April 28, 1964 A. SCHNEITER 3,131,267

CLOCK OR WATCH HAVING AN ELECTRIC CONTACT CONTROLLED BY THE MOVEMENT

Filed April 5, 1961

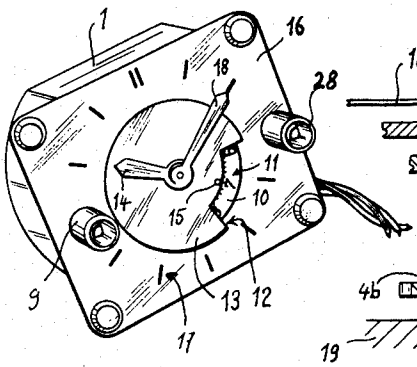


FIG. 1

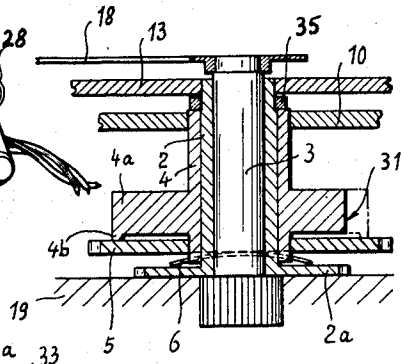


FIG. 3

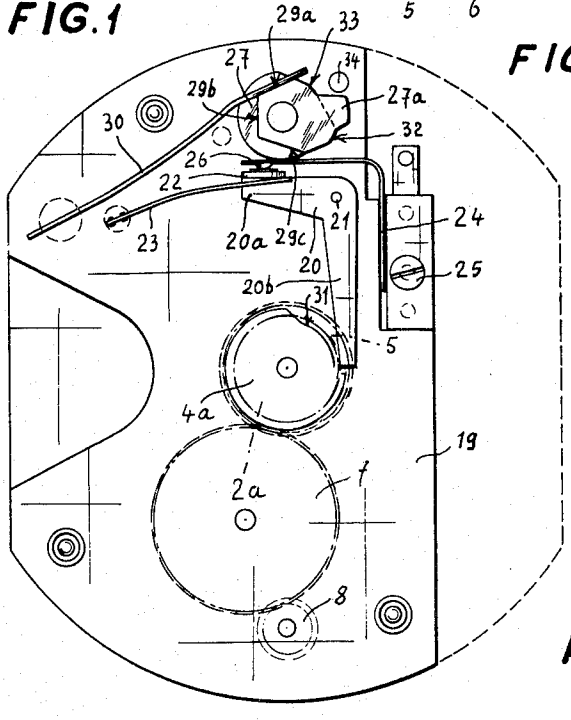


FIG. 2

INVENTOR
ALI SCHNEITER
BY

AGENTS

United States Patent Office 3,131,267 Patented Apr. 28, 1964

3,131,267

CLOCK OR WATCH HAVING AN ELECTRIC CONTACT CONTROLLED BY THE MOVEMENT

Ali Schneiter, Corcelles, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland, a firm

Filed Apr. 5, 1961, Ser. No. 101,323
Claims priority, application Switzerland Apr. 8, 1960
7 Claims. (Cl. 200—38)

This invention relates to a clock or watch having an electric contact controlled by the movement.

The clock or watch is characterised in that the contact comprises two movable studs, one of which is subject to the action of a control cam driven by the movement while the other is subject to the action of a manually operated cam adapted to occupy at least two positions, in one of which opening and closing of the contact is controlled by the said movement-driven cam while in the other it renders the control cam inoperative.

The drawing illustrates one embodiment of the subject of the invention by way of example.

FIGURE 1 is a perspective view of an electric clock intended to be incorporated in a radio set, the switching on of which it controls automatically.

FIGURE 2 is a plan view of part of the mechanism of the said clock on an enlarged scale, and

FIGURE 3 is an axial section of a detail, on an enlarged scale.

