United States Patent

Grohoski

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[54] SET STEM MECHANISM FOR WATCHES

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[52] **U.S. Cl.** **58/99**

[51] **Int. Cl.** **G04b 37/06**

[58] **Field of Search** 58/63, 67, 95–99

[56] **References Cited**

UNITED STATES PATENTS

479,930	8/1892	Arrick	58/99
1,926,713	9/1933	Cochin	58/67
398,957	3/1889	Faxon	58/98 X
1,292,441	1/1919	Depollier	58/95

FOREIGN PATENTS OR APPLICATIONS

16,784	11/1915	Great Britain	58/95

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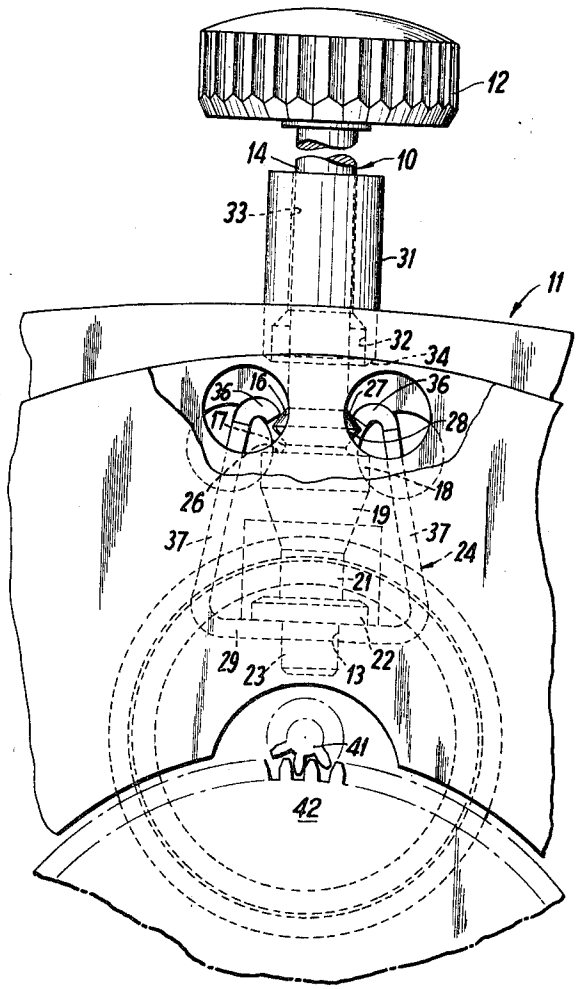
[57] **ABSTRACT**

A set stem mechanism for watches comprising a set stem having a set pinion integral therewith and a shaped body portion which is designed for engagement with a stem bracket in either a set or an idle position. A stem release sleeve is slidably mounted about the set stem to contact the bracket disengaging it from the stem in order to facilitate removal of the crown and stem assembly.

