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REPEATING ALARM CLOCK

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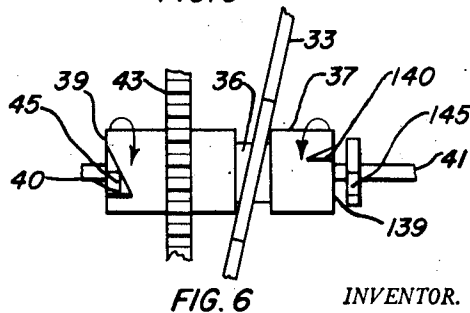
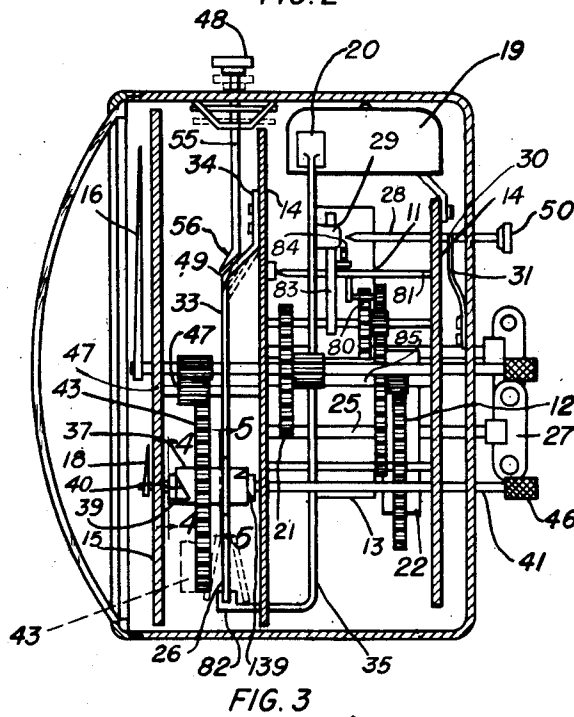
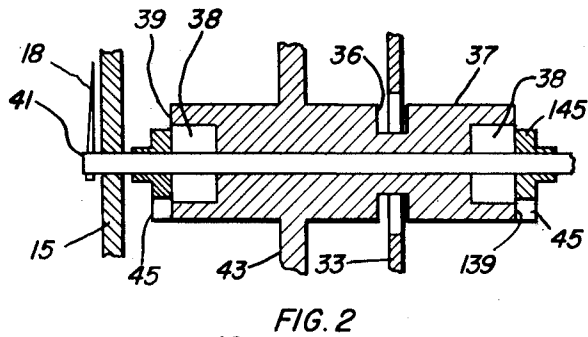
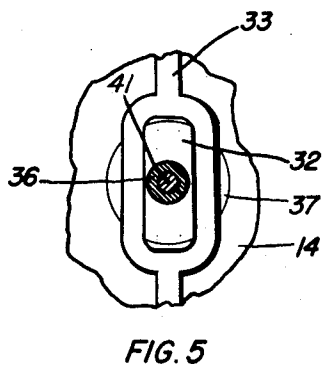
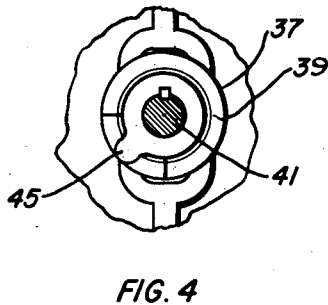
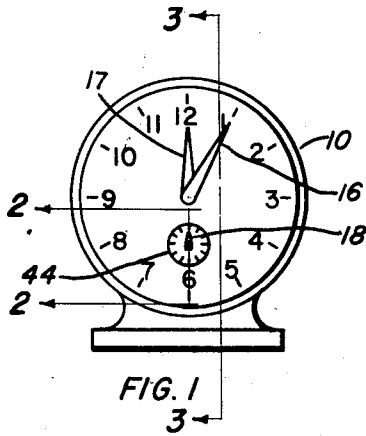


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REPEATING ALARM CLOCK

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4 Claims. (Cl. 58—21.11)

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This invention relates to horological apparatus and more particularly to alarm clocks and the control for the alarm.

