June 12, 1956 E. K. SCHWAIBOLD 2,749,703

SEALED CALENDAR WATCH

Filed April 26, 1954

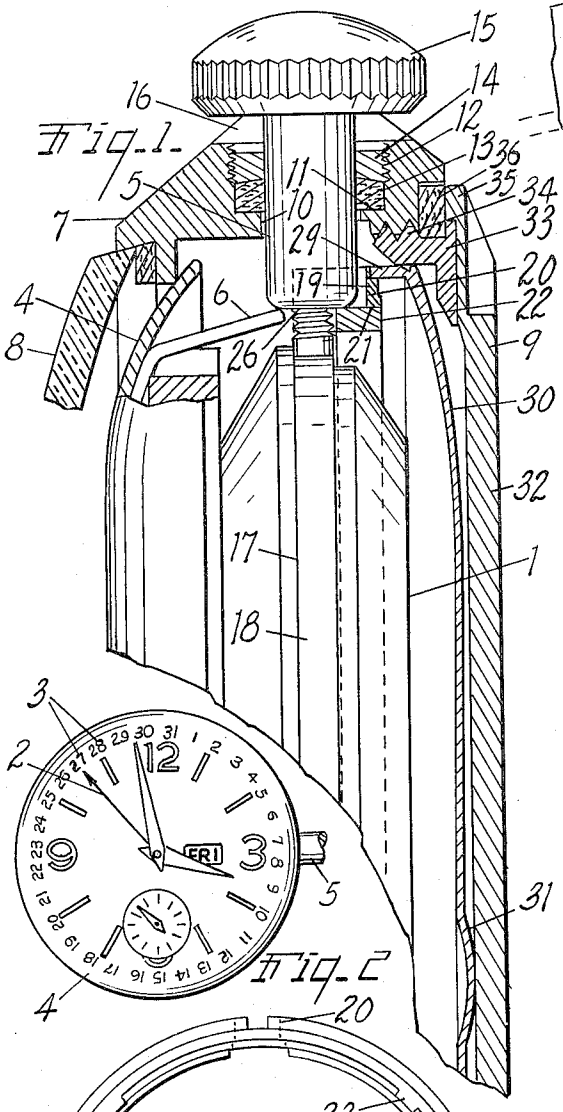


Fig. 1

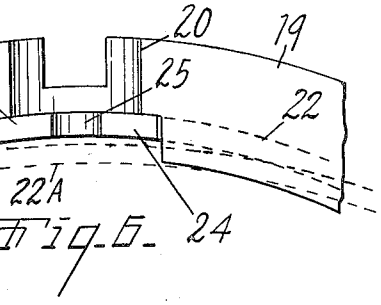


Fig. 6

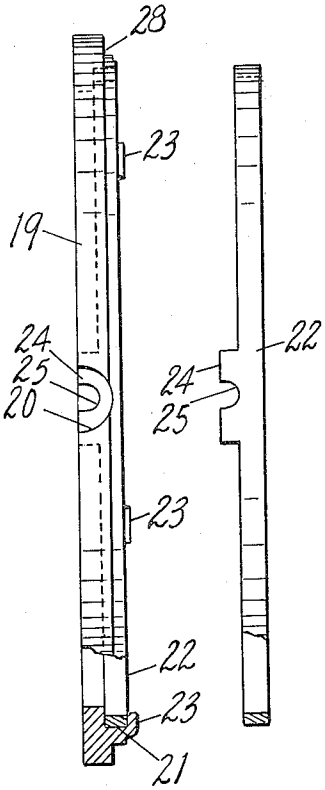


Fig. 4

Fig. 5

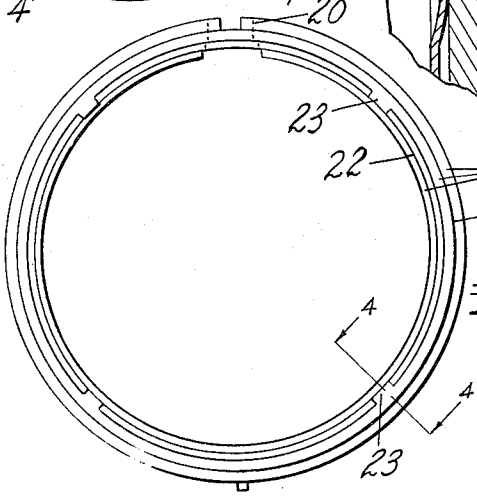


Fig. 3

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SEALED CALENDAR WATCH

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Application April 26, 1954, Serial No. 425,502

3 Claims. (Cl. 58—90)

This invention relates to improvements in sealed calendar watches. The principal objects of this invention are:

First, to provide a calendar watch which may be effectively sealed against the entrance of dirt and moisture to the case.

Second, to provide a calendar watch having a novel spring arrangement for returning the stem axially upwardly of the case so that axial movement of the stem may be utilized in setting the calendar movement.

Third, to provide a calendar watch with a movement centering structure which yieldably supports the movement in the case and yieldably returns the stem of the movement axially outwardly of the case.

Fourth, to provide means for yieldably biasing the stem of a calendar watch movement with sufficient force to permit the stem to overcome the friction of a waterproof seal surrounding the stem.

Other objects and advantages of the invention will be apparent from the following description and claims. The drawings illustrate a preferred embodiment of the watch.

Fig. 1 is a fragmentary cross sectional view through a waterproof calendar watch embodying the invention. tion.

Fig. 2 is a front view of the dial or face of the movement.

Fig. 3 is a back elevational view of the movement ring which centers the movement in the case.

Fig. 4 is an edge elevational view of the movement ring partially broken away in radial cross section along the plane of the line 4—4 in Fig. 3.

Fig. 5 is an edge elevational view of the stem returning spring partially broken away in radial cross section.

Fig. 6 is an enlarged fragmentary front elevational view illustrating the action of the stem biasing spring.

