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DRAWINGS ATTACHED

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(54) SET STEM MECHANISM FOR WATCHES

(71) We, TEMEX CORPORATION, a Corporation organised under the laws of the State of Delaware, United States of America, of Waterbury 20, Connecticut, United States of America, 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:—

The present invention relates to watches and more particularly to an improved set stem mechanism for a watch.

According to the invention there is provided a set stem mechanism for a watch comprising a set stem having an elongated body portion at one end, an intermediate locking portion and a second end portion, a set stem bracket, having a base portion including a bearing means engaged by the second end portion of the set stem and a pair of upwardly extending legs which engage the locking portion of the set stem, and a substantially cylindrical stem release sleeve, said sleeve being slideable along the body portion of the stem to engage the legs of the stem bracket thereby releasing the stem from the bracket. The set stem mechanism of the present invention eliminates the need for special tooling to remove the crown and stem assembly and also minimizes the possibility of damage to the stem.

The present invention may be embodied by a set stem mechanism for watches comprising a set stem having a shaped body portion with locking portions thereon to be engaged by the legs of a stem bracket in either a set or an idle position. A set pinion is formed integrally with the stem and engages the crown gear of the minute wheel when the stem is in a set position. A stem release sleeve is slidably mounted about the stem to cam apart the legs of the stem bracket to facilitate removal of the crown and stem assembly.

The new and improved set stem mechanism for watches is less costly than the prior art, exhibits improved performances characteristics and is more readily repaired.

An embodiment of the present invention will now be described by way of example, reference being made to the accompanying drawings in which:—

Fig. 1 is a front view, partly cut away, of a portion of a watch provided with a set stem mechanism embodying the invention;

Fig. 2 is a view similar to Fig. 1 showing the stem release sleeve in an operative position; and,

Fig. 3 is a cut-away cross-sectional view taken along the line 3—3 of Fig. 2.

Referring now to the drawings, the set stem mechanism shown comprises a set stem having one end extending outwardly from the watch 11 and having a watch crown 12 mounted on the extremity thereof. The other end of the stem 10 is journaled in a bearing 13 within the watch 11. The set stem 10 includes a substantially cylindrical elongated body portion 14 and a protruding locking portion 16 which forms a recess 17 together with enlarged body portion 18. The stem 10 further includes a tapering portion 19 which extends from enlarged portion 18 to a body section 21. A set pinion 22 is formed integrally with the stem 10 between body section 21 and the other end portion 23 and is journaled with the stem for rotation in the bearing 13.

The stem bracket 24 has a base portion 29 and a pair of upwardly extending legs 37 which are resilient and are inclined inwardly from the ends of the base portion. The legs 37 have curved end portions 36 which engage the set stem. The base 29 of the bracket 24 includes the bearing 13 for the stem 10 in the form of an aperture extending through the base and engaged by the stem end portion 23.

The set stem 10 is movable between an idle position 9 the position illustrated in the drawings 9 and a set position. The locking portion 16 of the set stem includes a face 27 which slopes outwardly from the elongated body portion 14 and a second face 28 sloping back in the opposite direction to the recess 17. The ends 36 of the legs 37 of the stem bracket

24 engage the locking portion 16 to lock the stem in the idle and the set positions respectively.

5 In order to set the watch 11, the set stem 10 is retracted by grasping the crown 12 and pulling away from the watch 11. The surface 27 of locking portion 16 forces the curved end portions 36 of the stem bracket 24 outwardly until surface 28 is reached. The ends 36 of
10 bracket 24 then drop down surface 28 and into the recessed portion 17 between the outwardly extending portions 16 and 18 on the stem 10 to also engage a surface 26 of the enlarged portion 18.

15 In the setting position, the set pinion 22 engages a crown gear 38 of a minute wheel 39. A minute pinion 41 which is coupled to the minute wheel 39 then transmits the motion to an hour wheel 42. The minute wheel 39
20 and the hour wheel 42 are both supported for rotation in a front frame 43. A dial frame 44 holds the minute wheel 39 in place assuring proper engagement of crown gear 38 with stem pinion 22.

