Jan. 14, 1941. K. T. WAGNER 2,228,681

WATCH CONSTRUCTION

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Fig. 1.

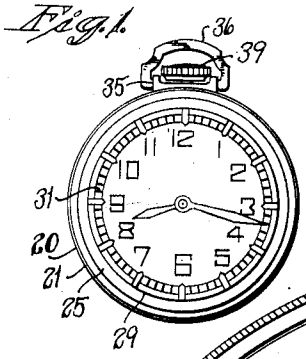


Fig. 3.

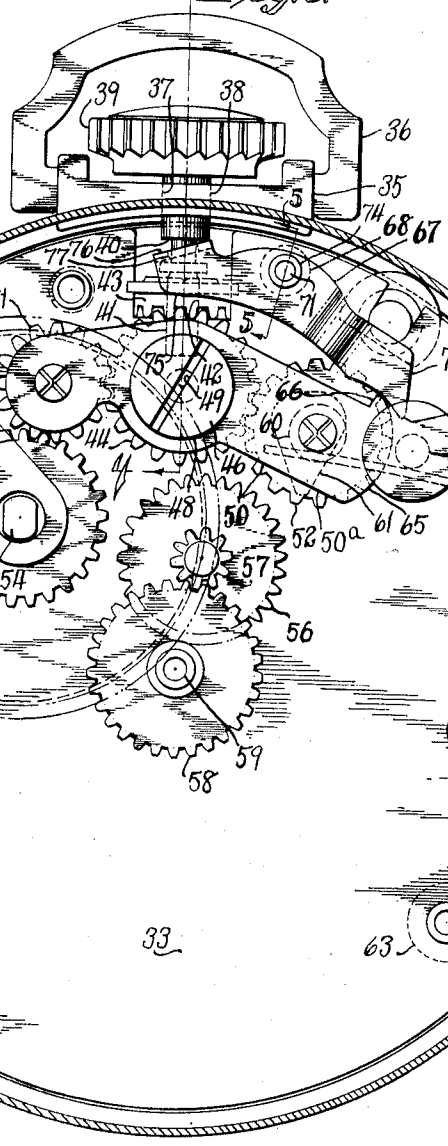


Fig. 2.

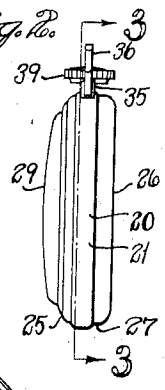


Fig. 9.

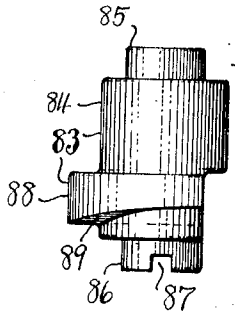
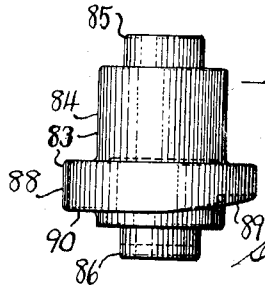


Fig. 10.



Inventor
Karl T. Wagner
By Seymour Earle Nichols
Attorneys

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Fig. 4.