Watch movements are presently known and available which will not only record time in hours and minutes but which will further record the days of the week and the numerical days of the month. A movement of this type is indicated at 1 and as is best illustrated in Fig. 2 the movement is provided with a date hand 2 which cooperates with the numerical date indicia 3 marked around the periphery of the dial 4. Obviously the hand 2 must be adjusted or set at various times in order that the hand and indicia shall accurately correspond to the date of the month. Setting of the date hand will be necessary whenever the watch stops inadvertently or when the calendar month contains less than 31 days and it is necessary to advance the date hand 2 to the numerical one for the next succeeding month. This setting of the date hand 2 is accomplished by axial inward motion of the stem 5 of the watch. The mechanism by which axial motion of the stem sets the date hand is a well known part of calendar watch movements and so is not illustrated herein. The present invention deals in part with the provision of means for returning the stem 5 axially outwardly after it has been depressed to set the date hand.

Return motion of the stem 5 has heretofore been accomplished by attaching a spring finger 6 to the rear side of the face 4 so that the end of the finger bears against an inwardly facing shoulder on the stem. The spring force of the finger acts to return the stem after its has been depressed. The force of the spring finger 6 is adequate for the purpose if the stem is free to move axially as in an ordinary unsealed watch case. However, the addition of a waterproofing seal round the stem necessarily applies a friction force to the stem which resists and overcomes the ability of the finger to return the stem. Fig. 1 illustrates a sealed watch case including a bezel 7 having a crystal 8 sealed in the front side thereof and an outer back member 9 sealed to the back of the bezel. A stem bore is proved in the bezel, as at 10 and the bore is counter bored at 11 and threaded at 12. A stem sealing gasket is positioned around the stem at the bottom of the counter bore as at 13 and a packing nut 14 clamps the gasket in sealing relation to the stem. The crown 15 of the stem is spaced radially from the bezel to permit axial depression of the stem through the bezel. The bezel may be notched as at 16 to partially embrace the crown. The construction of the stem seal is more particularly described and claimed in my copending application, Serial No. 425,503, filed April 26, 1954, for Improvements in Waterproof Watch Stem Construction.

