Nov. 10, 1925.

1,561,005

I. LEVENSTEIN

RADIO TIME SWITCH

Filed April 28, 1924

3 Sheets-Sheet 1

Fig. 1.

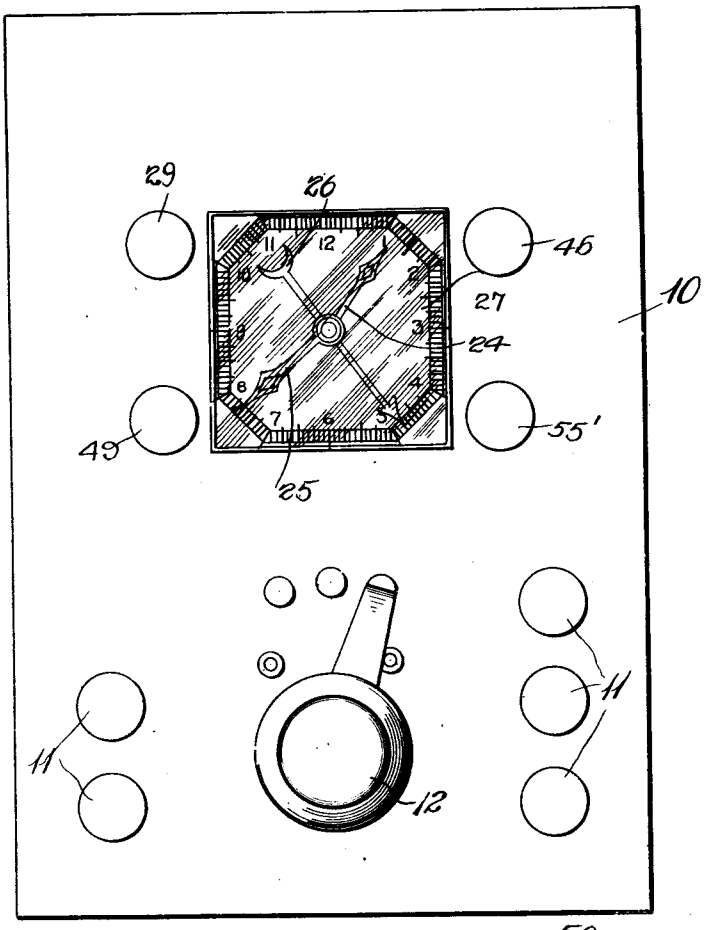
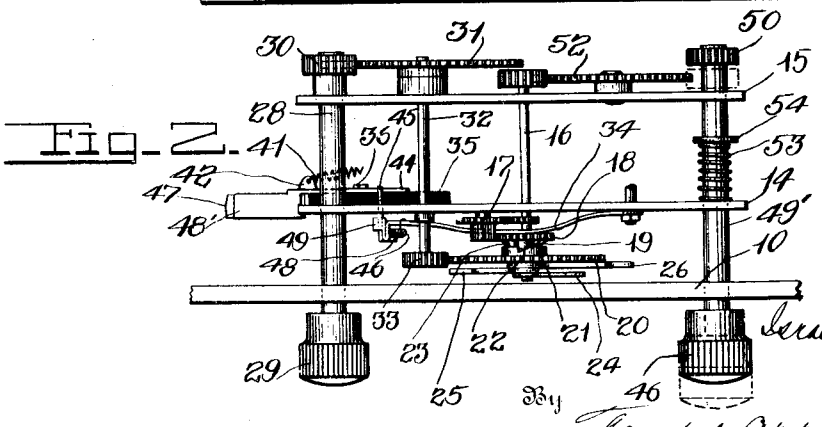


Fig. 2.



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Fig. 3.

