

PATENT SPECIFICATION

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(54) GEAR MECHANISM FOR A TIMEPIECE

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese company, 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 relates to gear mechanisms for timepieces.

According to one aspect of the present invention there is provided a gear mechanism for a timepiece comprising: two supporting members maintained in spaced apart relationship by a plurality of pillars; a gear assembly disposed between the supporting members; bearings in the supporting members for receiving pivots of the gear assembly; and a guide plate disposed adjacent one of the supporting members and supported by the pillars, the guide plate being provided to guide the gear assembly to facilitate positioning of said one of the supporting members during assembly of the gear mechanism.

The supporting members may be a base plate and a bridge plate.

Thus, the said one of the support members may be the bridge plate.

In the preferred embodiment said gear assembly comprises a gear train and an anchor.

Said guide plate may be made of metal or plastics material.

According to a further aspect of the present invention there is provided a timepiece, for example, an electric watch, having a gear mechanism as recited above.

The invention is illustrated, merely by way of example, in the accompanying drawing which shows, in cross-section, a gear mechanism for a timepiece according to the present invention.

Referring to the drawing the gear mechanism according to the present invention comprises a base plate 1 and a bridge plate 2 maintained in space apart relationship by pillars 3, 4. The base plate 1

and the bridge plate 2 may be made as thin sheets. A gear assembly, generally indicated at 10, is provided in the space between the base plate and the bridge plate, the gear assembly, in the illustrated embodiment, comprising a gear train consisting of gears 5, 6, 7 and an anchor 8.

In an electric watch, for example, the motive force for driving the anchor 8 is provided by a drawing magnet (not shown). The drawing magnet not only drives the anchor but tends to attract the gear assembly, and during assembly of the gear mechanism this causes the gears 5, 6, 7 and the anchor 8 to move so that their upper pivots are not in alignment with respective bearings in the bridge plate. Thus, when assembling the gear mechanism it is extremely difficult to insert the upper pivots of the gear assembly into the respective bearings in the bridge plate.

The gear mechanism according to the present invention, therefore, provides a gear assembly guide 9 to prevent the gears 5, 6, 7 and the anchor 8 from moving so that their upper pivots are out of alignment with the respective bearings in the bridge plate. The gear assembly guide 9 is a thin plate disposed, in the assembled gear mechanism, adjacent the bridge plate 2 and it is retained in this position by the pillars 3, 4. The gear assembly guide 9 has a plurality of holes therein disposed so as to receive the respective upper pivots of the gear assembly. The holes are so dimensioned that there is a small clearance between each and its respective pivot passing therethrough and the holes are of larger size than the respective bearings in the bridge plate 2.

When assembling the gear mechanism, the lower pivots of the gears 5, 6, 7 and the anchor 8 are positioned in the respective bearings in the base plate 1. The upper pivots are then inserted into the respective holes in the gear assembly guide 9 as this is placed in position. As previously mentioned, these holes in the gear assembly guide 9 are of larger size than the respective bearings in

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the bridge plate 2 so even if the gears 5, 6, 7 and the anchor 8 move so that there is not complete alignment between the upper pivots and the holes in the gear assembly guide, assembly can still easily be accomplished. When the upper pivots of the gear assembly have been inserted into the gear assembly guide they may then be positioned in the respective bearings in the bridge plate 2 as this plate is fitted to the rest of the assembly without the upper pivots of the gears 5, 6, 7 or the anchor 8 moving out of alignment. Thus, the bridge plate 2 can be assembled with the rest of the gear mechanism extremely easily. When the gear mechanism is assembled the gears 5, 6, 7 and the anchor 8 are retained by the respective bearings in the base plate and in the bridge plate.

The gear assembly guide 9 may, for example, be made from sheet metal or plastics material by a pressing process. It is, therefore, simple and inexpensive to manufacture.

The gear mechanism illustrated has, as will be appreciated, the advantage that it may be assembled without incurring expensive manufacturing costs and it may easily be disassembled and reassembled during repair. In particular, the gear mechanism may be assembled without the use of special assembling tools.

WHAT WE CLAIM IS:—

1. A gear mechanism for a timepiece comprising: two supporting members maintained in spaced apart relationship by a

plurality of pillars; a gear assembly disposed between the supporting members; bearings in the supporting members for receiving pivots of the gear assembly; and a guide plate disposed adjacent one of the supporting members and supported by the pillars, the guide plate being provided to guide the gear assembly to facilitate positioning of said one of the supporting members during assembly of the gear mechanism.

2. A mechanism as claimed in claim 1 in which the supporting members are a base plate and a bridge plate.

3. A mechanism as claimed in claim 2 in which said one of the supporting members is the bridge plate.

4. A mechanism as claimed in any preceding claim in which said gear assembly comprises a gear train and an anchor.

5. A mechanism as claimed in any preceding claim in which said guide plate is made of metal or plastics material.

6. A gear mechanism substantially as herein described with reference to and as shown in the accompanying drawing.

7. A timepiece having a gear mechanism as claimed in any preceding claim.

8. An electric watch having a gear mechanism as claimed in any of claims 1 to 6.

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