Nov. 30, 1948. A. BUTTNER 2,455,161

SWITCH CONTROL DEVICE

Filed Feb. 18, 1946

Fig. 2.

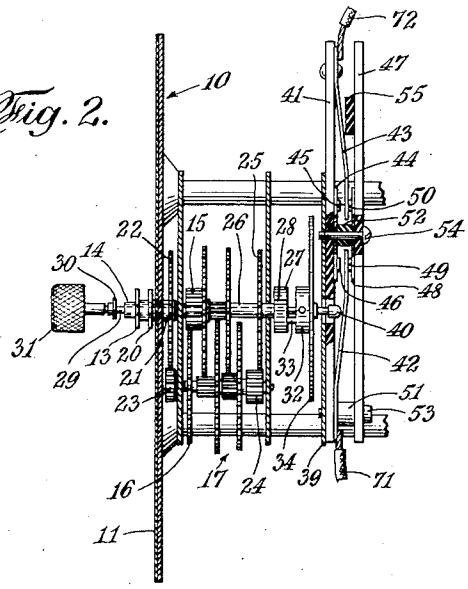


Fig. 3.

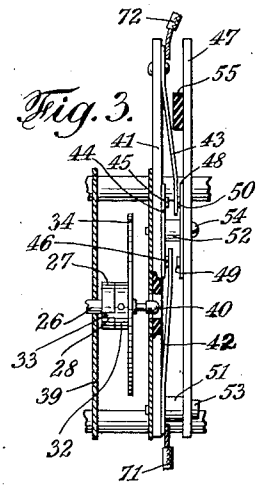


Fig. 4.

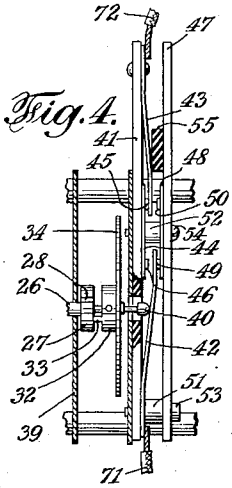


Fig. 1.

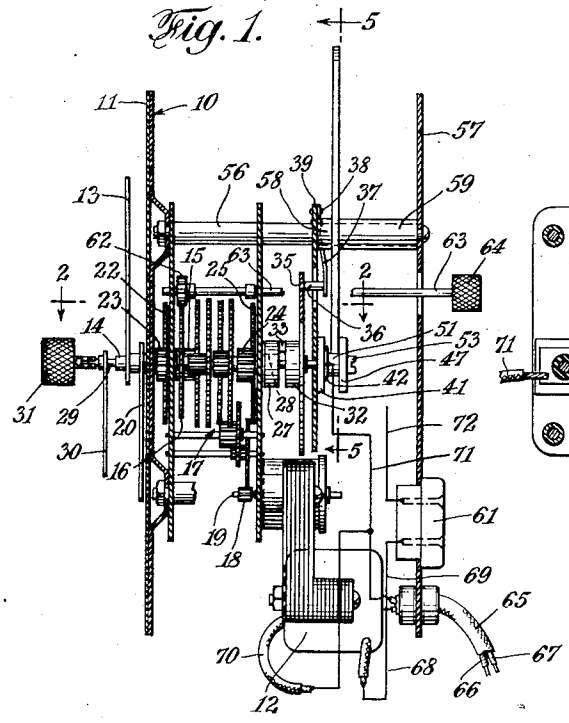
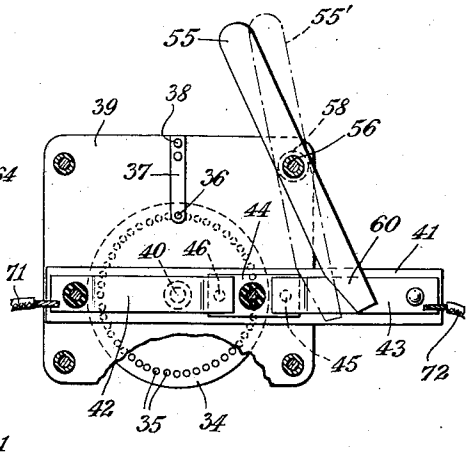


Fig. 5.



INVENTOR.
Arnold Buttner.
BY Peter M. Boesen.
his Attorney.

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SWITCH CONTROL DEVICE

Arnold Buttner, Flushing, N. Y.

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5 Claims. (Cl. 200—38)

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This invention relates to new and useful improvements in switch control devices, adaptable for various purposes, such as radio-clocks, television apparatus, and the like.