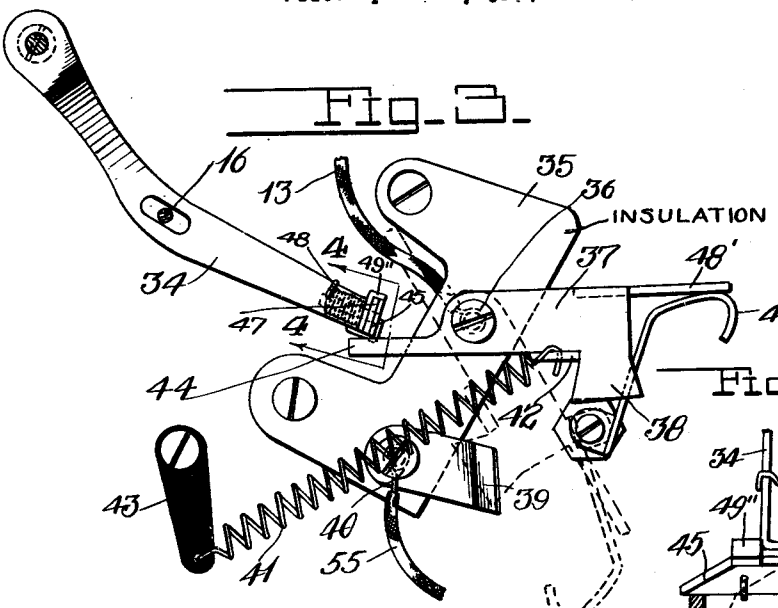


Fig. 4.

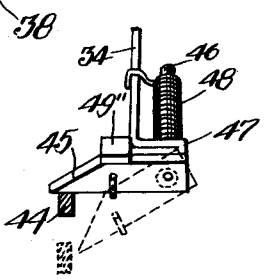


Fig. 5.

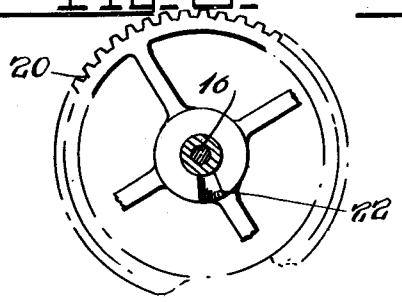
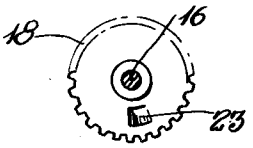


Fig. 6.



