July 19, 1966 P. M. TUREL 3,261,157

TIMEPIECE ALARM MECHANISM

Filed Oct. 20, 1964 2 Sheets-Sheet 1

FIG. 1

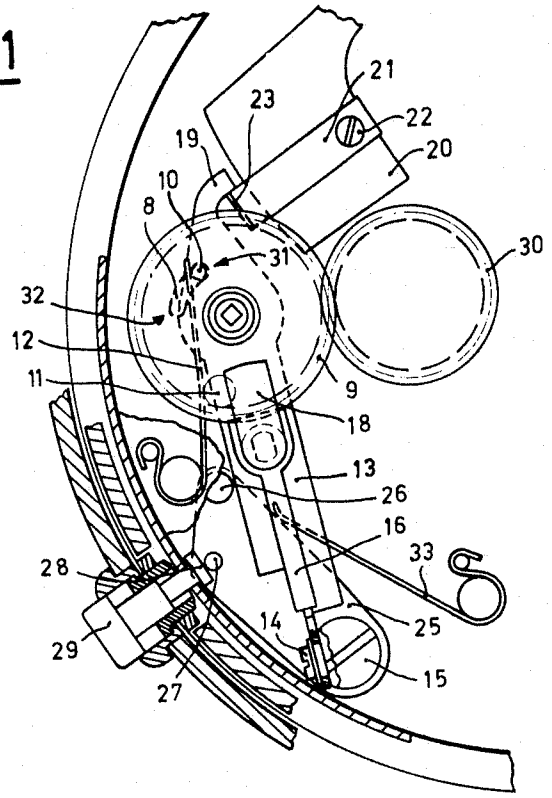
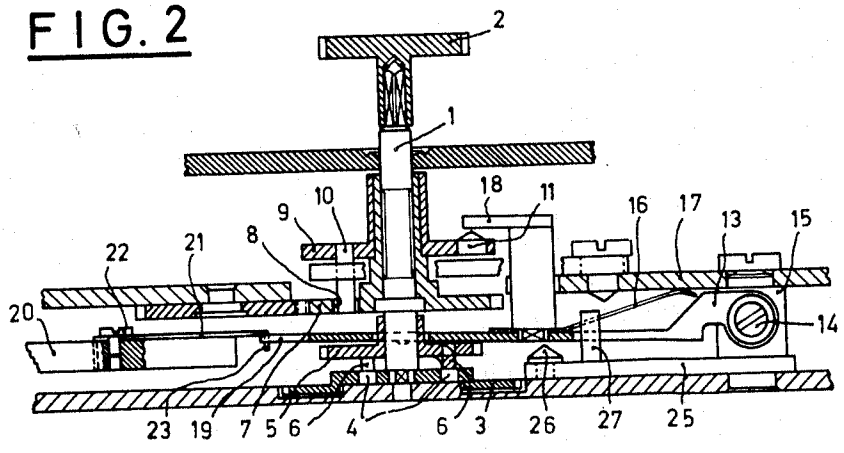


FIG. 2



July 19, 1966 P. M. TUREL 3,261,157

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Filed Oct. 20, 1964 2 Sheets-Sheet 2

FIG. 3

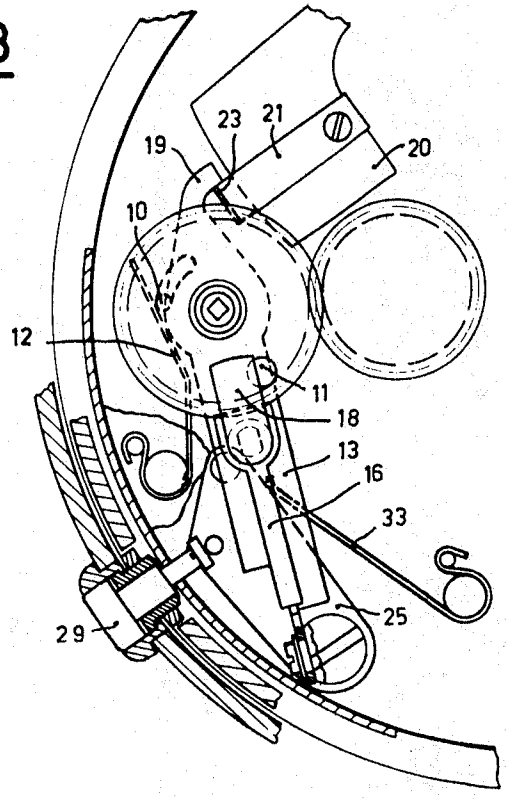
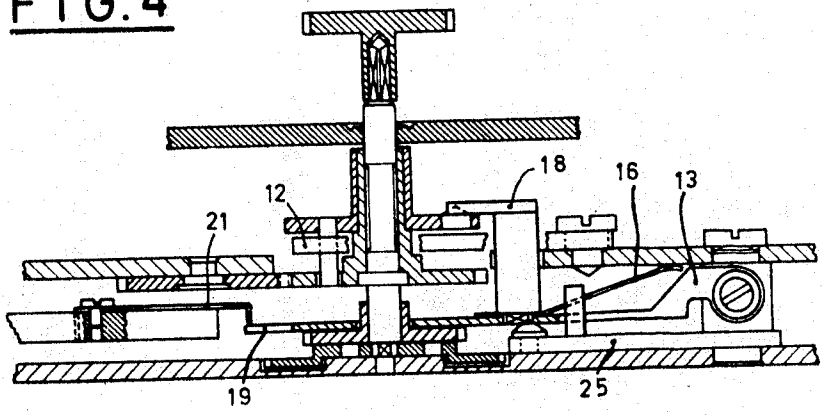