With the above and other objects in view, this invention consists of the novel features of construction, combination, and arrangement of parts, hereinafter fully described, claimed, and illustrated in the accompanying drawings, forming part of this specification, and in which similar characters of reference indicate corresponding parts in all views, and in which:

Figure 1 is a side elevational view of my improved switch control device, partly in section.

Figure 2 is a transverse horizontal sectional view, taken on the line 2—2 in Figure 1.

Figure 3 is a fragmentary elevational view, partly in section, showing the switch mechanism in Figure 2 in a different position.

Figure 4 is a view similar to Figure 3 but showing said switch mechanism in another and further different position.

Figure 5 is a partly sectional and partly elevational transverse vertical view on the line 5—5 in Figure 1.

Referring more particularly to the drawing, and especially now to Figures 1 and 2, the numeral 10 indicates the frame of an electric clock, having the usual dial 11, and the motor 12; a minute hand 13 is attached to a sleeve 14 which carries a pinion 15; cooperating with the latter is a gear 16 and a train of gears 17, relatively mounted with respect to each other, so as to engage the pinion 18 of a rotor shaft 19, which in turn causes the rotation of the shaft 14.

The hour hand 20 is secured to a sleeve 21, which carries a gear 22 meshing with a pinion 23, which in turn by cooperation of the train of gears 17 and pinion 18 mounted upon the rotor shaft 19, cause the hour hand 20 to rotate; cooperating with the gear 16 is a pinion 24 meshing with a gear 25, attached to a sleeve 26, which carries a disc 27 having a slot 28.

A shaft 29 rotatably and slidably arranged within the sleeves 14, 21 and 26 carries at one end a hand 30; while a knob 31 is frictionally operating said shaft 29.

On the other end of the shaft 29 is secured a disc 32, which carries a lug 33, said lug is adapted to be engaged by the slot 28 of the disc 27, when during rotation the said slot 28 and lug 33 are in properly aligned position.

To the disc 32 is secured a circular plate 34 which is provided therein with a number of small openings 35 adapted to be engaged by a pin 36

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connected to a spring 37, the latter being fixedly attached by means of rivets 38 to a plate 39 forming part of the frame 10. Extending beyond the plate 39, the shaft 29 is provided with a rounded tip 40 which preferably may be of insulating material.

A bar 41 of insulating material is fast on plate 39 said bar is provided at each end with contact springs 42 and 43.

At the central position of said bar 41 is arranged a contact plate 44 carrying the contact points 45 and 46, which latter are adapted to be engaged by contact springs 42 and 43, respectively.

An insulating bar 47 has centrally arranged thereon a contact plate 48 carrying contact points 49 and 50, which latter also are adapted to be engaged by contact springs 42 and 43, respectively, when not in engagement with contact points 45 or 46.

The insulating bars 41 and 47 may be properly spaced relative to one another and secured to the frame 39 by means of insulated bushings 51 and 52, and screws 53 and 54. The bushing 52 and screw 54 also serve the purpose of properly locating and securing the contact plates 44 and 48 in relation to the insulation bars 41 and 47. An insulated lever 55 is pivotally mounted on a sleeve 56 between the plate 39, and a plate 57.

The lower end 60 of the lever 55 extends downwardly between bars 41 and 47 and is by means of spacers 58 and 59 arranged to engage the contact spring 43, when said lever 55 is in a position as shown in Figure 4, or in the position shown in dotted-dash lines 55' in Figure 5.

The plate 57 is provided with a socket 61 in which a contact plug (not shown) of any device contemplated to be operated, is inesrted.

A shaft 63 provided with a knob 64 on one end is arranged in the frame 10 and carries a pinion 62 for a manual operation of the clock mechanism.

A wire 65 adapted to connect to an electrical source (not shown), is provided with wires 66 and 67. The wire 66 by means of a lead 68 is connected to the motor 12 and by a lead 69 to one terminal of the outlet 61, while the wire 67 is connected to the motor by a wire 70, and to the spring 42 by a wire 71. The other terminal of the outlet 61 is connected to the spring 43 by means of a wire 72.

In the operation of my device thus described, the disc 32 by means of the rod 29 and knob 31 may be pushed inwardly toward and in contact with the spring 42 until the lug 33 is forced out of engagement with the slot 28 to allow a rotary movement of the disc 32 and lug 33. The hand

30 is arranged in alignment with the lug 33 and by means of the plate 34 and openings 35, which latter are spaced at 15 minute intervals and may be set at any desired time and held in a locked position by means of the pin and held in a locked 37. When the disc 32 is out of engagement with the disc 27 the round projection 40 on the shaft 29 forces the spring 42 into contact with the contact point 49. As may be clearly seen now, from Figure 2, the spring 43 is in contact with the point 50, the circuit will be closed by means of contact plate 48, contact 50, spring 43 and wire 72 leading to one terminal of the plug 61 and by means of contact plate 48, contact point 49, spring 42 and wire 71 connected to the other terminal of the latter.