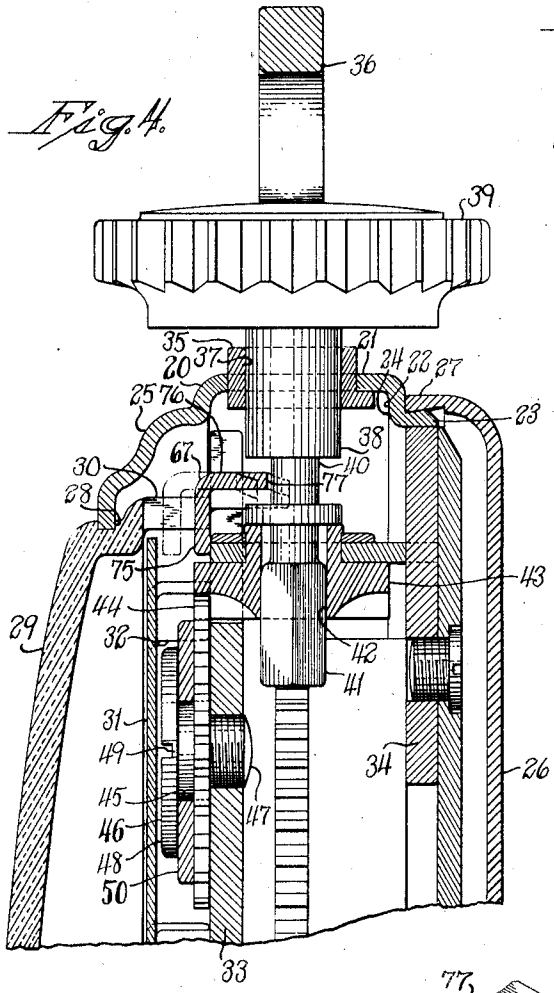


Fig. 5.

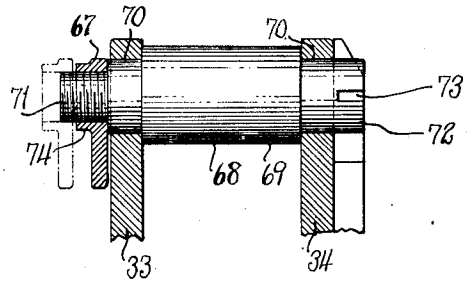


Fig. 6.

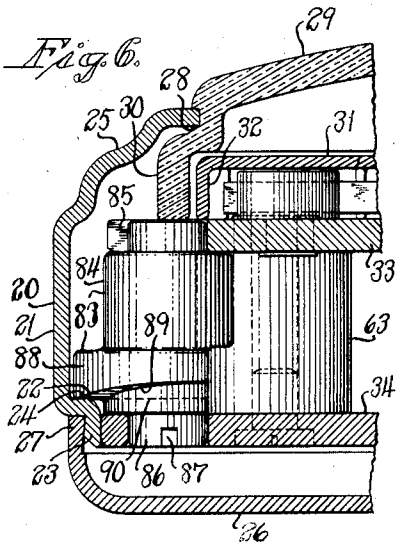


Fig. 7.

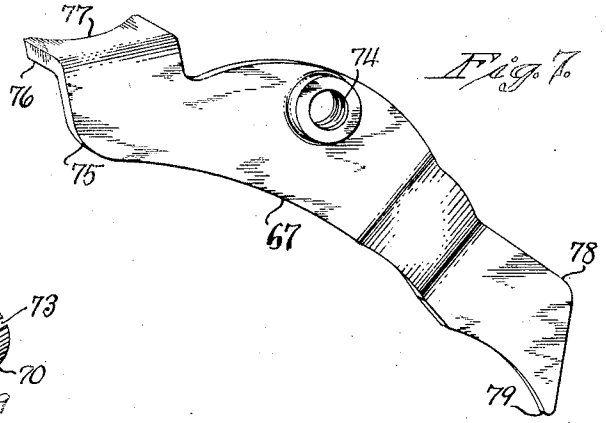
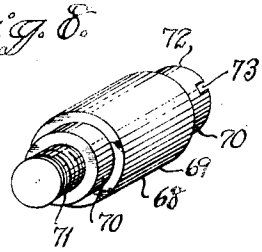


Fig. 8.



Inventor
by Karl T. Wagner
Seymour Earle Nichols
Attorneys

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UNITED STATES PATENT OFFICE

2,228,681

WATCH CONSTRUCTION

Karl T. Wagner, Waterbury, Conn., assignor to The Waterbury Clock Company, Waterbury, Conn., a corporation of Connecticut

Application December 8, 1938, Serial No. 244,513

4 Claims. (Cl. 58—99)

This invention relates to an improved stem-wind and stem-set watch construction, and more especially to an improved construction for watches in which the bezel is constructed as an integrally-formed extension of the center-band portion of the watchcase.

