

WATCH WITH A STRIKING WORK

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The present invention relates to the field of watchmaking. It concerns more specifically a watch with a striking work, such as a repeater watch or an alarm watch.

Such watches are fitted with an element that vibrates via the action of a
10 hammer, and thus produces, directly or indirectly, an acoustic wave, via another part. The vibrating element may be a bell, a gong or an element of the type disclosed in EP Patent No. 0 400 205. The bell is voluminous and solid. The same is true of the element disclosed in EP Patent No. 0400 205, formed of a solid rigid crown, mounted on a flexible securing element including two
15 arms, the ends of which are secured to a support. The gong, which is small and compact, is generally preferred. The gong is generally formed of a metal strand of circular cross-section, or of a metal strip, forming a winding whose length is variable depending upon the desired tonality. Secured to the bottom plate via
20 one of its ends, the gong transmits vibrations to the bottom plate, which itself can emit an acoustic wave. Consequently, the quality of coupling between the gong and the bottom plate plays an important role as regards the acoustic power transmitted and the sound quality.

In the case of gongs of large length, such as the gongs fitted to pocket watches, or "cathedral" type gongs, which correspond to two turns around the
25 bottom plate, the gong vibration amplitude can be significant. It sometimes happens that the gong enters into contact with the bottom plate, the middle part

or the hammers, which denatures the sound produced. This contact can also occur via the effect of a shock and, in such case, the gong vibrates unexpectedly, thus being able to generate an unexpected and disagreeable sound.

5 The present invention overcomes these drawbacks by proposing a watch with a striking work fitted with a gong whose vibration amplitude is limited so as to prevent any contact between the gong and a neighbouring part, and thus coupling with the bottom plate is improved.

 More specifically, the invention concerns a watch with a striking work
10 including a support element and a gong forming a winding including two ends, said gong being secured via a first end to the support element. According to the invention, the second end of the gong is also secured to the support element.

 In an advantageous embodiment, the bottom plate forms the support element.

15 Owing to the fact that both ends of the gong are secured to the bottom plate, the vibration amplitude is reduced and the transmission of vibratory energy is increased. Against all expectations, and contrary to a widespread prejudice according to which one of the ends of the gong has to be free, the acoustic quality and power are thus improved.

20 Other features and advantages of the present invention will appear more clearly from the following detailed description of an example embodiment of a watch with a striking work according to the invention, this example being given purely by way of illustrative and non-limiting example, in conjunction with the annexed drawing, in which:

25 - Figure 1 is a schematic cross-section of a watch with a striking work according to the invention;

 - Figure 2 is a top view of a bottom plate of the watch with a striking work

shown in Figure 1, and

- Figures 3 and 4 are variants of the embodiment illustrated in Figure 2.

The watch with a striking work shown schematically in Figure 1 includes, in a conventional manner, a case 10 formed of a middle part 12 and a back cover 14, together defining a housing 16. A movement 18 mounted on a bottom plate 20 is arranged inside housing 16. A dial 19 is mounted on said movement, which drives a set of hands 21 in rotation. A gong 22, forming a winding around movement 18, is fixedly mounted on bottom plate 20, via a first gong carrier 24 secured to bottom plate 20. Gong 22 has a circular cross-section, but in a variant, it could have a rectangular cross-section. It is generally made of steel.

Gong carrier 24 is formed of a block screwed to bottom plate 20 and pierced with a hole 25 in which a first end of gong 22 is engaged and brazed. This securing method is well known to those skilled in the art. As an alternative, said first end of gong 22 could be welded to gong carrier 24, or screwed between two counterparts. In another variant, gong 22 and the first gong carrier 24 form a single part secured to bottom plate 20. In practice, those skilled in the art will chose the appropriate securing method in order to optimise the coupling between gong 22 and bottom plate 20, so as to transmit a maximum vibration from gong 22 to bottom plate 20.

Hammers, not visible in Figure 1, strike gong 22 in a substantially parallel plane to the general plane of the watch. These hammers are controlled by a striking mechanism, such as a repeater mechanism, mounted on bottom plate 20, but not shown in Figure 1.

