

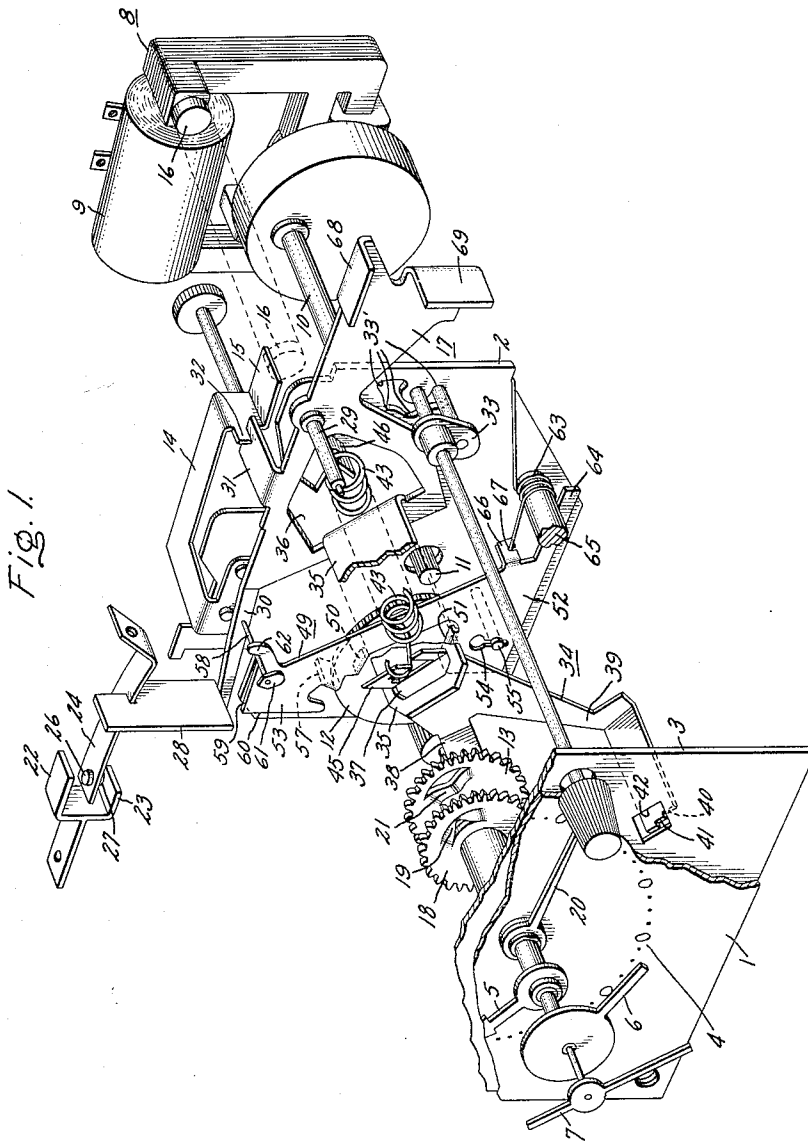
Aug. 1, 1961

H. M. DIMOND ET AL
ALARM CONTROL MECHANISM

2,994,183

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3 Sheets-Sheet 1

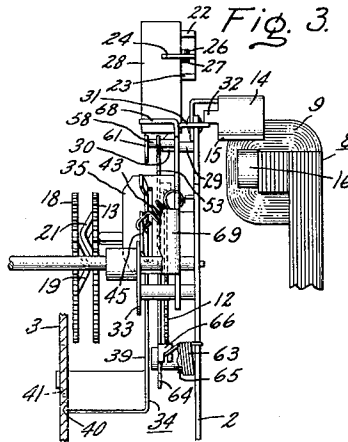
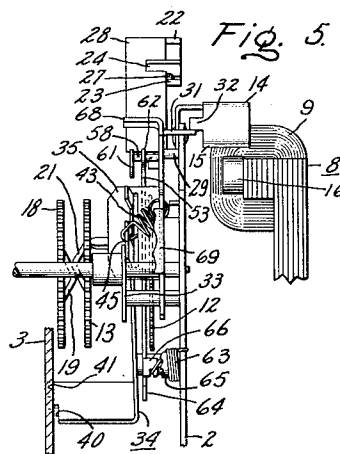
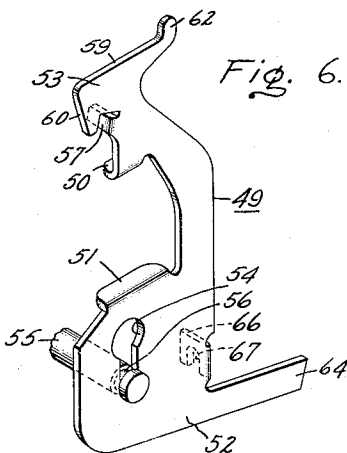


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Fig. 3.



