

June 16, 1925.

1,542,275

M. H. RODRIGUES

ELECTRIC ALARM CLOCK

Filed Feb. 11, 1924

2 Sheets-Sheet 1

Fig. 1.

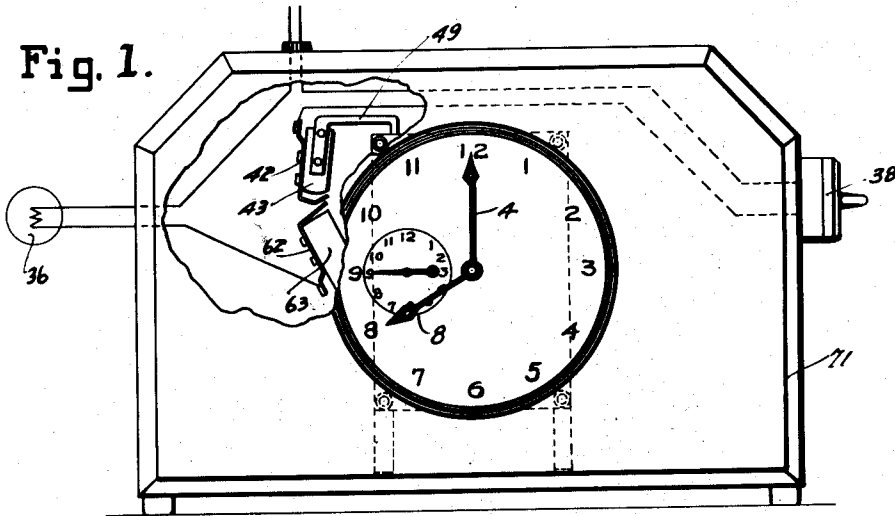


Fig. 2.

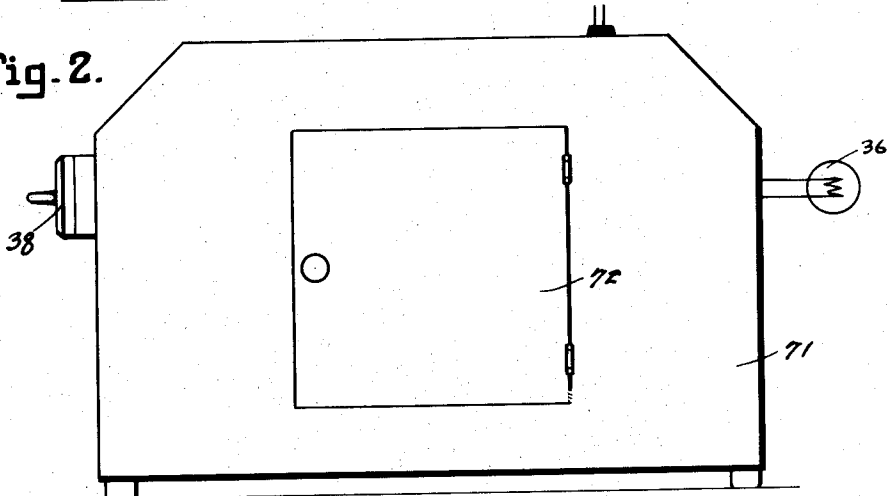
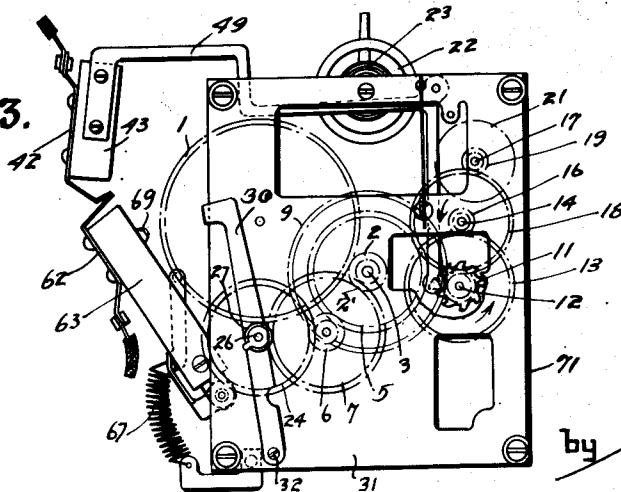


Fig. 3.