The primary object of the present invention is to provide an improved construction and arrangement of parts in a stem-winding-and-setting mechanism to permit the winding-and-setting stem to be connected up to the watch-movement through an aperture in the watchcase after the placement of the watch-movement within the watchcase and to permit the said winding-and-setting stem to be disconnected from the watch-movement and removed from the watchcase preliminary to the removal of the said watch-movement from the watchcase.

One object of the invention is to provide an improved construction and arrangement of parts in a stem-winding-and-setting mechanism wherein a retaining-member which is preferably the set-lever for the watch-movement, is movable into and out of coupled relationship to the winding-and-setting stem to permit the latter to be connected to and disconnected from the former after the watch-movement has been placed within the watchcase.

Ancillary to the foregoing object, the present invention contemplates a retaining-member or set-lever of improved construction to adapt it to be coupled to and uncoupled from the winding-and-setting stem; and an improved mount for the said retaining-member or set-lever whereby the latter may be coupled to and uncoupled from the said winding-and-setting stem while the watch-movement remains in position within the watchcase.

Another object of the invention is to provide means of improved construction for camming a watch-movement into snug fitting engagement with the watchcase therefor and securely retaining the former within the latter.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which a specific mode of carrying out the present invention is shown for illustrative purposes:

Fig. 1 is a face view of a watch embodying the present invention;

Fig. 2 is an edgewise elevation of the same;

Fig. 3 is a greatly-enlarged sectional view taken on the line 3—3 of Fig. 2 but with the watch-movement shown in front elevation;

Fig. 4 is an enlarged fragmentary view in vertical section corresponding to the line 4—4 of Fig. 3, parts being shown in elevation;

Fig. 5 is an enlarged fragmentary sectional view corresponding to the line 5—5 of Fig. 3;

Fig. 6 is an enlarged fragmentary sectional view corresponding to the line 6—6 of Fig. 3;

Fig. 7 is an enlarged perspective view of the set-lever or retaining-member detached;

Fig. 8 is an enlarged perspective view of the shift-member for pivotally-mounting and moving the set-lever into and out of coupled relationship to the winding-and-setting stem;

Fig. 9 is an enlarged elevational view of one of the locking-cams for camming the watch-movement into snug relation with the watchcase and retaining the former in securely-fastened relation to the latter; and

Fig. 10 is a side elevation of Fig. 9.

According to the embodied form of the invention shown in the drawings, the watchcase includes a center-band member designated generally by the reference character 20, the said center-band member having a cylindrical body-wall 21 which is turned inwardly at its rear edge to provide an annular wall or abutment 22 and terminating in a circular marginal flange 23 which forms with the annular wall 22 an inner shoulder 24; and a back case-plate 26 which is provided with a snap-flange 27 for releasably engaging the marginal flange 23. Integrally formed with the said center-band member 20 is a forwardly-presented bezel-portion 25 which is constructed to provide a peripheral-seat 28 for a crystal 29. The crystal 29 is provided with an annular flange 30 encircling a dial-plate 31 which serves to position the watch-movement at the front of the watchcase.

The watch-movement proper is mounted between and carried by front and rear movement-plates 33 and 34, the said movement-plates being rigidly united together by means of interposed pillars 63. Anterior movement-supporting means are interposed between the front movement-plate and the bezel-portion 25 of the center-band member 20 of the watchcase and, in the present instance, comprise the dial-plate 31 with its rearwardly-presented peripherally-spaced flanges, one of which is shown at 32 in Fig. 6.

Mounted at the top of the center-band member 20 and within an opening in the cylindrical body-wall 21 thereof, is a pendant-head 35. Pivotally connected to the pendant-head 35 is a bow

or pendant 36. Extending through an aperture 37 in the pendant-head 35 and movable axially therethrough into and out of operating-connection with a watch-movement disposed within the watchcase, is a winding-and-setting stem 38 which is surmounted by an operating-head 39 and provided with a coupling-groove 40. At its inner end, the winding-and-setting stem 38 is provided with a rectangular end-portion 41 to removably fit a rectangular socket 42 which extends axially through a winding-and-setting pinion 43, the said end-portion 41 being elongated axially to maintain its non-rotational connection with the said winding-and-setting pinion 43 during the axial shifts of the former for alternately winding and setting the watch.