The customary alarm has a mechanism that sets off the alarm and allows it to run for a definite period, if mechanically arranged, or continuously if electrically energized. The alarm may be manually shut off in either instance by the operator while the alarm is signaling, by pushing in a rod-operated catch. The practical objection to this lies in the fact that the operator may be awakened by the alarm, and after shutting it off, go off to sleep again, and wake eventually at a time much later. Since the object of the alarm is usually to waken the user at a certain time and have him get up or do something, his going back to sleep after shutting off the alarm and awakening later offsets any advantages that the clock may have in this regard. Appreciating the frailty of human nature and its tendency to caused tired individuals to oversleep, this invention is designed to anticipate this situation by providing an alarm clock with a repeatedly actuated alarm mechanism, that will operate at predetermined intervals. This arrangement allows the user to selectively shut off the first alarm through the use of a temporary stop, or to use the final stop to shut off the mechanism so the alarm will not be repeated. When the user desires to sleep after the first alarm is sounded he shuts off the first alarm through the use of the temporary stop, and goes back to sleep until the second alarm is sounded. He stops the second alarm by using the final stop. The purpose of the repetition is to permit the clock to resound the alarm if it should be shut off by the user and neglected by him, so that it will serve as a reminder.

Therefore it is an object of this invention to provide a new and improved alarm clock mechanism that will avoid one or more of the disadvantages and limitations of the prior art.

Another object of the invention is to provide a new and improved alarm clock mechanism that will have a repeating alarm that will sound at different intervals, after being shut off, so the user can be warned or reminded several times.

A further object of the invention is to provide an alarm clock that will repeat its signals at various times according to the requirements of the user.

Other objects will become apparent as the invention is more fully set forth.

For a clearer understanding of the invention its objects and the principles thereof, reference is made to the attached drawings. These drawings when used in conjunction with the following description outline a particular form of the invention by way of example, not in limitation, while the claims emphasize the scope of the invention.

Referring to the drawings:

Figure 1 is a front elevation of an alarm clock embodying this invention;

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Figure 2 is a sectional view taken along line 2—2 of Figure 1;

Figure 3 is a sectional view taken along line 3—3 of Figure 3;

Figure 4 is a sectional view taken along line 4—4 of Figure 3;

Figure 5 is a sectional view taken along line 5—5 of Figure 3, and

Figure 6 is an enlarged view of the shifter mechanism used in this invention.

Similar reference numerals relate to the same parts throughout the drawings.

In the construction shown in the drawings, a conventional clock housing 10 contains the general works 11 of a clock, including the various gears 12, the main spring 13 and the supporting frame 14. These works also include the customary balance wheel 33 mounted on shaft 81, the anchor 84 and the escapement wheel 80. The face 15 of the clock has a minute hand 16 and an hour hand 17, and a hand or indicating device 18 for indicating the time at which the alarm is to sound. The alarm consists of a bell 19 which is struck at predetermined intervals by a hammer 20 operated by a mechanism and gear train 21 through the action of a spring 22 and controlled by a ratchet and pawl and a shaft 25 for winding the spring 22 through the use of a key 27. The alarm mechanism is mounted on the frame 14 as are the general works and the frame is extended suitably to hold it in a convenient position. The alarm mechanism is controlled by a flat spring shifter member 33 attached on one end 34 to the framework 14 with a catch 26 formed at the other end. The catch 26 engages the end 82 of the hammer rod 35 so it and the hammer cannot vibrate, unless released, by gear 43 and shifter 33, when the gear 43 is revolved by works 11. When the catch 26 is pushed from the neutral position shown in Figure 3, the hammer 20 is free to strike the bell 19 to give out the alarm, through the action of the spring 22 and gear train 21, because the catch 26 has moved out of engagement with the end 82 of the hammer rod 35 thus permitting the hammer rod 35 to vibrate in a plane parallel to the frame 14 and to sound the first alarm by causing the hammer 20 to strike the bell 19. The shifter member 33 normally is positioned in neutral with its lower end 26 engaging the end 82 of the hammer rod 35 to restrain the hammer 20 from striking the bell 19 when the alarm lock 28 is not positioned in the lug 29 attached to the hammer rod 35. This hammer rod is pivoted between its ends on a shaft 85. The alarm lock 28 is provided with a groove 30 that acts as a stop when the lock 28 is pulled out of engagement with the lug 29 and contacted by spring 31. The shifter 33 is provided with an elongated opening 32 that fits around the undercut portion 36 of the cam component 37. The catch 26, which is fashioned from the end of the spring shifter 33, will move out of engagement with the end 82 of the ham-

