May 23, 1933. H. H. RAUH 1,911,038

CLOCK

Filed May 5, 1932

Fig 1.

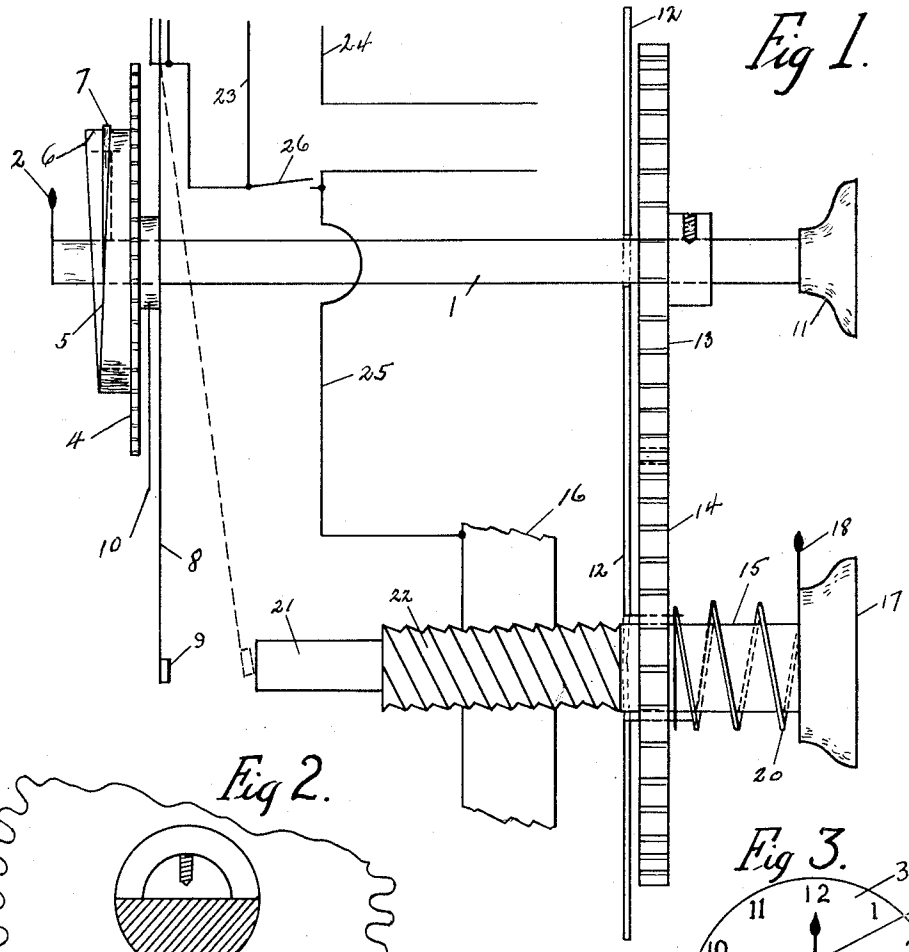


Fig 2.

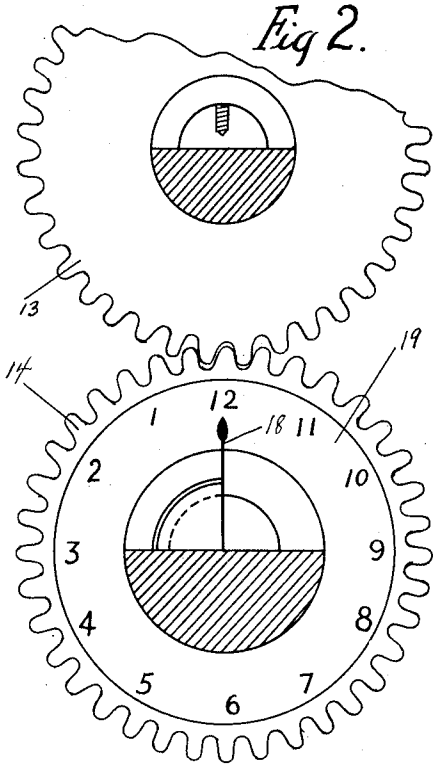


Fig 3.