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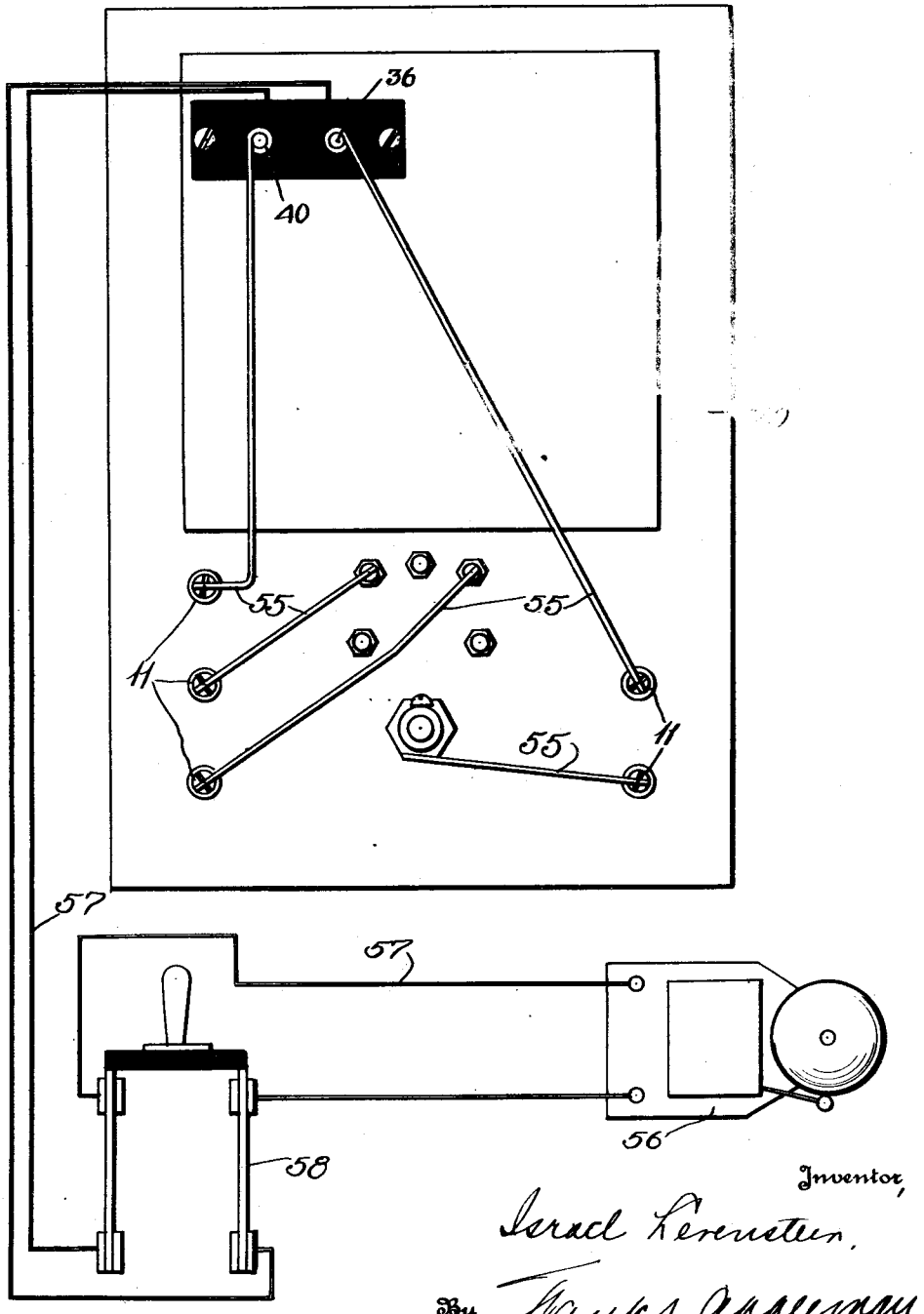
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Fig. 7.



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UNITED STATES PATENT OFFICE.

ISRAEL LEVENSTEIN, OF BROOKLYN, NEW YORK.

RADIO TIME SWITCH.

Application filed April 28, 1924. Serial No. 709,619.

To all whom it may concern:

Be it known that I, ISRAEL LEVENSTEIN, a citizen of the United States of America, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Radio Time Switches, of which the following is a specification.

This invention relates to electric switches, and has special reference to a time controlled switch for radio circuits.

One important object of the invention is to provide an improved general construction of time controlled switch whereby it is especially adapted for use in closing a radio circuit at a predetermined time.

A second important object of the invention is to provide a novel and efficient clockwork control for such a switch.

A third important object of the invention is to provide an improved form of switch opening and setting mechanism in such a device.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is a face view of the panel supporting the radio circuit connections, the switch and the clockwork mechanism.

Figure 2 is a top edge view of a portion of the panel showing certain parts of the clockwork and switch mechanism.

Figure 3 is an enlarged detail view disclosing the several elements of the switch and its setting and release mechanism removed from the casing.

Figure 4 is a detail perspective view of certain latch means used herewith, the view being taken in the direction of the arrows 4—4 on Figure 3.

Figures 5 and 6 are views of the coacting faces of certain trip wheels used for adjusting the time of action of the switch and for releasing the latch to permit closing of the circuit.

Figure 7 is a rear view of the front panel showing the wiring.

In the embodiment of the invention here shown there has been illustrated a panel 10, whereon are mounted a set of binding posts 11 and an ordinary manually controlled switch 12. These parts, and their wiring connections are susceptible of a wide variety of arrangement. It is thought to be sufficient for present purposes to say that one of these circuits (preferably the filament or "A" battery circuit) is interrupted, the ends of the connections being shown at 13 and 14 respectively in Figure 3.