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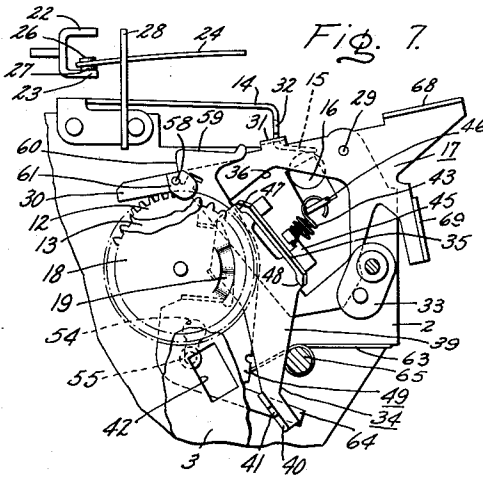
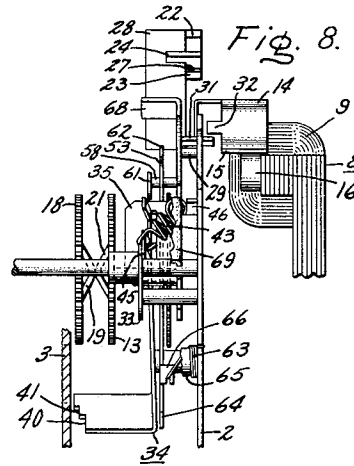
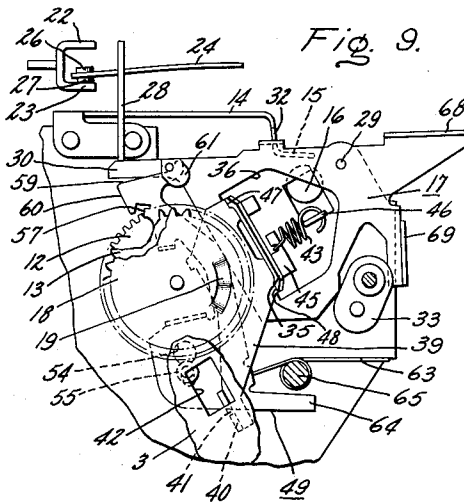
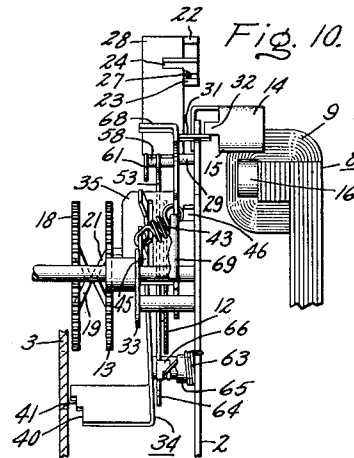
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3 Sheets-Sheet 3



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ALARM CONTROL MECHANISM

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Filed Feb. 12, 1958, Ser. No. 714,807
10 Claims. (Cl. 58—21.12)

This invention relates to an alarm control mechanism, and more particularly, to a temporary shut-off mechanism for an alarm clock.

In a co-pending application of Robert L. Boyles, Serial No. 605,032, filed August 20, 1956, and assigned to the same assignee as the instant invention, there is disclosed a time switch and alarm for controlling a radio and the like. As described in the above-mentioned application, a unique lever arrangement is provided for actuating a switch and for obstructing operation of an audible alarm vibrator.

Alarm clocks and timers which include a temporary alarm shut-off mechanism provide a valuable addition to the horological art. With such a mechanism, when the alarm sounds, a person awakened may actuate the temporary shut-off mechanism and return to sleep for a short period of time without fear of oversleeping, since the alarm will sound again after a short time interval. Our invention is concerned with such a temporary shut-off mechanism and the inclusion of such a mechanism in the device disclosed in the above-mentioned co-pending application.

Accordingly, it is a primary object of this invention to provide an improved low-cost reliable mechanism for temporarily shutting off an alarm having a minimum number of parts which may be easily manufactured.

It is a further object of this invention to provide an improved temporary alarm shut-off movement which may be uniquely and easily combined with the time switch and alarm disclosed in the above-mentioned patent application.

In accordance with one aspect of this invention, a timing mechanism comprises a gear rotatable at a relatively fast speed by the timing mechanism, and a plural position lever for permitting or obstructing actuation of an alarm. Spring means is provided for urging the plural position lever to one position to permit actuation of the alarm. All of the above-mentioned elements are disclosed in the aforementioned application. In order to achieve temporary alarm shut-off, a uniquely formed interval lever is provided for temporarily holding the plural position lever in another position against the force of the spring means. The interval lever includes a projection engageable between the teeth of the aforementioned gear to permit the interval lever to be moved as a function of time by the gear to thereby release the plural position lever from the interval lever after a predetermined short time interval to permit operation of the alarm. The above-mentioned spring means acting through the plural position lever also functions to urge the projection between the teeth of the gear when the interval lever is placed in its operative position for temporarily holding the plural position lever. By this arrangement, a very simple yet effective temporary shut-off means is achieved.