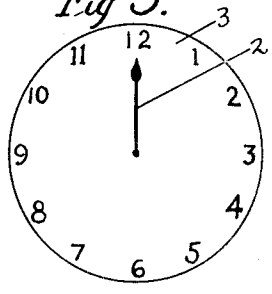
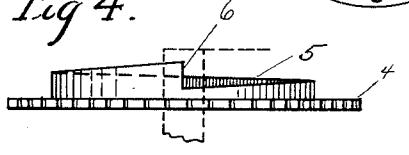


Fig 4.



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UNITED STATES PATENT OFFICE

HERBERT H. RAUH, OF PERRYVILLE, MISSOURI

CLOCK

Application filed May 5, 1932. Serial No. 609,458.

My invention relates to a clock designed to control the time of on coming and duration of an electric current for the operation of various electrical appliances.

The principal object of the present invention is to provide in a clock simple, efficient and inexpensive means for closing an electric circuit for the operation of an electric appliance such as a radio at a predetermined time, as well as the opening of such circuit at the end of the period during which operation of the appliance is desired.

Further objects of my invention will appear from the following detailed description thereof.

In the drawing:

Figure 1 is a sectional view of my invention.

Figure 2 is a detail of the "on" dial with inter-connecting gear.

Figure 3 is a detail of the "off" dial.

Figure 4 is a detail of the cam.

Referring to Figure 1 the numeral 1 indicates a shaft such as is provided in ordinary alarm clocks for the alarm control, said shaft is rotatably mounted on the usual bearings in the movement, not shown, and carries an indicating hand 2 at its front end which moves on a dial 3 for setting the "off" time of the circuit as will hereinafter appear. Shaft 1 is not driven by the clock mechanism and is rotatable only by hand.

Rotatable and slidable on the shaft 1 and arranged to be driven by the clock mechanism is a gear 4 the face of which is provided with a spiral cam surface 5, which includes an abrupt release 6. Secured in the shaft 1 is a pin 7, which is adapted to ride upon the cam surface 5. The gear 4, cam release 6, and pin 7 are all of the type ordinarily used in the construction of alarm clocks, the cam 5, however, is of special spiral shape. Secured on the frame of the clock movement is a spring conductor 8, which carries a contact 9 at its end. The spring 8 abuts against a collar 10 carried by the gear 4, and presses the cam toward the pin 7, said pin, however, as the cam revolves during the clock movement in the usual manner, presses the cam and gear to the right, as viewed in Figure 1, causing the spring and contact progressively to move toward a circuit closing position, shown in dotted lines in Figure 1.

The shaft 1 is provided on its rear end with the usual alarm setting button 11. Also secured on the shaft 1 outside of the rear wall 12 of the clock case is a gear 13 which intermeshes with a similar gear 14 loosely and rotatably mounted on a shaft 15, said shaft being threaded through a member 16 of the clock mechanism and being setable by hand. The outer end of the shaft 15 is provided with an operating head 17 and carries a pointer 18 adapted to read on a dial 19, see Figure 2, on the face of gear 14; a compression spring 20 between the gear 14 and head 17 stabilizes the position of the gear adjacent the rear wall and prevents slippage of the gear 14 on the shaft 15, thus obviating the possibility of said gear getting out of mesh and thus losing its proper relationship with gear 13 on shaft 1. The inner end 21 of the shaft 15 serves as a terminal to cooperate with the contact 9 for closing a circuit. The thread 22 of the shaft 15 must bear proper relation to the pitch of cam 5.

The circuit to be completed by contact 9 and terminal 21 comprises input conductors 23 and 24, the former of which contacts with the spring 8, the latter going directly to the output. The member 16 being conductive, the other output wire 25 is connected therewith. A manually operated switch 26 may be provided for closing the output circuit without the intervention of the clock mechanism above described.

