

PATENT SPECIFICATION

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(54) 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 timepieces.

According to the present invention there is provided a timepiece having a stem setting mechanism for setting a stem to one of a plurality of predetermined longitudinal positions, the stem setting mechanism comprising: a stem having a plurality of radially outwardly extending projections defining a plurality of recesses; a resilient member adapted to be engaged in each of said recesses for setting the stem in a corresponding one of the positions; and a crown mounted on one end of the stem the projection furthest from the crown extending radially outwardly of the stem by a greater extent and having sides disposed at a lesser angle to the radial direction than the projection nearest the crown.

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

Figure 1 is a plan view of a conventional stem setting mechanism of a watch;

Figure 2 is a plan view of a stem setting mechanism of a timepiece according to the present invention; and

Figure 3 is a cross-section of the stem setting mechanism shown in Figure 2.

Referring first to Figure 1 there is shown a conventional stem setting mechanism for a watch in which a setting lever 1 carries a pin 2 which is arranged to engage one of a plurality (three shown in Figure 1) of recesses 4 defined by projections 4 (two shown in Figure 1) in a spring lever 3. The setting lever 1 is moved by radial movement of a stem/crown 1a. In the arrangement illustrated in Figure 1, the stem/crown may be disposed in one of three positions corresponding to the three recesses 4. The

force required to move the stem/crown from one position to another is determined by the height and angle of the projections 4. That is to say, the force is determined by the radially outward extent of the projections 4 and the angle of the sides of the projections to the radial direction.

Calendar watches have recently been developed in which changing of the date is effected by the stem/crown 1a. If, for example, the date may be changed when the setting lever pin 2 is in the second recess 4, it is necessary to ensure that it can be positively moved to, and retained in, this recess. Thus, it is arranged that the force required to move the stem/crown from the first position to the second position is greater than the force required to move the stem/crown from the second position to the third position. Thus, for example, the force required to move the stem/crown from the first position to the second position may be 300 g, and the force required to move the stem/crown from the second position to the third position may be 800 g. Therefore, the angle and height of the first projection 4 must be different from that of the second projection 4. If, however, the height of the second projection is greater than that of the first projection, the distance the pin 2 must travel when it is moved from the second recess to the third recess will be greater than the distance it must travel when moved from the first recess to the second recess. As a result, the angle of deflection of the spring lever 3 is greater when the pin 2 moves from the second recess to the third recess than when it moves from the first recess to the second recess. This defeats the object of making the stem setting mechanism of small size and furthermore the spring lever 3 is more prone to failure and is more difficult to manufacture by press moulding.

Referring now to Figures 2 and 3, which show a stem setting mechanism of a timepiece (for example, a calendar watch) according to the present invention, a

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stem/crown 5 has two annular radially outwardly extending projections 6, 7 which define three annular recesses or grooves 10. The projections 6, 7 have different angles and different heights. That is to say, the projections have different radial outward extents and the angles of the sides of the projections to the radial direction are different. Mounted on a base or watch plate 9 is a resilient stem holder 8, a bent over end portion 11 which is engaged in one of the grooves 10. As the stem/crown 5 is moved, the stem holder 8 is displaced from one groove to the next and in the process is resiliently deformed in a plane parallel to its thickness.

As the stem/crown is moved from one position to the next position, the stem holder 8 initially resists this movement. As it passes over the radially outwardly extremity of the projection and begins to enter the next groove, the stem holder then assists the movement of the stem/crown. Thus, it will be appreciated that the stem/crown will be retained accurately in each of its three positions. The force required to move the stem/crown from one position to the next is determined by the angle and height of the projections as mentioned above and whilst it is possible to alter this force by making either the angle or the height of the projections different it is preferable to make them both different.

The force required to move the stem holder from one groove 10 to the adjacent groove is less than the force required to move the stem holder from the adjacent groove to the next groove. Thus the projection 7 extends radially outwardly of the stem by a greater extent and has sides disposed at a lesser angle to the radial direction than the projection 6 further from the crown.

In the conventional stem setting mechanism the spring lever 3 is resiliently deformed in its own plane and this makes it

prone to failure and makes its manufacture by press moulding difficult. In contrast, in the present invention, the stem holder 8 has the bent over portion 11 and so it is not so prone to failure. In any event, the stem holder 8 may be made larger and, as a result, stronger so that it is easier to manufacture. The projections 6, 7 may be easily machined into the stem by means of a cutting tool.

It will be appreciated that the above stem setting mechanism reduces radial and axial play of the stem and a fewer number of parts are used. Furthermore, the space occupied by the stem setting mechanism is reduced and all this has the result that it may be easily miniaturised and produced at low cost.

A timepiece is also described and claimed in our co-pending Application No. 33558/71 (Serial No. 1,343,541).

WHAT WE CLAIM IS:—

1. A timepiece having a stem setting mechanism for setting a stem to one of a plurality of predetermined longitudinal positions, the stem setting mechanism comprising: a stem having a plurality of radially outwardly extending projections defining a plurality of recesses; a resilient member adapted to be engaged in each of said recesses for setting the stem in a corresponding one of the positions; and a crown mounted on one end of the stem the projection furthest from the crown extending radially outwardly of the stem by a greater extent and having sides disposed at a lesser angle to the radial direction than the projection nearest the crown.

2. A timepiece substantially as herein described with reference to and as shown in Figures 2 and 3 of the accompanying drawings.

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