25 The sloping surfaces 27 and 28 of the locking portion 16 cam the bracket 24 into a particular position during the to and fro movement of the stem 10 between the idle and setting positions.

30 A substantially cylindrical stem release sleeve 31 is slidably mounted about the body portion 14 of the stem 10. The sleeve 31 includes a counter-sunk portion 32 which clears locking portion 16 and an elongated aperture
35 33 slidable along body portion 14. The leading edge 34 of the sleeve is tapered to facilitate engagement with the curved end portions 36 of the bracket 24 forcing the pincer-like legs 37 apart. This releases the stem 10 permitting
40 rapid removal of the crown and stem assembly from the watch 11 without the use of special hand tools. The possibility of damage to the stem bracket 24 is also minimized.

45 As shown in Figs. 2 and 3, if it is desired to release the stem 10, the sleeve 31 is urged in the indicated direction into the watch 11 between the front frame 43 and a train bridge 46, until the leading edge 34 of the sleeve engages the surface 26 of the enlarged body portion 18 of the stem 10 which acts as a stop
50 for the stem release sleeve. As mentioned above, the legs 37 of the bracket 24 are forced apart freeing the stem 10 in a single quick operation without the use of special tools. This greatly facilitates repair and assembly of the
55 watch 11. Furthermore, the stem design itself eliminates many separate parts and provides a more accurate and less expensive means for setting a watch 11.

60 WHAT WE CLAIM IS:—

1. A set stem mechanism for a watch comprising a set stem having an elongated body

portion at one end, an intermediate locking portion and a second end portion, a set stem bracket, having a base portion including a bearing means engaged by the second end portion
65 of the set stem and a pair of upwardly extending legs which engage the locking portion of the set stem, and a substantially cylindrical stem release sleeve, said sleeve being slidable along the body portion of the stem to engage
70 the legs of the stem bracket thereby releasing the stem from the bracket.

2. A set stem mechanism in accordance with claim 1 wherein the stem release sleeve includes a counter-sunk entrance portion which
75 clears the locking portion of the set stem and tapered entrance surfaces to facilitate release of the stem bracket legs from the locking portion as the legs are forced outwardly therefrom by the movement of the sleeve.

3. A set stem mechanism in accordance with claim 2 wherein the set stem includes an enlarged second intermediate portion to act as
85 a stop for the stem release sleeve.

4. A set stem mechanism in accordance with any one of claims 1 to 3, wherein the locking portion comprises a protruding portion having
90 a first face sloping outwardly from the elongated body portion of the stem along which the legs move during setting and a sloping portion extending in the opposite direction back to the stem body, forming a recess with the enlarged body portion.

5. A set stem mechanism in accordance with any one of claims 1 to 3, wherein the locking portion comprises a protruding portion which
95 forces the stem legs apart from a first locked position until the legs move into a second locked position for setting.

6. A set stem mechanism in accordance with any one of claims 1 to 5, wherein the stem bracket legs are resilient and taper inwardly
100 from the periphery of the base portion, said legs having curved end portions which engage the set stem.

7. A set stem mechanism in accordance with any one of claims 1 to 6, wherein the bearing means comprises an aperture extending
110 through the base portion of the stem bracket.

8. A set stem mechanism in accordance with any one of claims 1 to 7, wherein the set stem further includes a set pinion formed integrally
115 therewith, said pinion being journaled for rotation in the bearing means.

9. A watch including the set stem mechanism as claimed in claim 8, wherein the watch includes a crown gear coupled to a minute
120 wheel, and said mechanism further includes a watch crown mounted to the end of the elongated body portion, said crown being moved outwardly from the watch during setting bringing the stem pinion into mesh with the crown gear for effecting movement of the minute wheel.
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24 engage the locking portion 16 to lock the stem in the idle and the set positions respectively.

5 In order to set the watch 11, the set stem 10 is retracted by grasping the crown 12 and pulling away from the watch 11. The surface 27 of locking portion 16 forces the curved end portions 36 of the stem bracket 24 outwardly until surface 28 is reached. The ends 36 of
10 bracket 24 then drop down surface 28 and into the recessed portion 17 between the outwardly extending portions 16 and 18 on the stem 10 to also engage a surface 26 of the enlarged portion 18.

