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ALARM WATCH

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This invention relates to alarm watches and the like, and is concerned with the means therein whereby an alarm is given.

The invention consists in an alarm watch characterized in that it has a mechanism which permits at will adjustment of at least two different sound intensities, irrespective of whether the alarm watch is worn or not.

The purpose of the wrist or pocket alarm watch is to awaken or warn the wearer.

The inconvenience exhibited by known alarm watches in which the alarm has only one sound intensity consists in that they are relatively very noisy.

When, for example, the wearer of the alarm watch is at a meeting, it can be very unpleasant for him if his neighbor's attention is attracted, at the same time as his own, by the high sound intensity of his alarm.

The alarm watch according to the present invention avoids this inconvenience, for it has the property of warning tactfully and with a high or reduced intensity at will.

The drawing shows an exemplified embodiment of the invention.

Figure 1 shows a plan of a drive mechanism in an alarm watch according to the invention.

Figure 2 shows, in section along the line II—II of Figure 1, a toothed rack for adjustment of sound intensity in an alarm watch according to the invention.

Figure 3 shows in section along the line III—III of Figure 1, a part of the mechanism which makes possible the two adjustments of sound intensity.

Figure 4 shows a second form of construction according to the invention for regulation of the sound intensity.

Referring to Figures 1-3 of the drawings herewith a latch key 1 is rotatable in the case. In one position of the latch key 1 the alarm gives a high sound intensity, in the opposite position a soft sound.

The latch key 1 when rotated operates, by means of a toothed wheel 2, a toothed rack 3, which is at one end of a slide bar 4. The latch key 1 is actually operated in the case of the watch and is pushed into an axial position 1', shown in solid lines in Fig. 1, to operate the intermediate area lever 17 by its end 18, which is in position 18'. The intermediary lever which is in position 17' enters into the teeth of the alarm escapement wheel 9 and blocks it. The axial position 1' of the latch key 1 shuts off the alarm mechanism of high sound intensity and the warning mechanism of soft sound intensity. This shut-off mechanism forms no specific part of the present invention and may otherwise be of conventional construction. When the latch key 1 is pulled axially into the position 1'', shown in phantom lines, the intermediary lever 17 is pushed into position 17'' by its end 18 which is in position 18'. The position 17'' of the intermediary lever 17 releases the teeth of an alarm escapement wheel 9 and renders operative the alarm mechanism of high intensity sound or the warning mechanism of soft intensity sound.

At the other end of the slide bar 4 is a striking rod or

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anvil 5 which serves to transmit the strokes of a hammer 6 to gong sound spring 7. The hammer 6 is firmly connected to a lever 8 and is driven or set in oscillation by the alarm escapement wheel 9. When the wheel 9 is set in motion by the alarm watch movement, the impact of the teeth of the alarm escapement wheel 9 against the lever impulse surfaces 8' and 8'' of lever 8 sets the lever 8 and together with it the hammer 6 into oscillation. Thus, the contact of the wheel 9 with the lever 8 which is of a very low intensity sound provides the soft warning noise. The slide bar 4 operated by the latch key 1 can assume the position 4' whereby the striking pin 5 is shifted and put out of operation as shown in the phantom line position 5'. The hammer 6 is no longer enabled to engage the striking pin 5. Therefore, the only noise will be that of the wheel 9 engaging the lever 8 which is of a very soft sound intensity but which is clearly perceived on the arm and becomes apparent to the sense of feeling of the wearer even though it is only slightly audible, if audible at all. This low intensity sound can be perceived when the sound regulating bar 4 which is operated by the latch key 1 in the position 1'' and in a rotated position, assumes the position 4'.

In Fig. 4 the latch key 1 is shown in a position illustrating how by means of a camplate 10 it operates a damping spring 11 which presses the gong spring 7 against a firm support 12. The vibrations of the gong sound spring 7 are thereby reduced and the noise caused is slight. In another position of latch key 1 spring 7 is released by spring 11 and emits a comparatively loud alarm.

The wheel 9 is loosely mounted on the shaft of the toothed wheel 14 and is under the influence of friction or damping brought about by a friction spring 13, as can be seen in Fig. 3.

The function of the friction spring 13 is to prevent the transmission of the noise made by the impact of the alarm escapement wheel 9 against the lever surfaces of lever 8 to the entire watch mechanism. Without this provision, if the escapement wheel 9 were connected directly to the toothed wheel 14, the noise would be somewhat stronger, since it would spread to the entire watch movement, thereby producing an additional resonance, through watch movement plate 19.

In operation, the latch key 1 pushed axially into position 1' and operated in a rotated position (Figs. 1 and 2) stops the alarm mechanism of high intensity sound when it is in motion or prevents the alarm mechanism of high intensity sound from being set into motion.

The latch key 1 pushed axially into position 1' also stops the low intensity sound warning when in motion and prevents the warning mechanism of low intensity sound from being set into motion.

The latch key 1 pulled axially into position 1'' and operated in a rotated position, permits both the alarm mechanism of high intensity sound and the warning mechanism of low intensity sound to be set in motion.

When the anvil is out of alignment with the hammer, the warning of low intensity sound only will be obtained. The ringing of the alarm mechanism of high intensity sound can be emitted when the sound regulating bar 4 operated by the latch key 1, in axial position 1'' and in rotated position is in the position 4'' with the anvil 5 in the position 5'' so as to transmit the strokes of the hammer 6 to the gong sound spring 7.

At the moment the noise of the warning mechanism of low intensity sound, which is also a part of the alarm mechanism of high intensity sound, emitted by the teeth of the alarm escapement wheel 9 against the lever impulse surfaces 8' and 8'' of the lever 8, is still produced, but

inaudible, because it is covered by the noise produced by the ringing of the alarm mechanism of high intensity sound, because both sounds, that of the alarm mechanism of high intensity sound and that of the warning mechanism of low intensity sound, are emitted simultaneously in this circumstance.

But when the warning mechanism of the sound of low intensity is alone in motion, only the sound of soft intensity is audible and the sound of high intensity cannot be produced and, of course, cannot cover the former noise.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that these modifications and changes be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An alarm structure for a watch having a movement, comprising a casing enclosing said movement, alarm sound means in said casing and including a gong member peripherally disposed in said casing, an escapement wheel driven by said movement and having teeth on the periphery thereof, a lever pivotally mounted in said casing and having projecting means engaging said teeth, a hammer on said lever for pivotable movement toward and away from said gong member, a sound regulating bar in said casing shiftable to a high intensity sound position and to a low intensity sound position, respectively, anvil means interposed between said hammer and said gong member and in striking contact with both, when said regulating bar is in said high intensity sound position, a high intensity alarm sound being created by striking of

said anvil means through said hammer against said gong member and a simultaneous low intensity alarm sound by the impact of said teeth against said lever projecting means, said hammer being disengaged from striking contact with said anvil means when said sound regulating bar is moved to said low intensity sound position so that only a low intensity alarm sound is produced due to the impact of said teeth of said escapement wheel with said projecting means of said lever.

2. An alarm structure according to claim 1, said gong member being in the form of a circular-shaped metal spring conformed to the inner contour of said casing, said metal spring being fixed to said casing at one end thereof located adjacent said escapement wheel, said anvil means being fixed to one end of said bar and located between said hammer and metal spring in one position of said bar and remote from said hammer in another position of said bar, and operable means operatively related to said bar at the other end thereof and extending beyond said casing for shifting said bar from said one to said other position.

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