The clock illustrated comprises an electric movement enclosed in a ferromagnetic protective case 1, which is not shown in detail because it is outside the scope of the present invention. The hour cannon pinion, denoted by reference 2 (FIG. 3), rotating on a spindle 3, carries a sleeve 4 mounted rotatably thereon. Sleeve 4 has an outer shoulder 4*a* which forms a control cam for an electric contact described hereinbelow. Mounted freely on the sleeve 4 is a gearwheel 5. A resilient washer 6 is interposed between the latter and the hour wheel denoted by reference 2*a* and tends to urge the sleeve 4 against a stop ring 35 through the medium of the wheel 5. The washer 6 thus ensures a friction drive on the one hand between the hour wheel 2*a* and the cam 4*a* and on the other hand between the cam 4*a* and the wheel 5.

By means of a gear train 7 and 8 (FIG. 2) and a control knob 9 joined to the wheel 8 the wheel 5 enables the cam 4*a* to be turned by hand on the cannon pinion 2 and thus enables the relative angular position of these two parts to be varied. It should be noted that the cam 4*a* has an annular bearing surface 4*b* against which bears the wheel 5 so that the friction between the latter and the cam takes place over a larger diameter than the friction between the sleeve 4 and the ring 35. The cam 4A is thus satisfactorily driven by the wheel 5 without any danger of undesired slip.

The sleeve 4 also carries a disc 10 (FIG. 1) provided with a graduation 11 which appears in a slot 12 in a rotary dial 13 carried by the hour cannon pinion 2. Said dial 13 carries two markers, one of which, denoted by reference 14, has the appearance of an hour hand and the other, denoted by reference 15, is situated opposite the graduation 11.

When the sleeve 4 is turned by the manual control knob 9, the graduation 11 is moved with respect to the marker 15, so that it is possible to check the relative angular position of the sleeve 4 and the cannon pinion 2, thus enabling the release mechanism to be adjusted. It should be noted that the control knob 9 drives the wheel 8 by means of a clutch (not shown) which enables said knob to be disengaged by moving it axially. In this way, the knob 9 is not constantly rotated during operation of the movement.

The rotary dial 13 is housed in the plane of a fixed dial 16 which surrounds it and which carries an hour face 17 with which the hour marker 14 and the minute hand (denoted by reference 18) co-operate. The movement plate is denoted by reference 19.

On its surface situated opposite the dials 13 and 16, plate 19 carries a two-armed lever 20 pivoted at 21 about an axis perpendicular to the plane of the movement; an arm 20*a* of the lever 20 carries an electric contact stud 22 while its second arm, 20*b*, co-operates with the cam 4*a*. A return spring 23 tends to urge the arm 20*b* against the cam. A bent resilient strip 24 is fixed at 25 on the plate 19 with the interposition of an electrical insulator. Said resilient strip 24 carries a contact stud 26 co-operating with the stud 22. The inherent elasticity of the strip 24 tends to apply the strip 24 against a cam 27 of insulating material which is mounted rotatably on the plate 19 and is connected to a control knob 28. Said cam 27 has three flats 29*a*, 29*b* and 29*c* with which a jumper spring 30 co-operates, thus ensuring stability of three of its positions.

Depending on the angular position occupied by the cam 27, the stud 26 is at a greater or lesser distance from a maximum deflected position thereof. In its position illustrated in FIGURE 2, the stud 26 is at a distance from the maximum deflected position such that the stud 22 comes into contact with it only when the arm 20*b* of the lever 20 is situated opposite an indented part 31 of the cam 4*a*. When the rest of the cam operates on the lever 20, the stud 22 is moved away from the stud 26, thus breaking the contact. In this position of the cam 27, switching on of the radio to which the clock is fitted is automatic.

When the flat 29*b* is in engagement with the spring 30 the zone denoted by 32 on the cam 27 acts on the strip 24, thus bringing the stud 26 to its maximum deflected position. In this position, the studs 22 and 26 are constantly in contact, irrespective of the position of the central cam 4*a*. This position of the cam 27 corresponds to a continuous operation of the radio.

Finally when the stud 29*c* is in contact with the spring 30, the zone 33 of the cam 27 acts on the strip 24 thus enabling the stud 26 to move away from the maximum deflected position. In the corresponding position, the stud 22 is never in contact with the stud 26, irrespective of the position of the central cam 4*a*. The radio is thus constantly switched off.

It should be noted that the cam 27 has a nose 27*a* co-operating with a pin 34 carried by the plate 19, thus limiting the angular movements of the cam 27.

As an alternative, the cam 27 may be so shaped that it occupies only two positions and to this end has only two operative zones, one in which the control cam 4*a* is operative and the other corresponding to one or other of its zones 32 and 33 in which the cam 4*a* is inoperative, the contact remaining constantly closed or open.