Inventor
M. H. Rodrigues

by *M. H. Rodrigues*
Attorney S—

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Fig. 5.

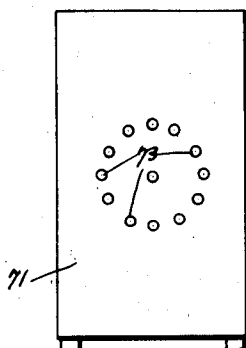


Fig. 4.

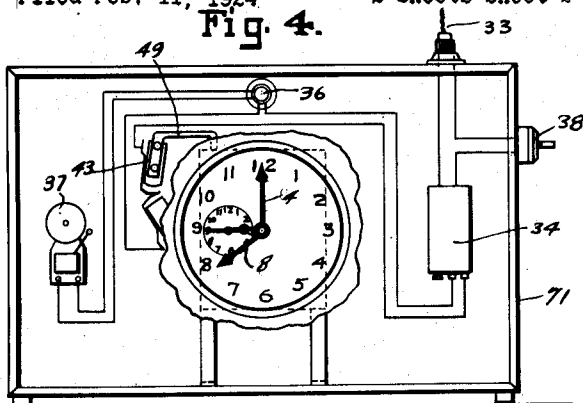


Fig. 6.

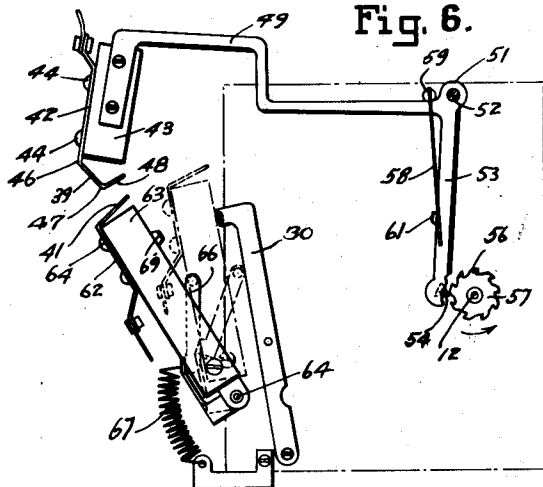
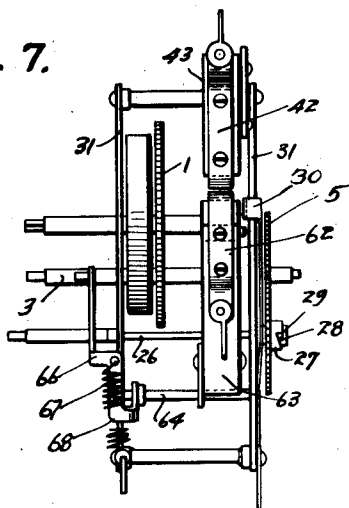


Fig. 7.



Inventor
M.H. Rodrigues

by

Mum & Co.

Attorneys-

UNITED STATES PATENT OFFICE.

MANUEL HENRY RODRIGUES, OF HONOLULU, TERRITORY OF HAWAII.

ELECTRIC ALARM CLOCK.

Application filed February 11, 1924. Serial No. 692,141.

To all whom it may concern:

Be it known that I, MANUEL HENRY RODRIGUES, a citizen of the United States, and a resident of Honolulu, Territory of Hawaii, have invented a new and useful Electric Alarm Clock, of which the following is a specification.