Further objects and advantages of our invention as well as other modifications and uses thereof will become apparent from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is an exploded perspective view of the operating mechanism of the time switch and audible alarm showing the switch in the "off" position and the temporary alarm shut-off means in an operative position;

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FIG. 2 is a partial front elevational view of the time switch and alarm mechanism shown in FIG. 1;

FIG. 3 is a partial side elevational view of the time switch and alarm mechanisms shown in FIG. 1;

FIG. 4 is a partial front elevational view of the time switch and alarm with the alarm set in the position shown in FIG. 2 after the switch has been closed automatically at the preset time and the temporary alarm shut-off mechanism is engaged for movement by the timing mechanism, but before the alarm is released by the temporary alarm mechanism and the latch;

FIG. 5 is a partial side elevational view of the time switch and alarm shown in FIG. 4;

FIG. 6 is a front perspective view of the interval lever and mounting stud of the temporary alarm shut-off mechanism;

FIG. 7 is a partial front elevational view of the time switch and alarm set in the position shown in FIG. 1 after the switch has been closed automatically and the alarm has been released by both the temporary alarm shut-off mechanism and the latch;

FIG. 8 is a partial side elevational view of the time switch and alarm shown in FIG. 7;

FIG. 9 is a partial front elevational view of the time switch and alarm showing the alarm temporarily shut off by the improved temporary shut-off mechanism; and

FIG. 10 is a side elevational view of the switch and alarm mechanism shown in FIG. 9.

Referring now to the drawings and first, particularly to FIG. 1, there is shown a time control device comprising a generally square casing 1 suitable for mounting in any desired manner on apparatus such as a radio receiver (not shown). This mechanism comprises a supporting structure including a rear plate 2, and a front plate 3 upon which is mounted a dial plate 4 having the usual clock indicia painted or otherwise generally centrally placed thereon. The clock is provided with hour, minute, and second hands 5, 6, and 7, respectively, mounted for movement over the dial and driven by a conventional timing device gear train.

The timing device may include any suitable form of timer motor here shown as a self-starting synchronous motor 8, a field coil 9 of which is connected to a source of regulated frequency alternating current. A terminal shaft 10 including a gear 11 fixed thereto extends through rear plate 2 for driving the hands of the clock and the time switch and alarm mechanism. In a conventional manner, minute hand gear 12 is connected to the timing device for driving minute hand 6, and hour hand gear 13 is suitably connected to the timing device for driving hour hand 5. A resilient magnetic vibrator 14 operated by leakage flux from the motor is arranged to have its free end portion 15 vibrate against a stator nut 16 and produce an audible alarm at all times when the motor is energized unless the vibrator is prevented from vibrating by a plural position lever 17 in a manner to be more fully described hereinafter.

A time set cam gear 18 having a projecting cam portion 19 located thereon is rotatably mounted on the supporting structure. The angular position of cam gear 18 is manually adjustable in a conventional manner and a hand 20 is connected to cam gear 18 for rotation therewith in order to indicate the time setting of cam gear 18. A cam surface 21 is also formed on hour hand gear 13. Gear 13 is rotatably mounted on the supporting structure as shown, and is axially moveable to actuate the time switch and alarm in a manner to be hereinafter more fully described. In a manner known in the art, at the time set by cam gear 18, cam surfaces 19 and 21 cooperate with each other to move gear 13 axially away from cam gear 18.

A three-position switch which may be utilized to control an apparatus such as a radio receiver is provided for

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actuation by the timing device. In the arrangement illustrated in FIG. 1, the switch comprises two fixed upper and lower switch contacts 22 and 23 spaced from each other. Fixed switch contacts 22 and 23 are electrically connected to each other and may be formed from a single U-shaped piece of conducting material. A moveable switch blade 24 fixed at one end thereof, is provided with two oppositely disposed contacts 26 and 27 formed on the other end thereof for cooperation with fixed switch contacts 22 and 23, respectively. Switch blade 24 is normally self-biased downwardly to one closed position with lower moveable contact 27 in abutting relation with the lower fixed switch contact 23. An insulated plate 28 is provided for moving resilient blade 24 upwardly for positioning contacts 26 and 27 between switch contacts 22 and 23 to open the switch and for further moving resilient switch blade 24 upwardly to another closed position with switch contact 26 in abutting relation with switch contact 22.

As more particularly described in the above-mentioned co-pending application of Robert L. Boyles, lever 17 is pivoted to the supporting structure at 29 and may be moved in a clockwise or counterclockwise direction to actuate both the switch and the alarm. As shown in FIG. 1, lever 17 is generally triangular shaped and is provided with an outwardly extending arm 30 for cooperating with insulated plate 28 to actuate the switch. An upper portion of lever 17 is provided with a rearwardly extending lug 31 for cooperating with a forwardly extending lug 32 which may be formed on vibrator 14 in order to obstruct operation of vibrator 14. A rotatable control cam 33 is provided for manually pivoting lever 17 clockwise about pivot pin 29 to a plurality of positions and for preventing lever 17 from moving counterclockwise beyond a set position. As shown in FIG. 1, a plurality of depressions 33' may be formed in rear plate 2 for selectively holding control cam 33 in one of a plurality of positions.

The means for manually opening the switch and automatically closing the same at the preset time will now be more particularly described. In the arrangement illustrated in FIG. 1, this mechanism comprises a generally Y-shaped latch 34 which is pivotally mounted on plural position lever 17. To achieve this, a forwardly extending lug 35 is bent from lever 17 so as to form an enlarged opening 36 in lever 17, and an aperture 37 is formed at the end of lug 35 for receiving the base of Y-shaped latch 34. As shown in FIG. 1, one of the arms 38 of Y-shaped latch 34 is considerably shorter than the other arm 39 of latch 34, and is provided for contacting a side portion of the axially moveable hour hand cam gear 13. The other arm 39 of Y-shaped latch 34 may be provided with a forwardly extending end portion having a plurality of steps 40, 41 formed thereon for cooperating with a generally rectangular hole 42 which may be cut in front plate 3. In the position shown in FIG. 2, it can be seen that step 40 cooperates with an edge of hole 42 to prevent counterclockwise rotation of lever 17 about pivot 29.

