

PATENT SPECIFICATION (11)

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DRAWINGS ATTACHED

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(54) TIMEPIECE ASSEMBLY

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese corporation of 3-4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention, for which we

pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a timepiece assembly, e.g. for a watch.

According to the present invention, there is provided a timepiece assembly comprising a ring which is adapted to be mounted within and to engage a case of a timepiece, a timepiece dial which is mounted within and engaged by the ring so that displacement of the timepiece dial radially of the ring is restrained by the latter, a timepiece movement which is mounted within and engaged by the ring so that displacement of the timepiece movement both radially of the ring and axially thereof towards the timepiece dial is restrained by the ring and means for preventing relative circumferential displacement between the timepiece movement and the timepiece dial.

Thus in the case of the present invention the ring is employed to effect the required relative positioning of the timepiece movement and timepiece dial, so reducing the number of parts normally employed for this purpose and permitting the timepiece dial to be made of materials which cannot normally be used.

Preferably the ring also restrains axial movement of the timepiece movement away from the timepiece dial.

Moreover, the ring also preferably restrains axial displacement of the timepiece dial away from the timepiece movement.

The means for preventing relative circumferential displacement preferably comprise portions of the timepiece movement and timepiece dial which inter-engage with respective portions of the ring.

The said portions of the timepiece movement and the timepiece dial are preferably spaced apart diametrically of the ring.

The timepiece movement may have a

flange which is disposed between and engaged by a shoulder portion and at least one hook portion of the ring.

The ring may have outer and inner cylindrical portions, the timepiece dial being seated on the inner cylindrical portion and being mounted within and engaged by at least a part of the radially internal surface of the outer cylindrical portion.

The outer cylindrical portion may be formed of a plurality of parts at least one of which resiliently engages the timepiece dial.

The invention also comprises a timepiece, e.g. a watch, provided with a timepiece assembly as set forth above, the said ring being mounted within and engaging a case of the timepiece.

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:—

Figure 1 is a broken-away sectional view of a known timepiece provided with a conventional timepiece assembly;

Figure 2 is a plan view of a timepiece assembly according to the present invention;

Figures 3 and 4 are broken-away sectional views taken on the lines 3—3 and 4—4 respectively of Figure 2;

Figure 5 is a broken-away perspective view of a portion of a ring shown in Figures 2 to 4;

Figure 6 is a broken-away sectional view which is similar to that of Figure 3 but illustrates another embodiment of a timepiece provided with a timepiece assembly according to the present invention; and

Figure 7 is a broken-away perspective view of part of a ring shown in Figure 6.

In Figure 1 there is shown a watch 10 of conventional construction having a watch case 11. Mounted within the case 11 is a ring 12 having a flange 13 which engages an internal shoulder 14 of the case 11. The watch 10 has a movement 15 which is provided with a flange 16, the flange 16 engaging an internal shoulder 17 of the ring

[Price 25p]

Price 33p

12. Mounted on the ring 12 is a watch dial 20.

The shoulder 17 of the ring 12 restrains displacement of the movement 15 both radially of the ring 12 and axially outwardly thereof i.e. towards the dial 20, axial outward displacement of the ring 12 itself being prevented by the engagement between the flange 13 and shoulder 14. Axially inward displacement of the movement 15 i.e. in a direction away from the dial 20, is prevented by engagement between the flange 16 and a frame member 21, the frame member 21 being secured by a washer 22 in position between the case 11 and a back cover 23.

In the conventional structure shown in Figure 1 relative circumferential displacement between the dial 20 and the movement 15 is prevented by virtue of the fact that the dial 20 has secured thereto a plurality of legs 24 which are fixed in position with respect to the movement 15 by virtue of being engaged by screws 18.

The conventional construction shown in Figure 1 has a number of disadvantages. In the first place the cost is unnecessarily high, since the legs 24 must be secured to the dial 20 with great accuracy. Moreover, the conventional construction involves the cost of providing the legs 24, the screws 18, and the necessary screw threads are both expensive and complicated to form.

Furthermore, in the conventional construction, the dial 20 has to be made of a material to which it is possible to secure the legs 24. This means that it is not practicable to make the dial 20 of stone, jewel or aluminium, since it is not practicable to secure the legs 24 to such materials. Thus the conventional construction, by virtue of limiting the materials from which the dial 20 may be made, also limits the extent to which one can vary the appearance and design of the latter.

Turning now to the embodiment of the invention shown in Figures 2 to 5, a watch 26 has a case 27 within which is mounted a ring 28 which engages the internal surface of the case 27. A watch dial 30 is mounted within and is engaged by the ring 28 so that displacement of the dial 30 radially of the ring 28 is restrained by the latter.

The ring 28 has outer and inner cylindrical portions 31, 32, the dial 30 being seated on the inner cylindrical portion 32 and being mounted within and engaged by the radially internal surface 33 of the outer cylindrical portion 31. Outward displacement of the dial 30 in an axial direction away from a movement 34 is prevented by engagement between the dial 30 and a flange 35 of the case 27.