The present invention relates to improvements in alarm clocks and its particular object is to provide an electrically operated alarm mechanism in combination with a clock, the different parts being arranged in such a manner that the alarm mechanism will become operative at a predetermined time, and further provision being made to periodically stop the working of the alarm mechanism. My invention is not confined to an alarm mechanism but may be used in connection with any other electrically operated device such as signals and the like. In this connection it might be stated for instance that my device would be well adapted for the periodical lighting of show windows to begin at a certain predetermined time. Further uses of my device will be readily found as the invention is more clearly understood.

The preferred form of the invention is illustrated in the accompanying drawings in which Figure 1 shows a front view of my device with a portion of the front cover broken away to disclose the interior, Figure 2 a rear view of the same, Figure 3 a front view of the clock mechanism and of my switch operated by the same, Figure 4 a front view of my device with the front cover removed, Figure 5 a side view of my device, Figure 6 a detail view illustrating the operation of my switch as detached from the clock mechanism and Figure 7 a side view of the clock mechanism. While I have shown only the preferred form of the invention it should be understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

The clock mechanism of my device does not substantially differ from the clock mechanism of any ordinary alarm clock and includes the large gear wheel (1) driven by the main spring of the clock mechanism not shown in the drawing and operating through the cog wheel (2), the shaft (3), on which latter the minute hand (4) is mounted. From the shaft 3 motion is transmitted

through the pinion 2' to the cog wheel 7 and from the pinion 6 mounted coaxially with the latter to the cog wheel 5 fixed to the sleeve carrying the hour hand. Mounted on the shaft (3) there is also the cog wheel (9) operating the pinion (11) on the shaft (12), which latter shaft through the gear wheel (13) transmits motion to the shaft (14) through the pinion (16), the motion of the latter shaft being transmitted to the shaft (17) through the cog wheel (18) engaging the pinion (19). The shaft (17) has the escapement wheel (21) mounted thereon, which cooperates in a well known manner with a pallet not shown in the drawing and the wheel (22) balanced by the spring (23) in controlling the operation of the clock mechanism. The pinion (6) also transmits motion to the cog wheel (24), which latter is rotatable on the shaft (26) and has a sleeve (27) formed integral therewith, which latter is notched as at (28) and rides with its end face on a pin (29) extending from the shaft (26). The latter pin normally forces the sleeve and the cog wheel (24) backward on the shaft (26) but allows the same to be pushed forward by the spring (30) when the gear wheel (24) reaches a position in which the notch (28) registers with the pin (29), which latter may be manually set by the operator to correspond with the time at which the operator wishes the alarm mechanism to become active. The spring (30) comprises a blade pivoted to one of the two metal plates (31) forming the frame of the cog mechanism as shown at (32) and is bent at its other end to pass around the sheet (31) for purposes to be explained hereinafter. The cog mechanism as described thus far is of conventional construction and no claims are made for the same.

My invention has particular reference to an electrically actuated alarm mechanism operated or controlled by the clock mechanism. My invention includes an electrical circuit which as shown in Figure 4 may be connected to the ordinary house circuit as at (33). A step down transformer (34) may be used to reduce the voltage and a light (36) and the bell (37) may be connected into the circuit. A snap switch (38) may be provided for the convenience of the operator. The principal switch operated by the clock mechanism includes two movable contacts (39) and (41). The former consists of a strip of spring metal (42) secured to a block of in-

sulating material (43) by means of rivets (44) and formed so that its end projects beyond the block and is turned as shown at (46) and (47) to present a flat face (48) in confronting relation with the other movable contact. The block (43) is supported at the free end of the horizontal arm (49) of a bell crank lever (51) pivotally supported between the plates (31) of the clock mechanism as shown at (52). A vertically depending arm (53) of the bell crank lever is formed with a projection (54) on its free end presenting an inclined face to the teeth (56) of a wheel (57) mounted on the shaft (12). The teeth on this wheel are formed to lean rearwardly of the direction of rotation and to present slanting faces forcing the arm (53) away from the center of the wheel in a slow motion and peripheral spaces maintaining the arm (53) at the extreme distance for a certain length of time. After the point of a tooth has been passed the weight of the block (43) forces the free end of the arm (53) centerwise relative to the wheel (57) with a spring (58) anchored at (59) and bearing on a stud (61) rising from the arm (53) partly balancing the weight of the block (43) so as to facilitate the task of the wheel (57).