A tension spring 43 is provided for urging the two arms 38 and 39 of Y-shaped latch 34 forwardly as viewed in FIG. 1, for biasing lever 17 in a counterclockwise direction as viewed in FIG. 2, and for pivotally securing latch 34 to lever 17. In a manner to be more fully described hereinafter, spring 43 also uniquely combined with the temporary alarm shut-off mechanism to perform a plurality of additional functions. Spring 43 may be passed through enlarged opening 36 formed in lever 17, with one end thereof connected to a lug 45 formed at the end of the base of Y-shaped latch 34 and the other end thereof connected to an upstanding lug 46 formed in rear plate 2. Referring now to FIG. 2, it can be seen that since the point of connection of spring 43 to lug 46 is to the right of an imaginary line connecting lug 45 and pivot 29, spring 43 will urge lever 17 in a counterclockwise direction as viewed in FIG. 2. The end portion of the base of Y-shaped latch 34 may be reduced in width to form shoulders 47 and 48. Thus, the end portion of Y-shaped

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latch 34 is formed with a complementary portion for insertion in aperture 37 and for restricting inward movement of Y-shaped latch 34 in aperture 37. It can be seen that spring 43 urges shoulders 47 and 48 of latch 34 into contact with a side surface of lug 35 to pivotally secure latch 34 to lever 17.

Accordingly, with the parts in the positions shown in FIG. 1, spring 43 urges lever 17, and latch 34 which is pivoted thereto, counterclockwise so that step 40 formed on arm 39 contacts an edge of hole 42 to hold the switch in the open position shown in FIG. 1. As the time preset by cam gear 18 is approached, cam surface 21 will engage cam surface 19 to slide gear 13 rearwardly, thereby pivoting latch 34 about lug 35 to allow spring 43 to move latch 34 from step 40 to step 41 so that step 41 contacts an edge portion of hole 42, as shown in FIG. 4. At the same time, spring 43 pivots plural position lever 17 an increment in a counterclockwise direction so that insulated switch actuator plate 28 is moved downwardly by the spring bias of switch blade 24 until contact 27 abuts contact 23 to close the switch; however, such slight pivotal movement of lever 17 does not move lug 31 down far enough to enable end portion 15 of vibrator 14 to contact field nut 16 to sound the alarm. As shown in FIG. 8, continued rotation of cam gear 13 will cause cam surface 21 to move further up on cam surface 19 in order to slide gear 13 still further rearwardly. Thus, as shown in FIG. 7, latch 34 is moved far enough rearwardly so that step 41 will become disengaged from an edge portion of hole 42. This completely disengages latch 34 from hole 42 and therefore, spring 43 pivots lever 17 further in a counterclockwise direction to lower lug 31 far enough so that vibrator 14 may contact field nut 16 to thereby sound the audible alarm. In order to shut off the alarm, control cam 33 may be merely rotated clockwise from the position shown in FIG. 7 to cause a portion of cam 33 to abut lever 17 and raise lever 17 to the position shown in FIG. 4 to thereby shut off the audible alarm vibrator but permit the radio to continue to play. Continued rotation of control cam 33 in a clockwise direction will cause plural position lever 17 to be further lifted to the position shown in FIG. 2 to thereby shut off both the alarm and the radio. Still further rotation of control cam mechanism 33 in a clockwise direction will cause the plural position lever 17 to be further pivoted in a clockwise direction, to thereby close switch 22-26. Obviously, in this latter mentioned position, lug 31 is held high enough to prevent the alarm from sounding.

The structure so far described is illustrated and described in greater detail in the above-mentioned co-pending application of Robert L. Boyles, assigned to the assignee as the present invention. According to this invention, there is combined with the aforescribed time switch and alarm a uniquely designed and positioned interval lever arrangement for temporarily preventing actuation of the alarm.

Temporary alarm shut-off mechanism

Our improved mechanism for temporarily preventing vibration of audible alarm vibrator 14 after plural position lever 17 has been moved to the position shown in FIG. 7 by the above-described timing device will now be described. Such a mechanism is particularly useful for turning off the audible alarm buzzer 14 without fear of dozing off and oversleeping while the radio continues to operate since with such a temporary shut-off mechanism the alarm will sound again after a short time interval. Our improved temporary shut-off mechanism operates on and includes plural position lever 17. The temporary shut-off mechanism also includes minute gear 12, spring 43, and other parts of the timing device previously described. This improved temporary shut-off mechanism does not interfere with any of the previously described time switch mechanism, except to the extent that the

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operation of such temporary shut-off means temporarily takes over control of plural position lever 17.