Referring now to Figure 2, it will be seen that there is provided a clock frame having a front plate 14 and a back plate 15. These plates support a clock work train, much of which is of the ordinary type so that, for the sake of clearness of illustration, it has been omitted from the drawings, only those parts having to do directly with the switch mechanism and the other special and novel features being retained. Of those parts directly involved in this invention, there is shown a minute shaft or staff 16 which, through a gear train 17, drives an hour wheel 18 carried by a sleeve 19 revolubly and slidably mounted on the shaft 16. Mounted revolubly on this sleeve is a gear 20 provided with a hub or sleeve 21 on the side next the wheel 18, and in the face of this hub is formed a cam notch 22 for the reception, at the proper time, of the finger or lug 23 projecting from the face of the wheel 18. The shaft or staff 16 carries a minute hand 24 while the sleeve 19 carries an hour hand 25 and the gear 20 carries a hand 26 to indicate, on the clock dial 27, the time of closing the switch. This clock dial is visible through a glazed opening in the panel 10.

In order to set the hand 26 to a desired time for the operation of the switch, there is provided a shaft 28 which extends through the panel 10 and carries on its projecting end a turning knob or head 29. On the inner end of this shaft 28 is a gear 30 which meshes with a gear 31 fixed on a shaft 32 journalled in the plates 14 and 15, and having on its outer end a pinion 33 meshing with the gear 20. It will now be plain that rotation of the head 29 will, through the gearing just described, rotate the gear 20 and thus cause shifting in position of the notch 22.

At 34 is a spring latch bar which has one end rigidly fixed to the front plate 14 and bears against the gear 18 to urge it towards the gear 20, the gear 18 thus preventing out-

ward movement of the spring latch bar so long as the lug 23 rests on the face of the sleeve 19, but permitting such movement whenever, in the course of the movement of the hour gear by the clock work, this lug drops into the notch 22. Thus it will be seen that the latch bar will spring outwardly in accordance with the setting of the hand 26 since the position of the notch is so correlated to this hand that the outward movement will always take place at the time to which the hand points.

Carried by the plate 14 is an insulating plate or base 35 on which is a pivot screw 36 to which the wire 13 is connected. On this pivot 36 is mounted a switch lever 37 provided at one end with a knife blade 38 adapted in one position of the lever, to engage between a pair of fixed contacts in the ordinary way, one of these fixed contacts being shown at 39. These fixed contacts are secured to the plate 35 by a screw 40 which also forms a connection for the wire 55. This lever 37 is constantly urged to engagement with the fixed contacts by a spring 41 which has one end fixed to an insulated lug 42 projecting from the lever while its other end is fixed to an arm 43. In order to prevent this closing of the switch the lever 37 is provided with an arm 44 which is engageable by the free end of a latch finger 45, which has its other end mounted on a shaft 46 journalled in a laterally projecting end 47 formed on the spring latch bar 34. On this shaft is coiled a spring 48 one end of which engages the bar 34 while its other end engages the finger 45 in such maner as to normally hold the finger in the position shown in full lines in Figure 4, a stop 49″ serving to limit its movement in this direction. The arrangement of the latch bar 34 and arm 44 is such that outward movement of the latch bar, as above described, disengages the finger 45 from the arm 44 and the switch thus closes under the influence of the spring 41.

In order to reset the switch to open position a shaft, similar to the shaft 28 is provided, and on one end of this shaft a turning knob 55′ is provided, an arm 47′ being carried by the other end to engage a lug or flange 48′ formed on the lever 37. An inspection of Figure 3 will show that as this arm 47′ is rotated it will move the switch lever from dotted to full line position, and it is to be noted that, in this movement, the arm 44 will engage the finger 45 and cause it to swing, against the action of the spring 48, to the dotted line position in Figure 4 so that the arm may move past this finger, which immediately flies back to the full line position so that the return of the arm is prevented and the switch is held open as before.