When upon rotation of the disc 27 and in co-operation with the hour hand mechanism the slot 28 of the disc 27 arrives at an alignment with the lug 33, the latter is then forced into engagement with the slot 28 by means of the spring 37, thus disengaging the point 40 from the spring 42 and allowing the latter to move toward and engaging the contact point 46.

As may clearly be seen from Figure 3 contact spring 42 and contact point 49 are now out of engagement, thus breaking the circuit to the plug 61. From the foregoing description it may be well understood that a radio or any other implement may be in operation until the lug 33 of the disc 32 engages the slot 28 of the disc 27.

The forward end of the pin 36 is slightly rounded so that it has a moderate friction bearing in the hole 35 it engages in the disc 34. During the period when the lug or pin 33 is disengaged from the slot 28, the disc 34 will be held stationary, because the spring 37 will be under tension, and only the frictional pressure of the end of the pin or lug 33 against the hub disc or sleeve 32 will act to turn the disc or sleeve 32 and the disc 34. When the slot 28 is moved by the time mechanism into a position of registration with the pin or lug 33, the force of the spring 37 will move the disc 34 and the sleeve of disc 34 along the shaft so that the pin or lug 33 will enter the slot, thereby coupling the sleeve or disc 32 to the disc or sleeve 27, and when this takes place the disc 34 will start to turn with the shaft, and the pin 36 will be idle.

As shown in Figures 4 and 5, the lever 55 may be brought in engagement with the spring 43 and forcing the latter into contact with the contact point 45. When the disc 27 is set at a desired time, as heretofore described, the spring 42 is then in contact with the point 49, thus leaving an open circuit to the plug 61. When the slot 28 comes into alignment with the lug 33, the spring 42 will then contact the point 46 and by means of the contact plate 44, contact points 45 and 46, springs 42 and 43 and wires 72, 71 and 69, the circuit to the plug 61 is then completed.

It is obvious that slight changes may be made in the form, construction and arrangement of the several parts, as shown, within the scope of the appended claims, without departing from the spirit of my invention, and I do not, therefore, wish to limit myself to the exact construction and arrangement shown and described herein.

What I claim as new, and desire to secure by Letters Patent of the United States is:

1. A switch control in combination with a clock, comprising, a frame, a train of gears supported by the latter, a sleeve, a disc mounted thereon and being actuated by said gears, a shaft provided with a knob, and having a disc mounted thereon, a second disc mounted on said shaft, said second disc being formed with a number of openings therein, and a pin and spring member engaging the openings in said second disc, substantially as shown and described.

2. A switch control in combination with a clock, comprising, a frame, a train of gears supported by the latter, a sleeve, a disc formed with a slot therein and being mounted on said sleeve, a shaft rotatably and slidably mounted in the latter, and a disc formed with a lug thereon and being secured upon said shaft, said shaft terminating in a rounded projection, adapted to engage one of said springs, whereby to alternately contact or disengage the latter from one of said contact points to the other.

3. In a device, as claimed in claim 2, and wherein a lever mounted on said frame, is adapted to engage or disengage the second one of said contact springs, whereby to alternately contact or disengage the second one of the contact points.

4. A switch control, as described, comprising a frame, a train of gears mounted on said frame, a sleeve supported by said frame, and a shaft rotatably and slidably mounted in said sleeve, a disc formed with a slot and being secured to the sleeve, and a disc having a lug and being mounted on the shaft, said lug being adapted to engage said slot, a second disc secured to the shaft and being provided with openings therein, a pin fixedly secured to a spring and adapted to engage said openings, said spring being secured to the frame, the shaft being formed with a rounded projection at one end thereof, two bars mounted on the frame, and two springs secured to one of said bars, two plates being secured, one to each of said bars, and each of said plates being made with two contact points, one of said springs being actuated by said rounded projection of the shaft, whereby alternately to engage or disengage one contact point of each plate, a lever mounted on said frame, and being adapted to engage the other spring whereby to alternately engage or disengage said spring from the other contact points of each plate.

5. A time controlled switch, comprising an electrically driven clock mechanism including a main shaft and a gear train therefor, a shaft operating in the main shaft, a time governed disc on said shaft having a slot therein, a disc mounted to turn on the shaft and provided with a series of circumferentially spaced time indexed sockets representing division of the hour, a spring pressed pin disposed in the path of rotation of said sockets, a lug carried by said disc last-named and adapted to engage the slot of the first-named disc, and circuit contacts controlled by the movement of said last-named disc.

ARNOLD BUTTNER.

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