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20 and the hour wheel 42 are both supported for rotation in a front frame 43. A dial frame 44 holds the minute wheel 39 in place assuring proper engagement of crown gear 38 with stem pinion 22.

25 The sloping surfaces 27 and 28 of the locking portion 16 cam the bracket 24 into a particular position during the to and fro movement of the stem 10 between the idle and setting positions.

30 A substantially cylindrical stem release sleeve 31 is slidably mounted about the body portion 14 of the stem 10. The sleeve 31 includes a counter-sunk portion 32 which clears locking portion 16 and an elongated aperture
35 33 slidable along body portion 14. The leading edge 34 of the sleeve is tapered to facilitate engagement with the curved end portions 36 of the bracket 24 forcing the pincer-like legs 37 apart. This releases the stem 10 permitting
40 rapid removal of the crown and stem assembly from the watch 11 without the use of special hand tools. The possibility of damage to the stem bracket 24 is also minimized.

45 As shown in Figs. 2 and 3, if it is desired to release the stem 10, the sleeve 31 is urged in the indicated direction into the watch 11 between the front frame 43 and a train bridge 46, until the leading edge 34 of the sleeve engages the surface 26 of the enlarged body portion 18 of the stem 10 which acts as a stop
50 for the stem release sleeve. As mentioned above, the legs 37 of the bracket 24 are forced apart freeing the stem 10 in a single quick operation without the use of special tools. This
55 greatly facilitates repair and assembly of the watch 11. Furthermore, the stem design itself eliminates many separate parts and provides a more accurate and less expensive means for setting a watch 11.

60 WHAT WE CLAIM IS:—

1. A set stem mechanism for a watch comprising a set stem having an elongated body

portion at one end, an intermediate locking portion and a second end portion, a set stem bracket, having a base portion including a bearing means engaged by the second end portion
65 of the set stem and a pair of upwardly extending legs which engage the locking portion of the set stem, and a substantially cylindrical stem release sleeve, said sleeve being slidable
70 along the body portion of the stem to engage the legs of the stem bracket thereby releasing the stem from the bracket.

2. A set stem mechanism in accordance with claim 1 wherein the stem release sleeve includes a counter-sunk entrance portion which
75 clears the locking portion of the set stem and tapered entrance surfaces to facilitate release of the stem bracket legs from the locking portion as the legs are forced outwardly therefrom
80 by the movement of the sleeve.

3. A set stem mechanism in accordance with claim 2 wherein the set stem includes an enlarged second intermediate portion to act as
85 a stop for the stem release sleeve.

4. A set stem mechanism in accordance with any one of claims 1 to 3, wherein the locking portion comprises a protruding portion having
90 a first face sloping outwardly from the elongated body portion of the stem along which the legs move during setting and a sloping portion extending in the opposite direction back to the stem body, forming a recess with the enlarged body portion.

5. A set stem mechanism in accordance with any one of claims 1 to 3, wherein the locking portion comprises a protruding portion which
95 forces the stem legs apart from a first locked position until the legs move into a second locked position for setting.

6. A set stem mechanism in accordance with any one of claims 1 to 5, wherein the stem bracket legs are resilient and taper inwardly from the periphery of the base portion, said
105 legs having curved end portions which engage the set stem.

7. A set stem mechanism in accordance with any one of claims 1 to 6, wherein the bearing means comprises an aperture extending
110 through the base portion of the stem bracket.

8. A set stem mechanism in accordance with any one of claims 1 to 7, wherein the set stem further includes a set pinion formed integrally
115 therewith, said pinion being journaled for rotation in the bearing means.

9. A watch including the set stem mechanism as claimed in claim 8, wherein the watch includes a crown gear coupled to a minute
120 wheel, and said mechanism further includes a watch crown mounted to the end of the elongated body portion, said crown being moved outwardly from the watch during setting bringing the stem pinion into mesh with the crown gear for effecting movement of the minute wheel.
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10. A set stem mechanism for a watch substantially as hereinbefore described with reference to the accompanying drawings.

5 11. A watch including the set stem mechanism as claimed in any one of claims 1 to 8 or 10.

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