FIG. 4



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TIMEPIECE ALARM MECHANISM

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3 Claims. (Cl. 58—21.15)

Alarm clocks of a conventional type include alarm mechanisms adapted to repeat the alarm signal every morning, provided the user has previously rewound the driving spring and has released the alarm mechanism.

In certain improved structures, the winding of the spring releases the bell so as to cut out one of the daily operations required for the setting of the alarm.

Various other devices are known, wherein a single winding of the spring maintains the alarm mechanism seven days in sequence. These often include a cam limiting to about 10 seconds each ringing of the alarm and replacing thereafter the parts in a position such that they may operate again after the next release. A device of this type has the drawback that it does not simultaneously return into its release position the knob through which the ringing of the alarm can be stopped by hand and consequently it is not possible to repeat the alarm if it has been previously interrupted through manual action on said knob.

The present invention has for its object an alarm time-piece of the type including a knob through which it is possible to manually interrupt the ringing of the alarm while a mechanism provided with an alarm lever adapted to be shifted transversely with reference to the plane of the movement under the action of the alarm wheel and of the hour wheel limits to a predetermined angle the rotation of the alarm barrel. According to the invention, the knob provided for cutting off the ringing of the alarm produces the rotation of a yoke rocking in a plane parallel with that of the movement so as to engage the alarm lever which stops the hammer and holds said yoke fast until the hour wheel raises in its turn said alarm lever whereupon a spring returns the rocking yoke and the hand-operable knob (stopping the movement of the alarm) into their initial positions.

The accompanying drawings illustrate by way of example an embodiment of the invention.

FIGS. 1 and 2 are respectively a plan view and a sectional view through line II—II of FIG. 1 of the arrangement in its inoperative position, while

FIGS. 3 and 4 are corresponding views showing it when operative.

In this eight day alarm, a mechanism limits to a predetermined number of revolutions the rotary movement of the alarm barrel as provided by the stop wheel **9** acting on the alarm lever **13** which holds the alarm hammer **20** fast. A hand-operable knob **29** allows stopping the ringing of the alarm. The axial shifting of the hour wheel **5** produces each time the alarm has rung and each time said ringing has been cut off by hand, a shifting of the alarm lever **13** which allows the different parts to return to their starting positions under the action of the return springs **12** and **33**.

As illustrated in FIGS. 1 and 2, the alarm mechanism includes a spindle **1** of which the end extending through the bottom of the time-piece is provided with a time setting knob **2**. On said spindle rigid with the alarm wheel **3**, the web of which is provided with two notches **4**, are loosely fitted the hour wheel **5** carrying two projections **6**. The alarm-controlling wheel **7** is provided with an arcuate opening **8** and forms a sector of an annulus coaxial with the spindle **1** and a stop wheel **9** carrying on

its lower surface a cylindrical pin **10** and on its upper surface a conical stud **11**. The spring **12** extends across the path of the pin **10**.

The alarm-releasing lever **13** terminating with the tail-piece **19** is pivotally secured to a screw **14** provided with a bearing surface engaging a pillar **15** of the time-piece movement, said lever engaging the upper surface of the hour wheel **5** under the action of a blade spring **16** fitted under the bridge **17** of said movement. An angle bar **18** rivetted to the lever **13** includes a horizontal section located above the path of a conical stud **11**. The alarm hammer **20** is adapted to rock in the plane of the movement and carries on one surface a spring **21** secured by a screw **22** while its outer end **23** is folded at right angles. A yoke **25** pivoting round the pillar **15** carries on its upper surface a conical stud **26** and also a cylindrical pin **27** engaged by the shank **28** forming a coaxial extension of the pusher knob **29** which cuts off the ringing of the alarm. A wheel **30** meshes, on the one hand, with the alarm wheel **7** and, on the other hand, with a gear connecting it with the barrel and with the escapement of the alarm system which is not illustrated.

FIG. 1 illustrates the mechanism in the position assumed by it after the automatic interruption of the ringing of the alarm, said mechanism being thus ready to produce the next signal. The hour wheel **5** is spaced with reference to the alarm wheel **3** under the action of the projections **6** carried by said wheel **5**. The lever **13** which engages permanently the hour wheel **5** is thus in a raised position for which its tail piece **19** holds the hammer fast through the depending section **23** of the spring **21**. The spring **12** holds the pin **10** on the stop wheel in contact with one end **31** of the opening **8** in the alarm power wheel **7**.