As more particularly shown in FIGS. 1 and 6, our temporary shut-off mechanism includes an interval lever 49 which may be formed from a single piece of flat sheet material. Lever 49 is C shaped in order to permit it to partially surround the center stack of shafts for mounting gears 12, 13, and 18, and the hands of the clock. Lever 49 may be provided with two transversely extending spacers 50 and 51 extending from a side surface thereof for slidably engaging a side surface of minute gear 12 to suitably space lever 49 from minute gear 12. Two arms 52 and 53 extend from opposite ends of the C. Bottom arm 52 is preferably provided with a key hole slot 54 formed therein for assembling and loosely pivotally mounting lever 49 on a stud 55. As shown, stud 55 is provided with a circumferential groove 56 formed therein, for suitably receiving and guiding the edges of interval lever 49 adjacent to the elongated portion of key-hole slot 54. A transverse projection 57 may be integrally formed on interval lever 49 for selective engagement between the teeth of relatively fast moving minute hand gear 12 to permit interval lever 49 to be pivoted clockwise about pivot pin 55 as a function of time.

As shown in FIG. 1, plural position lever 17, according to this invention includes a forwardly extending pin 58 for cooperation with upper arm 53 of lever 49. As shown, upper arm 53 includes a generally horizontal upper surface 59 and a generally vertical left side surface 60 for slidable engagement with pin 58. A plate 61 may be fixed to the end of pin 58 for suitably guiding upper arm 53 on pin 58. A stop ear 62 may be integrally formed at the right end of surface 59 for cooperating with stop pin 58 to limit the distance interval lever 49 may move in a counter-clockwise direction. As more fully described hereinafter, the length of upper surface 59 as determined by the location of stop ear 62, fixes the time interval during which the alarm may be temporarily interrupted. As viewed in FIG. 7, side surface 60 of upper arm 53 cooperates with pin 58 to provide stop means for holding the interval lever 49 in an inoperative position.

A coil spring 63 is provided for pushing lever 49 upwardly on its grooved pivot 55 to cause upper surface 59 to abut pin 58 and for disengaging projection 57 from between the teeth of minute hand gear 12. Spring 63 is also provided for urging lever 49 in a counterclockwise direction about pivot pin 55 until ear 62 or side surface 60 abuts pin 58, or an outwardly extending portion 64 of lower arm 52 engages a post 65. As shown in FIG. 1, spring 63 may be dropped over post 65, and one end thereof may be positioned over rear supporting plate 2. An inwardly bent tab 66 having a notch 67 located therein may be integrally formed with interval lever 49 for receiving and holding the other end of spring 63. Spring 63 is weaker than spring 43 so that spring 43 and vibrator 14 acting through lever 17 may cause pin 58 to press downwardly on surface 59 to move transverse projection 57 between the teeth of gear 12 against the force of spring 63. Spring 43 and vibrator 14 function to cause pin 58 to slide downwardly along side surface 60 of interval lever 49 thereby allowing lever 49 to move upwardly under the influence of spring 62 to disengage projection 57 from the teeth of minute hand gear 12. Thus, spring 43 and vibrator 14 are uniquely combined with our improved temporary alarm shut-off mechanism to perform a plurality of additional functions.

A plurality of means may be provided for manually moving plural position lever 17 in a clockwise direction against the force of spring 43 to shut off the alarm and lift pin 58 above vertical side surface 60 of lever 49 to thereby allow lever 49 to temporarily hold plural position lever 17 in an alarm shut-off position. As shown in FIG. 1, these means include manual control cam 33 and forwardly directed tabs 68 and 69 which may be integrally formed with plural position lever 17. Re-

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ferring now to FIG. 7, it can be seen that tab 68 may be pushed downwardly, tab 69 may be pushed to the left, or cam 33 may be rotated clockwise to manually rotate plural position lever 17 in a clockwise direction about pivot pin 29. Such clockwise movement of plural position lever 17 raises pin stop 58 along the vertical side surface 60 of interval lever 49 to permit spring 63 to snap the interval lever 49 to the position shown in FIG. 2 where it is stopped by the engagement of stop ear 62 with pin 58. In this position, projection 57 of interval lever 49 is held above minute gear 12. When manual control lever 33 is rotated to its extreme counterclockwise position and any manual force on tabs 68 and 69 is released, spring 43 and vibrator 14 acting through plural position lever 17 forces pin 58 downwardly against the force of spring 63 to move interval lever 49 downwardly about pivot 55 thereby engaging projection 57 between the teeth of minute gear 12. Referring now to FIG. 9, rotation of minute gear 12 then moves the interval lever 49 in a clockwise direction and pin 58 riding on upper surface 59 of interval lever 49 holds the plural position lever up against the force of spring 43 and vibrator 14 to prevent rotation of plural position lever 17 in a counterclockwise direction thereby keeping the vibrator from sounding. The distance from stop ear 62 to side surface 60 is predetermined so that approximately 8 to 10 minutes elapse in moving interval lever 49 from the position shown in FIG. 9 to the position shown in FIG. 7. When interval lever 49 reaches the position shown in FIG. 7, plural position lever 17 is released, pin 58 being permitted to slide downwardly on the side surface 60 of interval lever 49. In this position, lug 31 on lever 17 is moved down far enough to permit vibration of audible alarm vibrator 15 against stator nut 16. As pin 58 rides off the edge of interval lever 49 and slides along side surface 60, the downward pressure on the interval lever by spring 43 is released and spring 63 raises lever 49 to the inoperative position shown in FIG. 7 so that projection 57 clears the teeth of minute gear 12. Manual means 33 may then be rotated in a clockwise direction one increment to the dotted line position shown in FIG. 2, to rotate plural position lever in a clockwise direction thereby lifting lug 31 to permanently shut off the alarm.