5 Claims, 3 Drawing Figures



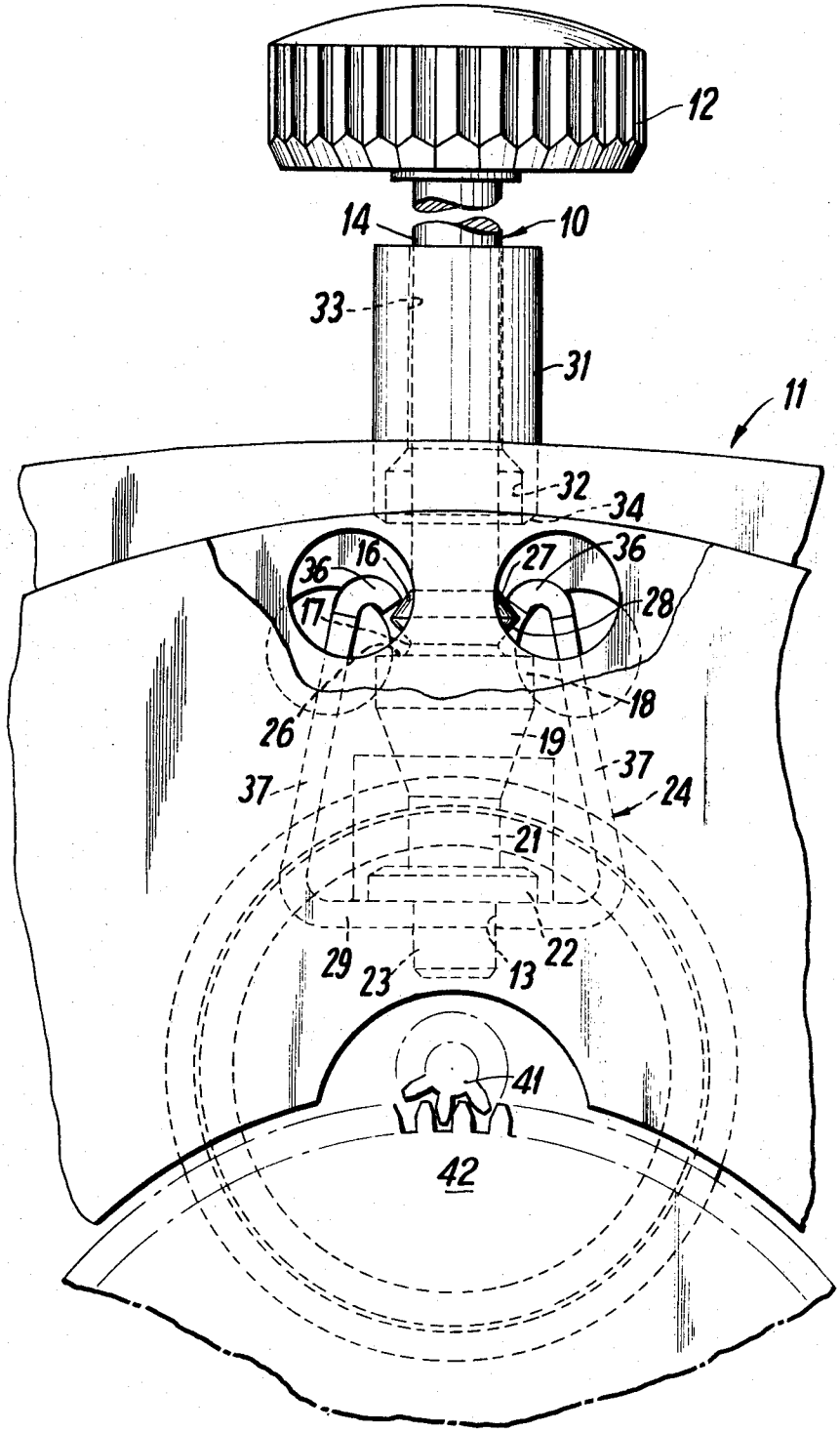


FIG. 1

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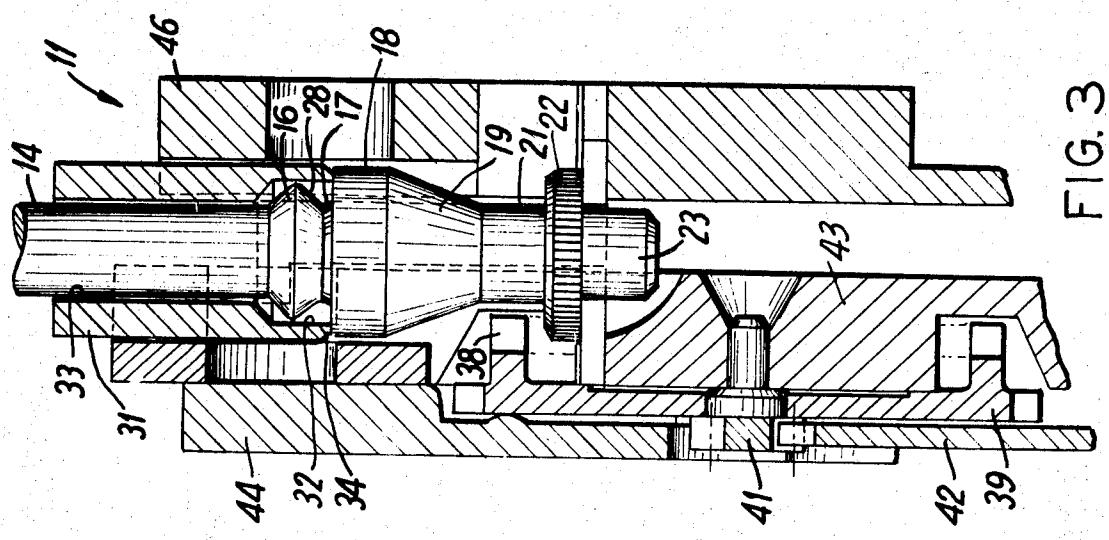