In continuous mesh with the said pinion 43 is a winding-and-setting wheel 44 which is freely journaled on the cylindrical intermediate body-portion 45 of a supporting-stud which is generally designated by the reference character 46. The said supporting-stud 46 is provided with a threaded reduced inner end 47 which is threaded into the front movement-plate 33. The enlarged circular head 48 of the supporting-stud 46 is provided with a slot 49 for the reception of a suitable tool. Oscillatably mounted upon the intermediate portion 45 of the stud 46 and between the enlarged circular head 48 thereof and the winding-and-setting wheel 44, is a shifting-lever which is designated generally by the reference character 50.

As shown in Fig. 3, a winding-pinion 51, which is always in mesh with the winding-and-setting wheel 44, is journaled in one arm of the shifting-lever 50 while in the other arm 50*a* thereof is journaled a setting-pinion 52. Normally, the winding-pinion 51 is enmeshed with a winding-wheel 53 keyed to a winding-arbor 54, the said winding-wheel 53 being held against retrograde movement by means of a spring-pressed pawl 55. A clockwise movement of the said shifting-lever 50 about its axis in the manner to be hereinafter pointed out, moves the setting-pinion 52 into mesh with a dial-wheel 56 which carries a dial-pinion 57 for driving an hour-wheel 58 in the usual manner. The dial-wheel 56 meshes with a pinion (not shown) on the minute-arbor 59.

In the arm 50*a* of shifting-lever 50 is riveted at its outer end a stud 60 upon which the setting-pinion 52 is journaled. The said stud projects rearwardly through a clearance-slot 61 in the front movement-plate 33. Pressing against the inner end of this stud and tending to retain the arm 50*a* of shifting-lever 50 in its normal raised position is one end of a wire-spring 62 which extends around an adjacent pillar 63 and has its other end anchored as at 64 to the front movement-plate 33. The normal tendency of wire-spring 62, therefore, is to retain the winding-pinion 51 in mesh with the winding-wheel 53. The arm 50*a* of shifting-lever 50 is provided with a rounded end 65 which terminates at the top in a latching-shoulder 66.

Arranged above the said arm 50*a* is a set-lever which is generally designated by the reference character 67. The said set-lever 67 is pivotally mounted intermediately of its ends on the forward end of a shift-member generally designated by the reference character 68 and, in the form shown in the drawings includes: an intermediate cylindrical body-portion 69 in rotational abutment at opposite ends with the front and rear movement-plates 33 and 34; reduced journaling-portions 70—70 journaled in the said movement-plates; a threaded forward end 71 which protrudes beyond the front movement-plate 33; and a turning-head 72 provided with a slot 73 for the reception of a suitable tool.

As shown particularly well in Fig. 7, the set-lever 67 is provided with an interiorly-threaded boss or socket 74 which is constructed and arranged to have threaded engagement with the threaded forward end 71 of the shift-member 68. The set-lever 67 is provided with a coupling-arm 75 having a laterally-presented coupling-finger 76 provided with an arcuate recess 77, the said set-lever together with the coupling-finger being movable laterally into and out of coupled relation to the winding-and-setting stem 38 within the coupling-groove 40. The said set-lever 67 is also provided with a shifting-lever actuating-arm 78 having a latching-nose 79 at its outer end.

As shown in Fig. 3, the latching-nose 79 has a profile which adapts it to operate as a cam upon the rounded outer end 65 of arm 50*a* of the shifting-lever 50 so that when a clockwise movement is imparted to the set-lever 67 by an outward axial displacement of the winding-and-setting stem 38, the latching-nose 79 depresses the said arm 50*a* by a camming engagement therewith as it rides over the rounded outer end 65 and snaps into engagement with the latching-shoulder 66 at the upper edge of the arm 50*a*. Under these conditions, the setting-pinion 52 is moved downwardly into mesh with the dial-wheel 56 and retained in mesh therewith by the set-lever 67 until said set-lever is returned to winding position.