By reason of the rotation of the hour wheel **5**, the projections **6** drop at the desired moment of the alarm into the notches **4** of the alarm wheel **3**. The lever **13** urged by its spring **16** follows the downward movement of the hour wheel and carries along with it the angle bar **18** rigidly secured to its upper surface. The horizontal section of said angle bar is then flush with the stop wheel **9**, while the tail piece **19** of the lever **13** moves out of the path of the spring **21** with depending section **23** acting on the hammer **20**. The latter thus released is now subjected to the action of the barrel spring, starts rocking and produces the alarm signal. The rotation of the alarm mechanism drives through the wheel **30** the alarm wheel **7**. The end **32** of the opening **8** in wheel **7** which is opposed to the end **31** reaches the pin **10** and now the stop wheel **9** is carried along until the conical stud **11** thereon meets the horizontal section of the angle bar **18** and raises said angle bar together with the lever **13** with which it is rigid. The tail piece **19** of said lever **13** is thus returned into the path of the spring **21** with depending section **23** cooperating with the hammer **20** so as to hold the latter fast.

The ringing of the alarm is consequently stopped at that moment, its duration being limited to the angle of unwinding of the barrel leading to the shifting of the stud **11** from the position occupied in FIG. 1 to that occupied in FIG. 3, so as to lift the angle bar **18**. A few hours after said automatic interruption, the hour wheel is raised again above the alarm wheel **3** and reengages the lever **13** which is urged against it by the spring **16** so as to raise the angle bar **18** from conical stud **11**. The stop wheel **9** is consequently released and, by reason of the action of the spring **12** on the pin **10**, said wheel **9** is caused to rotate and to return into the position illustrated in FIG. 1.

In order to interrupt the ringing of the alarm, the user may exert a pressure on the knob **29** which, through the agency of the shank **28** and of the pin **27**, rocks the yoke **25** round the pillar **15**. The conical stud **26** on the yoke

engages therefore the lower surface of the lever 13 and raises it. The tail piece 19 of said lever 13 is thus inserted in the path of the spring 23 acting on the hammer and interrupts the ringing of the alarm. The yoke is held fast in the position assumed by it by reason of the pressure exerted by the spring 16 on said conical stud 26. When, after a few hours of operation, the hour wheel moves again away from the alarm wheel, the lever 13 is raised further and the yoke 25 is released. Under the action of its spring 33, the yoke returns into its starting position (FIG. 1) while urging the stop-controlling knob 29 back into its inoperative position.

The alarm time piece thus executed with a provision of movement for seven days ensures a reliable operation for the user since the mechanism prepares, after each manual or automatic stopping of the ringing of the alarm, the next alarm period and cuts out the necessity of any manual operation on the stop-controlling knob.

What I claim is:

1. In an alarm time-piece including a movement, an alarm mechanism, an alarm lever operatively connected with the alarm mechanism to normally lock the latter and adapted to be shifted positively by the movement transversely of the movement at a predetermined adjustable moment to transiently release the alarm mechanism, the combination of a manually operable stop-controlling knob, a yoke adapted to pivot in a plane parallel to the movement, between a position slightly to one side of and underneath the alarm lever and a position registering vertically with the latter to be urged by said knob when depressed into its last-mentioned position to engage the alarm lever when in its alarm-releasing position and raise the latter into its alarm-locking position and hold it therein, a spring urging the alarm lever into its alarm-locking position for engagement with the yoke in its last-mentioned position, the next release of the alarm lever by the movement disengaging the yoke with reference to the latter, and elastic means urging the yoke when disengaged from the alarm lever back into its starting position to thereby also return the knob into its starting position.

2. In combination in an alarm time piece having a movement with an hour wheel; an alarm mechanism; an alarm lever operatively connected with said alarm mechanism to normally lock the latter and adapted to be shifted transversely of said movement by the axial displacement of said movement at a predetermined adjustable moment to transiently release said alarm mechanism;

(A) a manually operable-stop controlling knob slidably mounted in said time piece and able to assume depressed and pulled-out positions in respect thereto;

(B) a yoke pivotably mounted on said movement in contact with said knob and adapted to pivot in a plane parallel to said movement and to engage said alarm lever upon depressing said knob to set said alarm lever back into alarm-locking position until its next release by said movement; said release disengaging said alarm-lever from said yoke, and

(C) spring means in contact with said yoke for urging said yoke when disengaged from said alarm lever, against said knob and thereby pushing said knob back to its pulled-out position.

3. The combination of claim 2, wherein said yoke has a stud on its upper surface and a cylindrical pin, said stud being adapted to engage said alarm lever to raise the same and said pin being adapted to engage said knob.

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GERALD F. BAKER, *Examiner.*