In order to set the hands 24 and 25 of the clock from the front of the panel, a shaft 49′ is provided having on one end a turning knob 46 and on its other end a pinion 50 normally out of mesh with a gear train 52. This gear 50 is held yieldably out of mesh by a spring 53 bearing at one end on a collar 54 and at its other end on the back face of the plate 14′. Thus, by pulling outward on the knob 46 the pinion is moved into mesh so that rotation of the knob effects the required setting.

A similar arrangement of shaft and pinion is provided with a knob 55′ in front of the panel for winding the spring 56 through the gear train 57.

From the foregoing it will be seen that all the operations of setting and winding are performed from the front of the panel.

In Figure 7, it will be seen that the back of the panel is provided with suitable wire connections 55 and that the switch may be connected to a bell 56 by wiring 57 and a manual switch 58 so that the device may be used as an alarm clock. Under these circumstances, the usual switch for the "A" battery will be left open.

In using the device, the radio set employed is set to receive whatever station may be desired and the radio time switch is then set to the time the program to be broadcasted from that station opens. Then at that time the radio set will be thrown into circuit and thus the broadcasting or other transmission may be received.

The switch 58 is a conventional type, but the inventor does not wish to be limited with respect to the particular form as any suitable switch may be substituted for the type illustrated.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

It will be seen that the graduations between the hour markings on the dial of the face of the clock are twelve in number, which are intended to enable the user of the apparatus to have a circuit established through the apparatus at five minute intervals, each mark on the graduations being intended as a location from which a circuit can be established.

This arrangement enables a listener to get the location at the very minute the program is broadcasted. For instance, if one wanted to get the 8 05 program, it is only necessary to place the switch hand on the graduation next after 8 so that when the clock hand

points to 8:05, the switch will drop at exactly that time. The advantage of this arrangement will be apparent without further description.

While this invention has been described in connection with radio mechanism, it will be understood that the switch and the wiring thereof may be utilized for connecting other circuits such as lamp circuits for illuminating in automobiles in order that a lamp may be furnished with current at a predetermined time.

Claims.

1. In a switch of the class described, a fixed contact, a pivoted switch lever spring urged into engagement with the fixed contact, a spring latch mechanism including a spring latch bar and a swinging latch finger yielding to movement in one direction and resisting movement in the other direction and engaging under tension of the mechanism with the lever to hold it away from the fixed contact and moving when released from tension to free the lever and permit it to close on the contact, and clock work controlled means engaging the latch mechanism to hold it normally under tension, said means being arranged to release the latch bar at a predetermined time.

2. In a switch of the class described, a fixed contact, a pivoted switch lever spring urged into engagement with the fixed contact, a spring latch mechanism including a spring latch bar and a swinging latch finger yielding to movement in one direction and resisting movement in the other direction and engaging under tension of the mechanism with the lever to hold it away from the fixed contact and moving when released from tension to free the lever and permit it to close on the contact, and clock work controlled means engaging the latch mechanism to hold it normally under tension, said means being arranged to release the latch bar at a predetermined time, said clock work controlled means including a clock work driven gear bearing against the spring mechanism and mounted for lateral movement, a timing wheel parallel to the gear and held against lateral movement, and means carried by the gear and wheel to normally hold them apart and arranged to permit movement of the gear toward the wheel at a predetermined time.

3. In a switch of the class described, a fixed contact, a pivoted switch lever spring urged into engagement with the fixed contact, a spring latch mechanism including a spring latch bar and a swinging latch finger yielding to movement in one direction and resisting movement in the other direction and engaging under tension of the mechanism with the lever to hold it away from the fixed contact and moving when released from tension to free the lever and permit it to close on the contact, clock work controlled means engaging the latch mechanism to hold it normally under tension, said means being arranged to release the latch bar at a predetermined time, said clock work controlled means including a clock work driven gear bearing against the spring mechanism and mounted for lateral movement, a timing wheel parallel to the gear and held against lateral movement, said wheel having a hub projecting toward the gear and provided with a notch in its end, and a lug on the gear normally riding on the end of said hub, said lug being received in the notch upon registering therewith.

ISRAEL LEVENSTEIN.