From an inspection of Fig. 3, it will be seen that the latching-nose 79 is maintained in alignment with the rounded outer end 65 of the arm 50*a* of shifting-lever 50 during successive operations of the shifting-lever 50 by means of its arrangement between the large circular head 80 of a retaining-stud 81 in front and the setting-pinion 52 behind, the said set-lever 67, for this purpose, being formed near the latching-nose 79 so as to slidably overlap the front face of the setting-pinion 52.

It will be understood that one or more turns imparted to the shift-member 68 will serve to force the set-lever 67 outwardly from the front movement-plate 33, the said set-lever pivoting outwardly about the latching-nose 79 as a pivot to thus effect a retraction of the coupling-finger 76 from within the coupling-groove 40 of the winding-and-setting stem 38 which is thus released to be withdrawn axially from its engagement with the winding-and-setting pinion 43. Following the removal of the winding-and-setting stem, and after the cam-locks, to be presently described, have been moved to release positions, the watch-movement may be removed from the watchcase for any desired purpose. Furthermore, when the watch-movement is being placed within the watchcase, the procedure is considerably facilitated by the separate introduction of the winding-and-setting stem 38 after the watch-movement has been placed within the watchcase, when, by turning the shift-member 68 in a reverse direction, the set-lever 67 is drawn into its stem-retaining position with the coupling-finger 76 projecting into the coupling-groove 40 in the winding-and-setting stem.

Referring more especially to Figs. 6, 9 and 10, the present invention contemplates means of improved construction for retaining a watch-movement within the watchcase, and for this purpose employs two or more cam-locks ar-

ranged between and at the outer peripheries of the front and rear movement-plates **33** and **34**. One of the said cam-locks is shown especially well in Figs. 9 and 10 and is generally designated by the reference character **83**. After the dial-plate **31** has been securely fastened to the front movement-plate **33** with the peripherally-spaced flanges thereof in rigid abutment with the front movement-plate, the watch-movement is placed in position in the center-band member **20** with the dial-plate **31** positioned within the flange **30** of the crystal **29** and the front movement-plate **33** in abutment with the said flange **30**. The said cam-locks are then turned to their movement-retaining positions.

For this purpose, each cam-lock comprises a cylindrical body-portion **84**, a reduced tail-end portion **85**, a reduced head-end portion **86** provided with a transverse slot **87** for the reception of a suitable tool, and a cylindrical cam-portion **88**. As shown in Fig. 6, the said cam-locks are mounted between the front and rear movement-plates **33** and **34**, the tail-end portions **85** thereof being rotatably mounted in the front movement-plate **33**, while the head-end reduced portion **86** thereof is rotatably mounted in the rear movement-plate **34**. The cylindrical body-portions **84** of the said cam-locks are thus arranged in rotational endwise abutment with the said movement-plates. The said cylindrical cam-portion **88** of each cam-lock which protrudes from the body-portion **84** thereof and extends approximately halfway around the axis of the cam-lock, comprises a helical camming-surface **89** inclined rearwardly towards the rear movement-plate **34** and the annular abutment **22**, and a locking-surface **90** normal to the cam-lock axis.

It will be understood, therefore, that as each cam-lock is turned about its axis, the watch-movement is first brought into snug engagement with the annular flange **30** of the crystal by the helical camming-surface **89** and afterwards retained in that position by the locking-surface **90** in engagement with the annular abutment **22**.

The invention may be carried out in other specific ways than that herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. In a watch, the combination with a watchcase provided with an aperture through which a winding-and-setting stem may be connected up with a watch-movement within the watchcase; of a watch-movement provided with front and rear movement-plates, the said watch-movement also including a setting-member mounted forwardly of said front movement-plate and carrying a winding-wheel and a setting-wheel; a winding-and-setting stem for the said watch-movement, constructed to be connected to the watch-movement through the said aperture after the watch-movement has been placed within said watchcase and to be disconnected therefrom prior to the removal of the watch-movement from the watchcase; a winding-and-setting stem retaining-member movable toward and away from the forward-surface of the front movement-plate and into and out of coupled engagement with the winding-and-setting stem, the said retaining-member having a rearwardly-extending coupling-portion and being also provided with an actuating-portion arranged in front of the said front movement-plate and engaging thereat with the said setting-member for shifting the same together with the winding- and setting-wheels carried thereby; and a shift-member extending through the said movement-plates, the said shift-member having the said retaining-member mounted on its forward end and being so connected to the said retaining-member as to be capable of selectively moving the latter into and out of coupled engagement with the said winding-and-setting stem.