The contact (41) comprises a strip of metal (62) riveted to a block (63) as shown at (64) with its free end projecting outside of the block and bent to present a face substantially parallel to that of the contact (39). The block (63) is pivoted on the shaft (64) and may be swung into an inactive position by means of the handle (66) pivoted to the same shaft (64) with a spring (67) tending to pull the block (63) into an active position. The block (63) is prevented from going beyond an active position by a portion (68) of the lever (66) striking the plate (31). When the block is drawn into an inactive position a catch (69) on the block engages with the end of the spring (30) previously described provided the latter spring is pressed closely to the plate (31) by the pin (29) bearing on the face of the sleeve (28). When, however, the sleeve (28) is turned by the clock mechanism so that the pin (29) drops into the notch (28), that is, when the time has been reached for which the alarm clock has been set, the spring (30) is allowed to spring away from the plate (31) and to thereby release the catch (69), which again allows the block (63) to be drawn into an operative position by the spring (67).

The operation of my device is as follows: Assuming the alarm is set for nine o'clock as shown in Figure 1, the dial shows the present time to be eight o'clock. At this time the pin (29) rides on the straight face of the sleeve (28) and forces the latter sleeve and with it the spring (30) into close proximity with the plate (31) so that the spring can

hold the catch (69) and through the same the block (63) in an inactive position, manual operation being relied on, of course, for first engaging the catch (69) with the spring (30). At the same time the lever (51) is caused to swing back and forth on its pivot (52) by the other wheel (57), the contact (39) reciprocating but its motion remaining ineffective because the contact (41) is not in the proper place. As time proceeds and the hands on the dial indicate the arrival of the ninth hour, the pin (29) of the alarm device passes into the notch (28) and allows the sleeve (27) to jump forward under the pressure of the spring (30) and further allows the latter spring to spring away from the plate (31) and to become disengaged from the catch (69). Now the block (63) is at liberty to be pulled outwardly by the spring (67) and to assume an operative position relative to the contact (30). The latter continues to reciprocate and periodically engages with the contact (41) for closing the circuit due to the action of the tooth wheel (57). The length of time for which the switch formed by the two contacts (39) and (41) remains open and closed may be determined by the particular shape of the teeth on the gear wheel (57). If the bell (37) is connected into the circuit it will ring at intervals until the current is turned off or until the alarm clock is reset.

The clock mechanism and the bell, lamp and transformer are preferably enclosed in a housing (71) provided with a rear door (72) and with sound holes (73) in one of the sides thereof.

I claim:

1. In combination with a clock mechanism having a time indicating mechanism, an escapement control for the same and an alarm release associated therewith, an electric alarm device including a switch having two movable contact members, means associated with the alarm release for operating one of the contacts and means associated with the escapement control for operating the other contact.

2. In combination with a clock mechanism having a time indicating mechanism and an escapement control for the same, an electric alarm device including a switch having a movable contact member, a bell crank lever supporting the contact with one arm and a toothed wheel associated with the escapement control engaging the other arm for periodically opening the switch.

3. In combination with a clock mechanism having a time indicating mechanism and an escapement control for the same, an electric alarm device including a switch having a movable contact member, a bell crank lever supporting the contact with one arm and a toothed wheel associated with the escapement control engaging the other arm for

periodically opening the switch, the latter arm presenting an inclined face to the teeth of the wheel.

4. In combination with a clock mechanism
5 having a time indicating mechanism and an escapement control for the same, means for operating a lever to periodically open and close a switch comprising gravity means

tending to close the switch and a rotating toothed wheel associated with the escape- 10 ment control engaging the far end of the lever and periodically swinging the same away from the center of the wheel for opening the switch.

MANUEL HENRY RODRIGUES.