FIG. 3

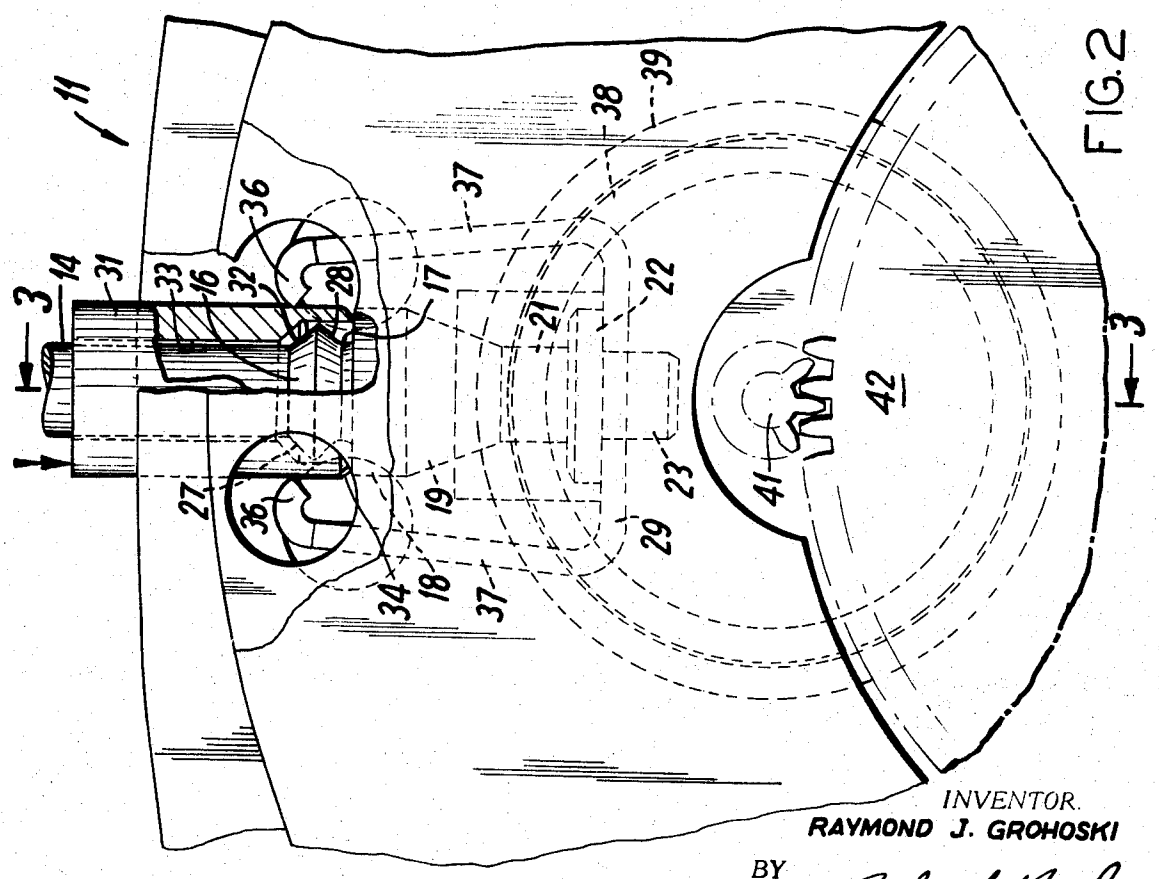

FIG. 2

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SET STEM MECHANISM FOR WATCHES