What I claim is:

1. In combination with a clock having a movement, an electrical control apparatus comprising a first cam connected to said movement, a lever including first and second rigid arms, means for pivotably mounting said lever, spring means for urging said first rigid arm in operative contact with said first cam, a first electrical contact means disposed on the said second rigid arm of said lever, a second electrical contact means disposed opposite said first electrical contact means, and a manually settable cam disposed in contact with said second electrical contact means, said manually settable cam including at least two different faces having different elevations so that when one of said faces is in contact with said second electrical contact means said first and second electrical contact means are connected regardless of the position of said first cam,

and when the other of said faces is in contact with said second electrical contact means the connection between said first and second electrical contact means is dependent on the position of said first cam.

2. In combination with a clock having a movement, an electrical control apparatus comprising a first cam connected to said movement, a lever including first and second rigid arms, means for pivotably mounting said lever, spring means for urging said first rigid arm in operative contact with said first cam, a first electrical contact means disposed on the said second rigid arm of said lever, a second electrical contact means disposed opposite said first electrical contact means, and a manually settable cam disposed in contact with said second electrical contact means, said manually settable cam including at least two different faces having different elevations so that when one of said faces is in contact with said second electrical contact means said first and second electrical contact means remain unconnected regardless of the position of said first cam and when the other of said faces is in contact with said second electrical contact means the connection between said first and second electrical contact means is dependent on the position of said first cam.

3. In combination with a clock having a movement, an electrical control apparatus comprising a first cam connected to said movement, a lever including first and second rigid arms angularly disposed with respect to each other, means for pivotably mounting said lever with said first rigid arm in operative contact with said first cam, a first electrical contact means disposed on the said second rigid arm of said lever, a flexible member having a bend wherein one portion of said flexible member is substantially parallel and opposite to said first rigid arm and the other portion is substantially parallel and opposite to said second rigid arm, means for fixedly mounting said flexible member at the first portion thereof, a second electrical contact means fixed to the other portion of said flexible member opposite said first contact means so that when said contact means is urged toward each other they connect with a wiping motion, and a manually settable cam disposed in contact with the second portion of said flexible member, said manually settable cam including first, second and third different faces having different elevations so that when said first face is in contact with said second portion of said flexible member, said first and second electrical contact means are connected regardless of the position of said first cam, when said second face is in contact with said second portion of said flexible member, said first and second electrical contact means remain unconnected regardless of the position of said first cam and when said third face is in contact with said second portion of said flexible member, the connection between said first and second electrical contact means is dependent on the position of said first cam.

4. The apparatus of claim 3 including a flexible element in contact with second rigid arm for urging said first rigid arm in contact with said first cam.

5. The apparatus of claim 4 including means for locking said manually settable cam into three positions related to said three faces.

6. In combination with a clock having a movement, an electrical control apparatus comprising, a first cam connected to said movement, a manually settable cam including at least first and second faces, a lever including first and second rigid arms, a first electrical contact means disposed on the first arm of said lever, means for pivotably mounting said lever with said second arm operatively disposed with respect to said first cam, means for urging said second arm in contact with said first cam, and a second electrical contact means disposed opposite said first electrical contact means and in contact with said manually settable cam so that when the first face of said manually settable cam is in contact with said second electrical contact means the second arm of said lever is moved out of contact with said first cam so that the contacting of said electrical contact means is independent of the position of said first cam and when the second face of said manually settable cam is in contact with said second electrical contact means the contacting of said first and second electrical contact means is dependent on the position of said first cam.

7. The apparatus of claim 6 including a third face on said manually settable cam and means for urging said second electrical contact means away from said first electrical contact means and towards said manually settable cam so that when said third face is against said second electric contact means said electrical contact means remain unconnected regardless of the position of said first cam.

References Cited in the file of this patent

UNITED STATES PATENTS

1,118,024	Lawrence	Nov. 24, 1914
2,294,573	Potter	Sept. 1, 1942
2,503,082	Tuttle	Apr. 4, 1950
2,621,266	Gretener	Dec. 9, 1952
2,866,021	Hildum	Dec. 23, 1958
2,956,437	Opocensky	Oct. 10, 1960