From the foregoing description it will be appreciated that our improved movement for providing temporary alarm shut-off comprises only four additional parts, a uniquely formed interval lever 49, a spring 62, a pin 58 attached to the plural position lever 17, and a pivot stud 55. Further, lever 49 may be easily formed in a stamping operation. Thus, an exceedingly simple, yet effective, temporary shut-off mechanism is obtained.

Operation of combined time switch and temporary shut off mechanism

If it is desired to have switch 24 for operating apparatus such as a radio receiver closed at some time in the future, say, three o'clock, and after the lapse of a short time interval, sounds the alarm vibrator, the knob at the rear of the timing mechanism is rotated to set hand 20 and cam gear 18, to the three o'clock position illustrated in FIG. 1, and control cam 33 is set in the position shown in FIG. 1; either knob may be set first. In rotating cam 33 to the position shown in FIG. 1, the cam is removed from the edge of plural position lever 17 with which it cooperates, and thus, no longer stops counterclockwise rotation of plural position lever 17 under the influence of spring 43 and vibrator 14. However, as cam 33 is moved to the position shown in FIG. 1, spring 43 urges step 40 on latch 34 into contact with an edge of hole 42, and thus, latch 34 prevents any significant rotation of lever 17 when control cam 33 is moved counterclockwise to the position shown in FIG. 1. In this position, as shown in FIG. 2, spring 63 urges interval lever 49 upwardly against pin 58 and projection 57 is disengaged from minute gear 12. Spring 63 also urges interval lever 49 in a counterclockwise direction to engage stop ear 62 with pin 58.

The mechanism can now operate to trip latch 34 and plural position lever 17 to the position shown in FIG. 4 to close the switch at three o'clock. The timing device rotates the clock hands toward three o'clock and at the same time, the timing mechanism rotates cam gear 13 clockwise. As the preset time is approached, the cam portions on gears 13 and 18 come into contact with each other and cam portion 21 rises on cam portion 19 thereby pivoting latch 34 about lug 35. At three o'clock latch 34 is moved far enough rearwardly to allow step 40 to become disengaged from the edge of hole 42 as shown in FIG. 4. Thus, spring 43 and vibrator 14 move lever 17, latch 34 and interval lever 49 downwardly until step 41 on latch 34 engages an edge of hole 42 and projection 57 on interval lever 49 engages between the teeth of minute gear 12. This slight counterclockwise movement of plural position lever 17 allows blades 24 to move contact 27 into abutting relation with respect to fixed contact 23 to close the switch. As the timing mechanism continues to rotate cam surfaces 21 and 19 on gears 13 and 18, respectively, move further into alignment with each other to thereby move gear 13 further rearwardly to disengage step 41 from the edge of hole 42. At the same time, rotation of minute gear 12 moves the interval lever 49 in a clockwise direction to slide pin 58 on upper surface 59 of interval lever 49 to release pin 58 from the top surface 59 of the interval lever 49 after a lapse of a predetermined short time interval. Thus, as shown in FIG. 4 both the temporary shut-off interval lever 49 and step 41 on latch 34 hold plural position lever 17 in the alarm shut off position. Preferably, the time interval of interval lever 49 as determined by the distance from stop ear 62 to vertical surface 60 is shorter than the time interval of step 41 as determined by the height thereof so that minute gear 12 moves interval lever 49 to the position shown in FIG. 7 before latch 41 is disengaged from the edge of hole 42. Thus, it can be said that in the timing operation thus far described, interval lever 49 merely goes through the motions without performing an effective function on either the switch or the audible alarm vibrator 14 since effective control of plural position lever 17 is maintained by latch 34. When step 41 of latch 34 is disengaged from the edge of hole 42, spring 43 moves plural position lever 17 and latch 34 counterclockwise to the position shown in FIG. 7 and vibrator 14 snaps down on field nut 16 and starts buzzing.

Referring now to FIG. 7, the buzzing will continue and switch 27, 23 will remain closed until control cam 33 is rotated clockwise to engage an edge portion of plural position lever 17 and move the lever clockwise to the position shown in FIG. 9. In this position arm 30 of plural position lever 17 holds the switch open and lug 31 formed on lever 17 engages lug 32 formed on vibrator 14 to prevent the vibrator from sounding. When lever 17 is moved to the position shown in FIG. 2 by a control cam 33, the switch is opened and interval lever 49 snaps to the position shown in FIG. 2. Thus, if it is desired to have the alarm sound again, after a short time interval while switch 27, 23 remains closed, control cam 33 is merely rotated back to the position shown in FIG. 9. Such motion causes spring 43 to urge pin 58 downwardly to engage projection 57 between the teeth of minute gear 12, thereby allowing interval lever 49 to be rotated as a function of time by minute gear 12. When interval lever 49 is being moved by gear 12, lever 49 holds plural position lever 17 high enough to prevent free end portion 15 of vibrator 14 from engaging field nut 16, but low enough so that contact 27 abuts contact 23 as shown in FIG. 9. Obviously, temporary alarm shut off may also be affected by pushing on either one of forwardly extending tabs 68 or 69 to rotate plural position lever in a clockwise direction to snap interval lever 49 to the position shown in FIG. 2 and then releasing tabs 68 and 69 to allow spring 43 acting through lever 17 to move projection 57 into engagement with minute gear 12 as shown in FIG. 9. It