BACKGROUND OF THE INVENTION

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

The prior art includes U.S. Pat. Nos. 287,001 and 1,292,441 which disclose various set stem arrangements. These patents are merely of general interest, however, and the present invention represents a distinct improvement thereover. 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.

Other prior art of interest are U.S. Pat. Nos. 1,409,067 and 2,480,843. U.S. Pat. No. 1,409,067 pertains to oil well machinery and discloses a sleeve which is designed to release a locking member mounted about a body member. U.S. Pat. No. 2,480,843 discloses a locking plug and jack having a sleeve arrangement slidable on a stem to bias the lock spring arms to a release position. These patents while illustrating various mechanical structures in other fields do not pertain to watches and the distinct problems encountered in this field.

SUMMARY OF THE INVENTION

The present invention pertains to 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.

Accordingly, it is an object of this invention to provide a new and improved set stem mechanism for watches which is lest costly, exhibits improved performance characteristics and is more readily repaired.

Other objects and advantages may be seen from the following description when viewed in conjunction with the drawings described below.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the invention with portions of the drawing cut away to show the important parts thereof;

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

FIG. 3 is a cutaway side view of the subject set stem mechanism taken along the line 3—3 of FIG. 2.

DETAILED DESCRIPTION

Referring now to the drawings, the set stem mechanism of the present invention comprises a set stem **10** having one end extending outwardly from the watch **11** and having a 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 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 the body section **21**. A set pinion **22** is formed integrally with the stem **10** between body section **21** and the end portion **23**.

The set stem **10** is held in place by a pincer-type stem bracket **24** which engages protruding portion **16** in an idle position and when the stem **10** is retracted to a set position the bracket **24** engages one surface **26** of enlarged portion **18**. The tapered 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**. The base **29** of the bracket **24** includes the bearing means **13** for the stem **10**.

A stem release sleeve **31** is slidably mounted about the stem **10**. The sleeve **31** includes a countersunk portion **32** which clears locking portion **16** and an elongated aperture **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 pincerlike legs **37** apart. This releases the stem **10** permitting 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.

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 portion **36** of the stem bracket **24** outwardly until surface **28** is reached. The ends **36** of bracket **24** then drop into the recessed portion **17** between the outwardly extending portions **16** and **18** on the stem **10**.

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

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 the train bridge **46**. 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 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**.

It is to be understood that the above-described arrangements are merely illustrative examples of the application of the principles of the invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

I claim:

1. A set stem mechanism for watches comprising:

a set stem having an elongated body portion at the end protruding from the watch case, an intermediate locking portion having a pair of sloping faces, and a second end portion,

a set stem bracket, having a base portion including an aperture extending therethrough to be engaged by the second end portion of the set stem and a pair of upwardly extending legs which engage the sloping faces 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 and spread apart 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 set stem further includes a set pinion formed integrally therewith said pinion being journaled for rotation in the stem bracket aperture, and

the stem release sleeve includes a countersunk entrance portion which 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 intermediate portion to act as a stop for the stem release sleeve, and, the

the locking portion comprises a protruding portion having 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.

4. A set stem mechanism in accordance with claim **2** wherein:

the stem bracket legs are resilient and taper inwardly from the periphery of the base portion, said legs having curved end portions which engage the set stem.

5. A set stem mechanism in accordance with claim 2 wherein the watch includes a crown gear coupled to the minute wheel, said mechanism further including:

a 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, and

the locking portion comprises a protruding portion which forces the stem legs apart from a first locked position until the legs move into a second locked position for setting.

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