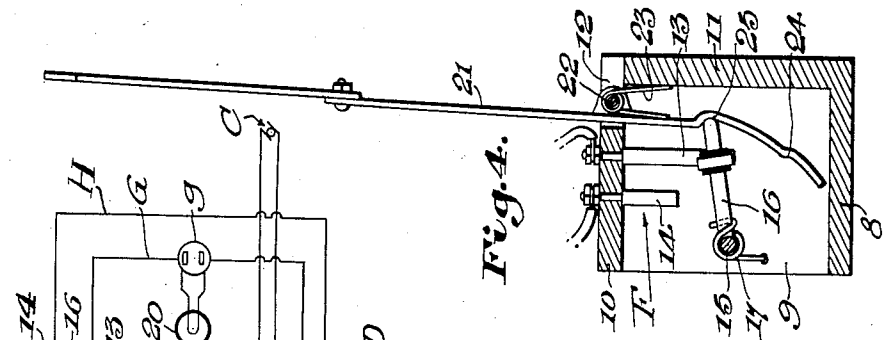


Fig. 4.

Fig. 6.

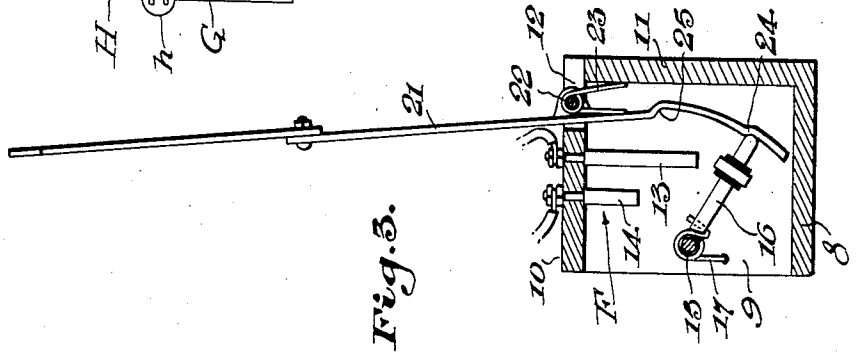


Fig. 3.

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AUTOMATIC TIME CONTROLLED SWITCH MECHANISM

William De Frank, Brooklyn, N. Y.

Application September 24, 1937, Serial No. 165,586

3 Claims. (Cl. 200—74)

This invention relates to automatic time controlled devices generally, but more particularly to an automatic time controlled device which controls the opening or the closing of either of two sub circuits.

The principal object of this invention is to provide an automatically operated but manually settable time controlled switch which is connected in two sub circuits, whereby the first circuit can be automatically closed, or the second circuit can be automatically opened according to the setting of the switch.

With the above and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a rear perspective view of an electric clock equipped with my invention,

Figure 2 is a rear view of the clock, the rear closure plate being shown in perspective,

Figures 3, 4 and 5 are vertical sectional views of the switch, showing the manually settable contact arm in different positions, each said sectional view being taken on the line *x*—*x* on Figure 2,

Figure 6 is a wiring diagram of the system, and

Figure 7 is a perspective view showing the relation between the time controlled actuating arm and the trip lever.

Like reference numerals designate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, there is shown an electric clock A having the usual time controlled alarm mechanism B and electric motor C which is connected to a main supply circuit D, the alarm mechanism including an arm E movable rearwardly or toward the back of the clock upon each functioning of the alarm, the latter in itself forming no part of my present invention. The clock proper is mounted in a case which includes a bottom 5, a side wall 6, and a removable rear cover 7.