The operation of the device is as follows:

The operator first rotates the shaft 1 until the pointer 2 is located at the point indicating the time when he desires operation of the appliance to be discontinued. The rotation of shaft 1 carries the pin 7 around the cam to a position where it is in such relation with the release 8 that the rotation of gear 4 by the clock mechanism, will bring said release in operative position at the desired time. Rotation of the shaft 1 through the gears 13 and 14 brings the dial 19 so that it is properly readable with reference to such "off" setting of the pin 7. The operator next rotates

the shaft 15 until the pointer 18 reads on the dial at the point indicating the time when he wishes the circuit closed and operation of the appliance to begin. This rotation of the shaft 15 rotates the thread 22 so that the terminal 21 is caused either to move toward or recede from the then position of the contact 9. When the parts are so set the riding of the pin 7 on the cam 5 progressively forces the spring 8 to the right, as viewed in Figure 1, until at the desired time as indicated by the setting achieved by rotation of threaded shaft 15, the desired contact is made and the output circuit completed. The circuit then remains closed and operation continues until further rotation of gear 14 by the timing mechanism of the clock brings the release 8 opposite the pin 7, when the spring 8 immediately opens the circuit, the gear 4 and cam sliding to the left as viewed in Figure 1.

It will thus be seen that a simple and efficient mechanism is provided whereby the output circuit for operating an electric appliance may be set for closing at any desired time, and when closed will so remain until a present time for opening has been reached.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a clock, an electric switch comprising in combination with a spring contact and an adjustable contact, a cam for the operation of said spring contact to close and open said switch, and means whereby said cam is operated by the time mechanism of said clock to control the duration of closure of said contacts.

2. In a clock, an electric switch comprising in combination with a spring contact and an adjustable contact, a cam for the operation of said spring contact to close and open said switch, means whereby said cam is operated by the time mechanism of said clock, and means for adjusting the operation of said cam relative to the time operation of said clock to control the time of closing and duration of closure of said contacts.

3. In a clock, an electric switch comprising in combination with a spring contact and adjustable contact, a cam for the operation of said spring contact to close and open said switch, means whereby said cam is operated by the time mechanism of said clock, means for adjusting the operation of said cam relative to the time operation of said clock to control the time of closing and duration of closure of said contacts, a dial and an indicator readable on said dial for determining the "off" time adjustment of said cam.

4. In a clock, an electric switch comprising in combination with a spring contact and an adjustable contact, a cam for the operation of said spring contact to close and open said switch, means whereby said cam is operated by the time mechanism of said clock, means for adjusting the operation of said cam relative to the time operation of said clock to control the time of closing and duration of closure of said contacts, a dial, an indicator readable on said dial for determining the "off" time adjustment of said cam, and means to indicate the time adjustment of said adjustable contact relative to said cam.

5. In a clock, an electric switch comprising in combination with a spring contact and an adjustable contact, a rotatably mounted shaft, a spiral cam rotatably and slidably mounted on said shaft, a pin secured in said shaft and arranged to cooperate with said cam to close and open said switch, means whereby said cam is operated by the time mechanism of said clock, a dial, an indicator carried by said shaft and readable on said dial for determining the "off" time adjustment of said cam, a gear on said shaft, a second gear mounted in connection with said adjustable contact and in mesh with said first gear, said second gear having a dial face disposed relative to the time setting of said cam whereby said adjustable contact may be set relative to said cam.

6. In a clock, an electric switch comprising in combination with a spring contact and an adjustable contact carried by a threaded shaft, a rotatably mounted shaft, a spiral cam rotatably and slidably mounted on said shaft, a pin secured in said shaft and arranged to cooperate with said cam to close and open said switch, means whereby said cam is operated by the time mechanism of said clock, a dial, an indicator carried by said shaft and readable on said dial for determining the "off" time adjustment of said cam, a gear on said shaft, a second gear in mesh with said first gear and rotatably mounted on said threaded shaft, a dial on the face of said second gear, and an indicator on said threaded shaft arranged to read on said dial, whereby said adjustable contact may be set relative to said cam.

HERBERT H. RAUH.