can be seen that with the parts in the positions shown in FIGS. 9 and 10, cams 19 and 21 hold latch out of operative engagement with hole 42 thereby allowing interval lever 49 to effectively control plural position lever 17. As previously described, when the parts are in the position shown in FIG. 9, minute gear 12 rotates interval lever 49 as a function of time and interval lever 49 holds plural position lever 17 up in the position shown in FIG. 9, until pin 58 slides downwardly along vertical surface 60 of interval lever 49, thereby lowering lug 31 far enough to permit vibration of audible alarm vibrator 14 on field nut 16.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various other changes and modifications can be made therein without departing from the invention, and therefore, it is aimed in the appended claims to cover all such changes and modifications that fall within the true spirit and scope of the invention.

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

1. A temporary shut-off mechanism comprising a timing mechanism; a gear rotatable by said timing mechanism; a plural position lever for obstructing operation of the alarm; spring means for urging said plural position lever to one position to permit actuation of the alarm; an interval lever for holding said plural position lever in another position against the force of said spring means to temporarily prevent actuation of the alarm; said interval lever including a projection engageable between the teeth of said gear to permit said interval lever to be moved as a function of time by said gear to thereby release the plural position lever from said interval lever after a short time interval, said spring means acting through the plural position lever to urge said projection between the teeth of the gear; and a pivot stud for loosely pivotally mounting said interval lever, said interval lever including a key-hole slot for receiving said pivot stud.

2. In a timing device, an audible alarm vibrator, a switch, a plural position lever for actuating said switch and for obstructing operation of said alarm vibrator, means driven by said timing device for automatically moving said lever in one direction to sequentially close said switch at a preset time and after a lapse of a predetermined time interval permit operation of said alarm vibrator, manual means positioned adjacent to said lever for moving said lever in an opposite direction to shut off the alarm and open said switch, and short interval means including a lever for holding said plural position lever in a position to keep the vibrator from sounding for a short time interval.

3. In a timing device, an audible alarm vibrator, a switch, a minute gear rotatable at one revolution per hour by said timing device; a plural position lever for obstructing operation of the alarm; plural position latch means pivoted to said lever; spring means connected to said latch for urging said latch and lever in one direction to one position to permit actuation of the alarm; and means driven by said timing mechanism for successively disengaging latch means to thereby allow said spring means to sequentially operate said switch and said alarm vibrator; and an interval lever for holding said plural position lever in another position against the force of said spring means to temporarily prevent actuation of the alarm, said interval lever including a projection engageable between the teeth of said gear to permit said interval lever to be moved as a function of time by said gear to thereby release the plural position lever from said interval lever after a predetermined short time interval, said spring means acting through the plural position lever to urge said projection between the teeth of the gear.

4. A temporary alarm shut-off mechanism comprising a timing mechanism; a gear rotatable by said timing mechanism; a plural position lever for obstructing operation of the alarm; spring means connected to said plural

position lever for urging said plural position lever to a first position to permit actuation of the alarm; an interval lever for selectively holding said plural position lever to temporarily interrupt actuation of the alarm; second spring means connected to said interval lever for pivotally urging said interval lever in a direction for temporarily holding said plural position lever; stop means on said plural position lever for holding the interval lever in an inoperative position when the plural position lever is in said first position; means for manually moving said plural position lever from said first position to shut off the alarm and release said stop means thereby permitting said interval lever to move in said one direction under the force of said second spring means in position to temporarily hold said plural position lever; stop means on said interval lever for limiting the distance the interval lever may move in said first direction to thereby fix a predetermined short time interval; a projection formed on said interval lever engageable between teeth of said gear to permit the interval lever to be returned to the said inoperative position as a function of time to thereby release the plural position lever from the interval lever after a predetermined short time interval; said first spring means acting through said plural position lever to urge said projection between the teeth of said gear.

5. A temporary alarm shut-off mechanism comprising a timing mechanism; a supporting structure; a gear rotatable by said timing mechanism; a plural position lever for obstructing operation of the alarm; spring means connected to said plural position lever for urging said plural position lever to a first position to permit actuation of the alarm; said plural position lever including a pin formed thereon; a generally C shaped interval lever for selectively holding said plural position lever to temporarily interrupt actuation of the alarm; a pivot stud fixed to said supporting structure for pivotally mounting said C shaped interval lever to said supporting structure; a keyhole slot formed in said C shaped lever for loosely receiving said pivot stud; said C shaped lever including a transversely extending spacer formed on a side surface thereof for slidably engaging a side surface of said gear for locating said C shaped interval lever; said supporting structure including a post; second spring means positioned over said post connected at one end thereof to said interval lever for pivotally urging said interval lever in one direction for temporarily holding the plural position lever; a first arm formed at one end of said interval lever for cooperating with said post for limiting movement of said C shaped lever by said second spring means; a second arm having an upper surface and a side surface at the other end of said C shaped interval lever; said pin formed on said plural position lever providing stop means for cooperation with the side surface of said second arm for holding said interval lever in an inoperative position when said plural position lever is in said first position; means for manually moving said plural position lever from said first position to shut off the alarm and release said stop means thereby permitting said interval lever to temporarily hold said plural position lever; stop means formed on the upper surface of said second arm to limit the distance said interval lever may move in said first direction to thereby fix a predetermined short time interval; a projection integrally formed on said interval lever engageable between teeth of said gear to permit said interval lever to be returned to said inoperative position as a function of time; said first spring means acting through said plural position lever including said pin to urge said projection between the teeth of said gear.