The movement 1 is provided with a rearwardly facing shoulder 17 and a cylindrical surface 18 through which the inner portion of the stem 5 extends. A movement ring 19 seats against the shoulder 17 and around the surface 18. The ring is notched as at 20 to clear the stem. Rearwardly of the movement engaging portion of the ring 19 the ring is radially outwardly shoudered as at 21 and receives a cylindrical or circular spring 22. The spring is held against the shoulder 21 by means of ears 23 turned radially inwardly from the rear edge of the movement ring at angularly spaced points around the ring. The ring 22 is provided with a forwardly projecting flange or ear 24 which is disposed midway between two of the spring retaining ears 23 and registered with the stem receiving notch 20 in the movement ring 19. The ear 24 is provided with a forwardly opening notch 25 that embraces the inner portion of the movement stem so that ear 24 underlies and opposes the radially inwardly facing shoulder 26 on the stem.

As is best illustrated in Fig. 6 the cylindrical spring 22 is adapted to be bowed or deflected radially inwardly as shown by the dotted lines at 22–A when the stem 5 is depressed to set the calendar movement. The energy stored in the spring 22 then acts to return the stem radially outwardly and assists the conventional spring 6 in overcoming the friction force of the seal 13 on the stem.

The movement ring 19 is provided with a rearwardly facing shoulder 28 and this shoulder is engaged and centered by forwardly projecting flange 29 on a cup shaped inner back member 30. The inner back member 30 is rearwardly bowed and further provided with a rearwardly projecting dimple 31 in its center which yieldably engages and is pressed upon by the inner surface of the outer back member 9. The outer back member 9 may be of two part construction having a back face 32 of precious or stainless metal and an inner annular ring 33 of base metal. The ring 33 has a forwardly projecting flange that is threaded as at 34 and engaged with threads formed in the interior of the bezel. The threaded flange further embraces and centers the inner back member 30 in the case. A radially projecting flange 35 on the outer back member overlies a rearwardly facing gasket seat on the bezel and presses a sealing gasket 36 against the bezel to complete the waterproof seal of the watch case. The inner and outer back members thus coact in both sealing and yieldably centering the calendar movement in the

case and in supporting the stem returning spring that permits the stem to be sealed with respect to the case.

Having thus described the invention, what is claimed as new and what is desired to be secured by Letters Patent is:

1. A sealed calendar watch comprising, a movement having a stem adapted to adjust the date indicating portion of the movement by reciprocation of the stem, a bezel receiving said movement and having a crystal sealed in its front side, said bezel having a radial bore formed therein passing said stem, a stem sealing gasket retained around said stem, a movement ring seated against said movement, a springable ring retained within said movement ring, said stem having a radially inwardly facing shoulder thereon seated against the radially outer side of said springable ring, and means retaining said movement and said movement ring in said bezel and sealing the back of said bezel.

2. A sealed calendar watch comprising, a movement having a stem adapted to adjust the date portion of the movement by axial motion of the stem, a sealed case including a bezel receiving said movement, said bezel passing said stem, means forming a seal around said stem, a movement ring centering said movement in said case, and an annular spring mounted within said ring and having a radially inwardly unsupported segmental portion extending on both sides of said stem, said stem having a radially inwardly facing shoulder engaging said segmental portion.

3. A sealed calendar watch comprising, a movement having a stem adapted to adjust the date portion of the movement by axial motion of the stem, a sealed case including a bezel receiving said movement, said bezel passing said stem, means forming a seal around said stem, a movement centering member centering said movement in said case, and a spring mounted within said movement centering member and having a radially inwardly unsupported segmental portion extending on both sides of said stem, said stem having a radially inwardly facing shoulder engaging said segmental portion.

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