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mer rod 33, only when it is allowed to do so by an appropriate lateral motion of the cam element 37 along the shaft 41, which lateral motion will occur only when the button 48 is out and the cut 40 is aligned with the dog 45, or when button 48 is in and the undercut 140 is aligned with the dog 145. The ends of the cam component 37 are counterbored at 38 and have their ends faced off square at 39 and 139 and are provided with an angular undercut as shown at 40 and 140. The cam component 37 is slidably mounted on an alarm setting shaft 41 and is rotated by a gear 43 attached thereto. The alarm shaft 41 is also provided with a hand 18 to designate the hour set out on the alarm dial 44 at which the alarm is to sound. The shaft 41 is also provided with dogs 45 and 145 which are affixed thereto against lateral or relative rotary movement. When it is desired to use the alarm portion of the clock, the knob 46 attached to shaft 41 is turned until the alarm hand 18 points to the hour selected on dial 44, the gear 43 is rotated by long gear 47 actuated by the works 11. As the gear 43 rotates the cam component 37, the face 39 presses against the face of the dog 45 and prevents the cam element 37 from being moved laterally along shaft 41 by the tension of the spring shifter 33. When the movement of the spring shifter is prevented, the catch 26 thereof is kept in engagement with the end 82 of the hammer rod 35, thus preventing the alarm from sounding until the undercut 40 is aligned with the dog 45. When this occurs, the cam component 37 is moved laterally along shaft 41 by the shifter 33 a distance sufficient to allow the catch 26 to move out of engagement with the end 82 of the hammer rod 35, thus permitting the said rod and its hammer 20 to strike the bell 19 when the button 50 is in the out position as shown in Figure 3. When the person is awakened he presses on the button 48 which moves an alarm stop 55 downward so that the bent or lug portion 56 on the stop 55 will press against a hump 49 and move the shifter and cam component towards the dog 145 so that the face 139 will ride against the face of the dog 145 until the cut 140 is aligned therewith to allow the end 26 of the shifter 33 to be disengaged and the hammer to strike the bell 19 at an interval preferably fifteen minutes after the first alarm has been sounded. To shut off the second alarm the button 50 is pushed in so the alarm lock 28 is engaged with the lug 29. The cuts 40 and 140 are preferably set 15 minutes out of phase with each other, the dogs 45 and 145 are preferably aligned, but other intervals may be selected between the first and second alarm.

Thus in the general operation of the clock, its works 11 actuate it in a conventional manner to turn the minute hands through their usual cycles.

While but one general form of the invention is shown in the drawings and described in the specification, it is not desired to limit this application for patent to this particular form, as it is appreciated that other forms of construction could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. In combination with a clock mechanism, an alarm system comprising a gong, a hammer for striking said gong, mechanism constantly tending to actuate the hammer and means for alternately constraining and releasing said mechanism

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including a cam having a pair of oppositely located faces, said cam being constantly rotated by the clock mechanism, an alarm setting shaft extending through said cam and on which said cam is slidably and rotatably mounted, means on said shaft for selectively engaging the opposite faces of the cam, a shifter engaging said cam and controlled thereby, locking means between said shifter and hammer, said locking means normally preventing actuation of the hammer to strike the gong and said locking means releasing the hammer to strike the gong upon rotation of the cam to a predetermined setting of the aforesaid alarm setting shaft.

2. In combination with a clock mechanism, an alarm system comprising a gong, a hammer for striking said gong, mechanism constantly tending to actuate the hammer and means for alternately constraining and releasing said mechanism including a double-faced cam constantly rotated by the clock mechanism, each of the faces having a groove thereon, an alarm setting shaft extending through said cam and on which the cam is slidably and rotatably mounted, a pair of dogs secured to said shaft adjacent, and respectively cooperating with, each of the faces of the cam, said dogs being predeterminedly positioned by said alarm setting shaft, a shifter engaging said cam and controlled thereby, locking means between said shifter and hammer, said locking means normally preventing actuation of the hammer to strike the gong and said locking means releasing the hammer to strike the gong upon engagement of one of the dogs in the groove of its adjacent cam face, hand operated means for relocking the shifter to the hammer to stop the initial actuation of the hammer, said hammer being again freed of the shifter to again strike the gong upon continued rotation of the cam and engagement of the second dog with the groove in the adjacent cam face, and additional hand means for immobilizing the hammer upon its second actuation.

3. The combination set forth in claim 1 wherein the cam is provided with an undercut portion forming shoulders on each side thereof, and the shifter has an elongated opening straddling the undercut portion, whereby the shifter alternately contacts the shoulders upon rotation of the cam and is successively shifted thereby to release the hammer to strike the gong, as aforesaid.

4. The combination set forth in claim 2 wherein the cam is provided with an undercut portion forming shoulders on each side thereof, and the shifter has an elongated opening straddling the undercut portion whereby the shifter alternately contacts the shoulders upon rotation of the cam and is successively shifted thereby to release the hammer to strike the gong, as aforesaid.

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