The movement 34 is mounted within and is engaged by the ring 28 so that displacement of the movement 34 both radially of the ring 28 and axially thereof both towards

and away from the dial 30 is restrained by the ring 28. To this end, the movement 34 is provided with a flange 40 which is disposed between and engaged by a shoulder portion 41 of the ring 28 and at least one (and, preferably, three as shown) angularly spaced apart hook portions 42 of the ring 28. The inner surface of each of the hook portions 42 is provided with a groove 43 whose shape corresponds to that of the flange 40 and which snugly engages the latter.

In order to make it easier to insert the movement 34 into the ring 28, the hook portions 42 are provided with guide slopes 44. During such insertion of the movement 34, an axially extending part 45 of the or each hook portion 42 resiliently deflects to allow insertion of the movement 34, and thereafter returns to the position shown in Figure 3.

The movement 34 is provided with an arcuate notch 46 (see Figure 2), into which extends an arcuate projection 47 of the ring 28, the projection 47 being provided at the "6 o'clock" position of the dial 30. Thus the inter-engagement between the notch 46 and projection 47 prevents relative circumferential movement between the movement 34 and the ring 28.

The dial 30 is provided with a projection 50 which extends into a radial groove 51 which is provided in the outer cylindrical portion 31 of the ring 28. The groove 51 is provided at the "12 o'clock" position of the dial 30 and is therefore diametrically spaced apart from the arcuate notch 46, although this is not essential. The parts 50, 51 prevent relative circumferential displacement between the dial 30 and the ring 28.

The elasticity of the outer cylindrical portion 31 enables the dial 30 to be pressed into position within the ring 28, this resilience then holding the dial in position.

In assembling the structure shown in Figures 2 to 5, the movement 34 is pressed along the guide slopes 44 towards the position which will be occupied by the dial 30. The hook portions 42 are moved away from the flange 40 to enable the movement 34 to be moved up against the shoulder 41. Once this occurs, the hook portions 42 return under their own elasticity to grip the movement 34 and prevent axial movement of the latter in either direction. The dial 30 is then inserted internally of the outer cylindrical portion 31, after which the hands of the watch are attached by a conventional method and the timepiece assembly can then be fixed within the case 27.

The embodiment shown in Figures 6 and 7 of the drawings is generally similar to that of Figures 2 to 5 and will not therefore be described in detail, similar reference numerals being used for similar parts. In the

embodiment of Figures 6 and 7, however, the outer cylindrical portion 31 of the ring 27 is formed of alternate parts 52, 53 of which the parts 53 resiliently engage the dial 30. If desired only one part 53 may be provided, although there would normally be a plurality of angularly spaced parts 53. Each part 53, moreover, engages an internal flange 54 of the case 27 and is provided with a radially inwardly extending beaded portion 55 which engages the dial 30 and restrains axial displacement of the latter away from the movement 34.

As will be appreciated, in the case of the present invention, it is not necessary to provide the legs 24 or screws 25 which have to be provided in the conventional structure and thus the number of parts is decreased and the cost of the watch is therefore reduced. As a result, moreover, of the fact that the legs 24 do not need to be provided, the manufacture of the dial 30 is simplified, the cost of securing the legs thereto is avoided, while although the ring 28 is of complex shape, this causes little difficulty since it is easily possible to fabricate the ring 28 by mass production methods from plastics material.

Moreover, since the dial 30 does not have to be made of materials to which legs may be secured, it may be made of stone or jewel or aluminium and a variety of designs on its exterior may be provided. Furthermore the assembly of the dial 30 in the timepiece assembly is effected merely by pressing it into position and this reduces costs further.

WHAT WE CLAIM IS:

1. A timepiece assembly comprising a ring which is adapted to be mounted within and to engage a case of a timepiece, a timepiece dial which is mounted within and engaged by the ring so that displacement of the timepiece dial radially of the ring is restrained by the latter, a timepiece movement which is mounted within and engaged by the ring so that displacement of the timepiece movement both radially of the ring and axially thereof towards the timepiece dial is restrained by the ring, and means for preventing relative circumferential displacement between the timepiece movement and the timepiece dial.

2. A timepiece assembly as claimed in Claim 1 in which the ring also restrains axial movement of the timepiece movement away from the timepiece dial.

3. A timepiece assembly as claimed in Claim 1 or 2 in which the ring also restrains axial displacement of the timepiece dial away from the timepiece movement.

4. A timepiece assembly as claimed in any preceding claim in which the means for preventing relative circumferential displacement comprise portions of the timepiece movement and timepiece dial which inter-engage with respective portions of the ring.

5. A timepiece assembly as claimed in Claim 4 in which the said portions of the timepiece movement and timepiece dial are spaced apart diametrically of the ring.

6. A timepiece assembly as claimed in any preceding claim in which the timepiece movement has a flange which is disposed between and engaged by a shoulder portion and at least one hook portion of the ring.

7. A timepiece assembly as claimed in any preceding claim in which the ring has outer and inner cylindrical portions, the timepiece dial being seated on the inner cylindrical portion and being mounted within and engaged by at least a part of the radially internal surface of the outer cylindrical portion.

8. A timepiece assembly as claimed in Claim 7 in which the outer cylindrical portion is formed of a plurality of parts at least one of which resiliently engages the timepiece dial.

9. A time piece assembly substantially as hereinbefore described with reference to and as shown in Figures 2 to 7 of the accompanying drawings.

10. A timepiece provided with an assembly as claimed in any preceding claim, the said ring being mounted within and engaging a case of the timepiece.

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