A top view of bottom plate 20 of the watch with a striking work according to the invention is shown in Figure 2, without movement 18. The gong 22 forms a winding extending in a conventional manner over an angular sector of approximately 270 degrees. As mentioned previously, it is secured by a first

end to bottom plate 20, via first gong carrier 24.

According to the invention, gong 22 is also secured to bottom plate 20 by its second end. Thus, a second gong carrier 26 is mounted integral to bottom plate 20. The second end of gong 22 is secured to this second gong carrier 26 by a securing method of the same nature as that of the first end. In a variant, the second end could be secured differently. In another embodiment, gong 22, first gong carrier 24 and second gong carrier 26 form a single part secured to bottom plate 20. Whichever method is used to secure gong 22 to gong carriers 24, 26, account will be taken of the fact that a phase opposition may occur between the waves respectively reaching the first and second gong carriers 24 and 26. This phase opposition may lead to the extinction of one or several vibration frequencies, as a function of the length travelled from the point of impact of the hammers to gong carriers, 24, 26, and the speed of propagation of the wave. The length of gong 22 must thus be chosen while taking this element into consideration.

According to a variant of the preceding arrangement, illustrated in Figure 3, gong 22 is secured via both of its ends to a single gong carrier 28 extending over the angular sector comprised between the first and second end of gong 22.

Finally, Figure 4 shows a bottom plate 20 of a watch with a striking work according to the invention, including two gongs wire respectively 22, 30, of different lengths, for producing two different tonalities. The first two ends are conventionally secured to a common gong carrier 32 mounted on bottom plate 20. The other two ends are secured to two gong carriers 34, 36 mounted integral with bottom plate 20. As previously, wire gongs 22, 30 are secured to gong carriers 32, 34, 36 by brazing, or any other securing method.

Of course, the watch with a striking work according to the invention is

not limited to the embodiment that has just been described and various simple alterations and variants could be envisaged by those skilled in the art without departing from the scope of the invention as defined by the annexed claims.

5 It will be noted, in particular, that gong 22 could be fixed to a different support element from bottom plate 20, for example case 10. In this type of embodiment, both ends of gong 22 are secured to case 10, using one or two gong carriers 24, 26, 28. In a variant, gong 22 is secured by one end to bottom plate 20 and by the other end to case 10.

CLAIMS

1. Watch with a striking work including a support element (10, 20) and a gong (22) forming a winding including two ends, said gong (22) being
5 secured via a first end to said support element (10, 20), characterized in that the second end of the gong (22) is also secured to said support element (10, 20).

2. Watch with a striking work according to claim 1, characterized in that said support element is formed by a bottom plate (20).

10 3. Watch with a striking work according to any of claims 1 and 2, characterized in that it includes a first gong carrier (24, 28) mounted on said support element (10, 20), and in that at least said first end of the gong (22) is secured to said first gong carrier (24).

4. Watch with a striking work according to claim 3, characterized in
15 that said second end of the gong (22) is secured to said first gong carrier (24, 28).

5. Watch with a striking work according to claim 4, characterized in that said first gong carrier (28) extends from said first end to said second end.

20 6. Watch with a striking work according to claim 3, characterized in that it includes a second gong carrier (26) mounted on said support element (10, 20), and in that said second end of the gong (22) is secured to said second gong carrier (26).

7. Watch with as striking work according to any of claims 3 to 6,
25 characterized in that one of said ends is secured to one of said gong carriers (24, 26, 28), by brazing or welding.

8. Watch with a striking work according to any of claims 3 to 6, characterized in that one of said ends is secured to one of said gong carriers (24, 26, 28) by screws.

5 9. Watch with a striking work according to claims 3 to 5, characterized in that said first gong carrier (24, 28) forms a single piece with said gong (22).

10. Watch with a striking work according to claim 6, characterized in that said first gong carrier (24) forms a single piece with said gong (22) and said second gong carrier (26).

10 11. Watch with a striking work according to any of claims 1 to 10, characterized in that it further includes a second gong (30) secured to said support element (10, 20).

12. Watch with a striking work according to claim 10, characterized in that said second gong (30) is secured via both ends thereof to said support element (10, 20).

15 13. Watch with a striking work according to claim 10, characterized in that the length of said gong (22) is selected so as to take account of phase opposition phenomena.