Independent outlet sockets *g*, *h* are attached to the cover 7, and a switch F is supported on the bottom 5 adjacent the side wall 6. The switch F includes a box or casing which comprises a bottom 8, side walls 9, 9, a top 10 and a front wall 11, the top being provided with an opening 12 adjacent the front wall. A pair of relatively long stationary contacts 13, 13 and a pair of relatively short stationary contacts 14, 14 depend from the top 10. A horizontal shaft 15 is journaled in the side walls 9, 9 in the rear of the contacts 13, 14, and fixed to said shaft is a contact arm 16. A spring 17 urges the arm 16 into engagement with either pair of contacts 13, 13 or 14, 14. One end of the shaft 15 projects outwardly through the side wall 6 of the clock case, and fixed thereto is a hand piece 18 and a pointer 19, the latter being adapted to register with any one of three position indicia "Off", "Set" and "On" which are located on said side wall 6. A sub circuit G which is connected to the main circuit D and to the outlet *g* includes the switch contacts 13, 13. A sub circuit H which is connected to the main circuit D and to the outlet *h* includes the switch contacts 14, 14. An electric lamp 20 or other device such as a percolator, may be plugged into either socket *g* or *h*. A vertical trip lever 21 is located within the switch box in front of the contacts 13, 14 and the upper end thereof projects through the opening 12 of the switch box, the lever being fulcrumed intermediate its ends on a horizontal pivot 22 mounted on the top 10 of said box. A spring 23 functions to normally urge the lower arm of the trip lever 21 rearwardly towards the free end of the contact arm 16. The lower arm of the lever is curved downwardly and rearwardly towards the contact arm 16 and is provided with spaced lower and upper steps 24 and 25 respectively adapted to engage the end of the contact arm and releasably retain said arm in either one of two positions. The upper end of the trip lever 21 is positioned in a recess 26 of the time controlled arm E, said recess forming a resultant shoulder 27 which when the arm E is moved rearwardly causes the upper end of the trip lever 21 to move rearwardly, or to the left as viewed in Figures 3 and 4, thereby moving the lower end of the trip lever forwardly to release the contact arm 16 from either one of the stops 24 or 25.

It will be observed that the contact arm 16 is manually settable to any one of the three positions, as shown in Figs. 3, 4 and 5; that in the Fig. 3 position the contact arm 16 engages the lower stop 24 and consequently the upper end of the trip lever 21 is held in spaced relation to the time controlled arm E whereby the latter cannot effect any movement to the lever, thereby insuring the contact arm to remain in its open position with respect to both sub circuits; that when the contact arm is set to engage the upper stop 25 on the trip lever, the arm will engage the contacts 13, 13 and close the sub circuit G, whereby the time controlled arm E will automatically en-

gage the trip lever and move the latter to effect the release of the contact arm 16 and permit the spring 23 to swing the arm upwardly to the Fig 5 position, thereby opening the sub circuit G, and closing the sub circuit H.

It will, therefore, be apparent that if a radio or other electrical device be plugged into the socket *g*, the sub circuit G will be automatically opened in response to the setting of the time controlled mechanism, or if the device be plugged into the socket *h* instead of in the socket *g*, the sub-circuit H will be automatically closed in repsonse to the setting of the time controlled mechanism.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:

1. An electrical control switch comprising a casing, a pair of relatively short spaced contacts mounted on said casing, a pair of relatively long spaced contacts mounted on said casing in spaced relation to said short contacts, a rock shaft journalled in said casing below said contacts and having its axis disposed normal to a vertical plane passing through said contacts, a radially extending contact arm mounted on said rock shaft and having its free end normally engaged by a release or control trigger having a plurality of selective contact-arm-engaging steps engageable with the free end of said contact arm whereby said contact arm may be normally and selectively maintained in a position clear of all contacts, or closing one pair of contacts, and means for urging said contact arm towards said contacts upon its release from said trigger whereby said contact arm will close one pair of contacts or will open one pair of contacts and close another.

2. An electrical control switch comprising a casing, a pair of relatively short spaced contacts mounted on said casing, a pair or relatively long spaced contacts mounted on said casing in spaced relation to said short contacts, a rock shaft journaled in said casing below said contacts and having one end projecting beyond said casing, the axis of said shaft being disposed normal to a vertical plane passing through said contacts, a radially extending contact arm mounted on said rock shaft and having its free end normally engaged by a release or control trigger having a plurality of selective contact-arm-engaging steps engageable with the free end of said contact arm whereby said contact arm may be normally and selectively maintained in a position clear of all contacts, or closing one pair of contacts, a finger knob secured to the projecting end of said rock shaft whereby said contact arm may be manually moved into engagement with one of said selective steps, and means for urging said contact arm towards said contacts upon its release from said trigger whereby said contact arm will close one pair of contacts or will open one pair of contacts and close another.

3. A switch of the character described adapted to be actuated by an actuator device movable in a definite path and comprising, a support, a first set of contacts mounted on said support for connection with a first circuit to be controlled, a second set of contacts mounted on the support for connection with a second circuit to be controlled, a circuit making and breaking element movably mounted on said support and constantly tending to engage the second set of contacts, and a single holding and releasing means effective to hold the element out of contact with both sets of contacts or in contact with said first set of contacts and effective upon engagement by the actuator device to release said element and permit it to contact said second set of contacts.

WILLIAM DE FRANK.