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(54) HAND SETTING MECHANISM FOR A TIMEPIECE

(71) We, KABUSHIKI KAISHA DAINI SEIKOSHA, a Japanese company, of 31—1, 6—chome, Kameido, Koto—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 a hand setting mechanism for a timepiece, more particularly a wrist-watch or pocket-watch which has no winding wheels, e.g. is self-winding or electrically powered.

According to the present invention there is provided a hand setting mechanism for a timepiece which has no winding wheel, the said mechanism including a rotary stem, a portion of which has a plane surface parallel to the axis of the stem, coupling means mounted on said portion for rotation therewith and movable between direct driving engagement with, and disengagement from, the minute wheel of the timepiece, there being no intermediate gearing between the coupling means and the minute wheel.

Preferably the coupling means in constituted by a toothed clutch wheel is slidably mounted on said portion and which is meshable with the minute wheel in the manner of bevel gearing.

The portion may have a square section.

The invention also includes a timepiece, e.g. a self-winding or electrically powered watch, including a hand setting mechanism as set forth above.

The invention will be described, merely by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a schematic plan view of a known hand setting mechanism for a watch, Figure 2 is a cross-sectional view taken on the line A—A' of Figure 1,

Figure 3 is a view similar to Figure 1, but showing a hand setting mechanism of the present invention, and

Figure 4 is a cross-sectional view on the line B—B' of Figure 3.

Referring first to the known hand setting mechanism shown in Figures 1 and 2, there is shown a watch having a conventional rotary winding stem 1 which is axially displaceable between a normal position (not shown) and a hand setting position shown in Figures 1 and 2. The winding stem 1 carries a clutch having two meshingly interengageable parts one of which is in the form of a bevel gear 3 adapted to mesh with an intermediate setting wheel 4, which in turn is arranged to mesh with a minute wheel 5. The minute wheel 5 is integral with a minute wheel pinion 6 and is arranged to mesh with a cannon pinion 8 which is mounted coaxially with an hour wheel 7 which carries the hour hand 15, while the cannon pinion 8 carries the minute hand 14. The other part of the clutch is provided with a winding wheel 2 which forms parts of a gear train (not shown) for winding up the mainspring (not shown) of the watch.

As can be seen from Figure 2, the minute wheel and minute wheel pinion 6 are mounted on a shaft 6a journaled in bearings in the watch plate 13, which also journals the shaft on which the hour wheel 7 and the cannon pinion 8 are mounted.

The rotary winding stem 1 is pivotally connected to a setting lever 9 which has a pin or projection adapted to co-operate with notches in a setting lever spring 12. The setting lever 9 has a nose which is arranged to abut a portion of a yoke 10 which is fitted into a groove on the clutch wheel 3 and which is biased by a spring 11 to rotate about its pivot in a counterclockwise direction as seen in Figure 1. Clearly, axial displacement of the rotary winding stem 1 will cause engagement and disengagement between co-operating teeth of the clutch parts.

Turning now to a preferred embodiment of the present invention shown in Figures 3 and 4, wherein parts corresponding to those shown in the previous embodiment have been given the same reference number, the hand setting mechanism of a self-winding or elec-

trically powered watch has a rotary stem 1 a portion of which has a plane surface parallel to the axis of the stem, this portion is shown in Figures 3 and 4 as being substantially square in cross-section. This portion carries the clutch wheel 3. Unlike the configuration in the embodiment of Figures 1 and 2, the clutch wheel 3 has a portion on its periphery which is substantially in the same horizontal plane (as viewed) as the minute wheel 5 and moreover, the wheels 3 and 5 are in direct meshing engagement. Once again, the rotary stem 1 is displaceable between a normal position (not shown) and a hand setting position as illustrated. In the illustrated position, as the stem 1 is rotated, clutch wheel 3 will also be rotated and will drive the minute wheel 5. The cannon pinion 8 which carries the minute hand 14 is rotated by virtue of its mesh with the minute wheel 5. At the same time the hour wheel 7 which carries the hour hand 15 is also rotated because it is geared to the minute wheel pinion 6 which is integral with the minute wheel 5.

It will be observed that the separation between the parallel planes respectively containing the top surface 16 and the axis of rotation of the stem 1 is diminished compared with the embodiment of Figures 1 and 2 and moreover the intermediate setting wheel and the winding wheel 2 of the previously described embodiment have been eliminated.

WHAT WE CLAIM IS: —

1. A hand setting mechanism for a time-

piece which has no winding wheel, the said mechanism including a rotary stem, a portion of which has a plane surface parallel to the axis of the stem, coupling means mounted on said portion for rotation therewith and movable between direct driving engagement with, and disengagement from, the minute wheel of the timepiece, there being no intermediate gearing between the coupling means and the minute wheel.

2. A mechanism as claimed in claim 1 wherein the coupling means is constituted by a toothed clutch wheel which is slidably mounted on said portion and which is meshable with the minute wheel in the manner of bevel gearing.

3. A mechanism as claimed in claim 2 wherein the said portion has a square section.

4. A hand setting mechanism for a timepiece substantially as hereinbefore described with reference to and as shown in Figures 3 and 4 of the accompanying drawings.

5. A timepiece, e.g. a self-winding or electrically powered watch, including a hand setting mechanism as claimed in any preceding claim.

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