2. In a watch, the combination with a watchcase, of a winding-and-setting stem rotatable in the center-band portion of the watchcase; a watch-movement mounted in the watchcase and having front and rear movement-plates, the said watch-movement also including a setting-member mounted forwardly of said front movement-plate and carrying a winding-wheel and a setting-wheel; a set-lever pivotally mounted intermediately of its ends at the front of the front movement-plate and movable forwardly and rearwardly in respect thereto; means for coupling one end of said set-lever to the said winding-and-setting stem, said coupling-means being operable by the rearward and forward movements of the said set-lever to connect and disconnect said coupling-means, the said set-lever also including an actuating-portion arranged in front of the said front movement-plate and engaging thereat with the said setting-member for shifting the same, together with the winding- and setting-wheels carried thereby; and a shift-member movably mounted in the said movement-plates, the said shift-member having the said set-lever mounted thereon and being so connected to the said set-lever as to be capable of selectively moving the latter by operation of the shift-member from the rear of the rear movement-plate to connect and disconnect the said set-lever from the winding-and-setting stem.

3. In combination with a watchcase comprising a center-band portion and a bezel-portion integrally formed therewith; a winding-and-setting stem rotatable about an axis extending radially into said watchcase through the said center-band portion thereof; a watch-movement mounted within the watchcase and provided with front and rear movement-plates, the said watch-movement also including a setting-member mounted forwardly of said front movement-plate and carrying a winding-wheel and a setting-wheel; a set-lever arranged anteriorly with respect to the front movement-plate and movable inwardly and outwardly with respect thereto, the said set-lever being movable into and out of coupled relation to the winding-and-setting stem by the former's inward and outward movement with respect to the front movement-plate, the said set-lever including a rearwardly-extending coupling-portion and being also provided with an actuating-portion arranged in front of the said front movement-plate and engaging thereat with the said setting-member for shifting the same together with the winding- and setting-wheels carried thereby; a set-lever shift-member journaled in both of said movement plates and rotatable from the rear of the rear movement-plate, the said set-lever shift-member being restrained against axial movement and the said set-lever being pivotally mounted on the anterior end of the shift-member therefor; and an

operating-connection between the set-lever and the said shift-member for converting the rotary movement of the latter into an inward and outward displacement of the former with respect to the front movement-plate.

4. In a watch, the combination with a watch-case comprising a center-band portion, a bezel-portion integrally formed therewith, and a detachable back case-plate; of a watch-movement provided with front and rear movement-plates arranged within the watchcase, the said watch-movement also including a setting-member mounted forwardly of said front movement-plate and carrying a winding-wheel and a setting-wheel; a winding-and-setting stem rotatable about an axis extending radially through the center-band portion of the watchcase and having a shank provided with a coupling-groove; a set-lever shift-screw rotatably mounted in the said movement-plates and rotatable from the rear of the rear movement-plate, said set-lever shift-screw being provided with a threaded extremity protruding forwardly from the front movement-plate for mounting of a set-lever thereon; a set-lever having intermediately of its ends, a combined pivotal and threaded connection with the threaded extremity of the said shift-screw, the said set-lever being provided at one end with a coupling-finger movable into and out of coupled engagement with said winding-and-setting stem within the said coupling-groove of the latter, and the said set-lever being also provided with an actuating-portion arranged in front of the said front-movement plate and engaging thereat with the said setting-member for shifting the same together with the winding- and setting-wheels carried thereby.

KARL T. WAGNER.