6. A temporary alarm shut off mechanism comprising: a timing mechanism, a gear rotatable by said timing mechanism, a resilient vibrator arm, plural position lever means having an alarm on position out of engagement with said vibrator arm and an alarm off position in engagement with said vibrator arm, spring means for

urging said plural position lever means to the alarm on position to permit actuation of the alarm, interval lever means, pivot means for rotatably mounting said interval lever means, stop means formed on said plural position lever means, stop means formed on said interval lever means for abutting the stop means formed on said plural position lever means for holding said plural position lever means against the force of said spring in the alarm off position to temporarily prevent actuation of the alarm, said interval lever means being movable as a function of time by said gear to move said stop means on said interval lever means with respect to the stop means formed on said plural position lever means to permit said spring to move the plural position lever means to the alarm on position to thereby permit actuation of the alarm.

7. A temporary alarm shut off mechanism comprising: a timing mechanism, a gear rotatable by said timing mechanism, a resilient vibrator arm, plural position lever means having an alarm on position out of engagement with said vibrator arm and an alarm off position in engagement with said vibrator arm, spring means for urging said plural position lever means to the alarm on position to permit actuation of the alarm, interval lever means, pivot means for rotatably mounting said interval lever means, stop means formed on said plural position lever means, stop means formed on said interval lever means for abutting the stop means formed on said plural position lever means for holding said plural position lever means against the force of said spring in the alarm off position to temporarily prevent actuation of the alarm, said interval lever means including a projection engageable between the teeth of said gear to permit said interval lever means to be moved as a function of time by said gear to move said stop means on said interval lever means with respect to the stop means formed on said plural position lever means to permit said spring to move said plural position lever means to the alarm on position to thereby permit actuation of the alarm, said spring means acting through the plural position lever means to urge said projection between the teeth of said gear.

8. A temporary alarm shut off mechanism comprising: a timing mechanism, a gear rotatable by said timing mechanism, a resilient vibrator arm, plural position lever means having an alarm on position out of engagement with said vibrator arm and an alarm off position in engagement with said vibrator arm, spring means for urging said plural position lever means to the alarm on position to permit actuation of the alarm, interval lever means, pivot means for rotatably mounting said interval lever means, stop means formed on said plural position lever means, stop means formed on said interval lever means for abutting the stop means formed on said plural position lever means for holding said plural position lever means against the force of said spring in the alarm off position to temporarily prevent actuation of the alarm, said interval lever means being movable as a function of time by said gear to move said stop means on said interval lever means with respect to the stop means formed on said plural position lever means to permit said spring to move the plural position lever means to the alarm on position to thereby permit actuation of the alarm, and means for manually moving said plural position lever means to shut off the alarm to thereby permit the interval lever means to hold said plural position lever means in said alarm off position.

9. A temporary alarm shut off mechanism comprising: a timing mechanism, a gear rotatable by said timing mechanism, a resilient vibrator arm, plural position lever means having an alarm on position out of engagement with said vibrator arm and an alarm off position in engagement with said vibrator arm, spring means for urging said plural position lever means to the alarm on position to permit actuation of the alarm, interval lever

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means, pivot means for rotatably mounting said interval lever means, stop means formed on said plural position lever means, stop means formed on said interval lever means for abutting the stop means formed on said plural position lever means for holding said plural position lever means against the force of said spring in the alarm off position to temporarily prevent actuation of the alarm, said interval lever means including a projection engageable between the teeth of said gear to permit said interval lever means to be moved as a function of time by said gear to move said stop means on said interval lever means with respect to the stop means formed on said plural position lever means to permit said spring to move said plural position lever means to the alarm on position to thereby permit actuation of the alarm, said spring means acting through the plural position lever means to urge said projection between the teeth of said gear, said stop means on said plural position lever means being arranged for cooperation with the interval lever means for holding said interval lever means disengaged from said gear.

10. A temporary alarm shut off mechanism comprising: a timing mechanism, a gear rotatable by said timing mechanism, a supporting structure including a front plate and a rear plate, said gear being rotatably supported between said front plate and said rear plate, a resilient vibrator arm mounted on said rear plate and extending behind said rear plate, plural position lever means having

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an alarm on position out of engagement with said vibrator arm and an alarm off position in engagement with said vibrator arm, spring means for urging said plural position lever means to the alarm on position to permit actuation of the alarm, interval lever means, pivot means extending between said front plate and said rear plate for rotatably mounting said interval lever means, stop means on said plural position lever means, stop means on said interval lever means for abutting the stop means on said plural position lever means for holding said plural position lever means against the force of said spring in the alarm off position to temporarily prevent actuation of the alarm, said interval lever means being movable as a function of time by said gear to move said stop means on said interval lever means with respect to the stop means on said plural position lever means to permit said spring to move the plural position lever means to the alarm on position to thereby permit actuation of the alarm.

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