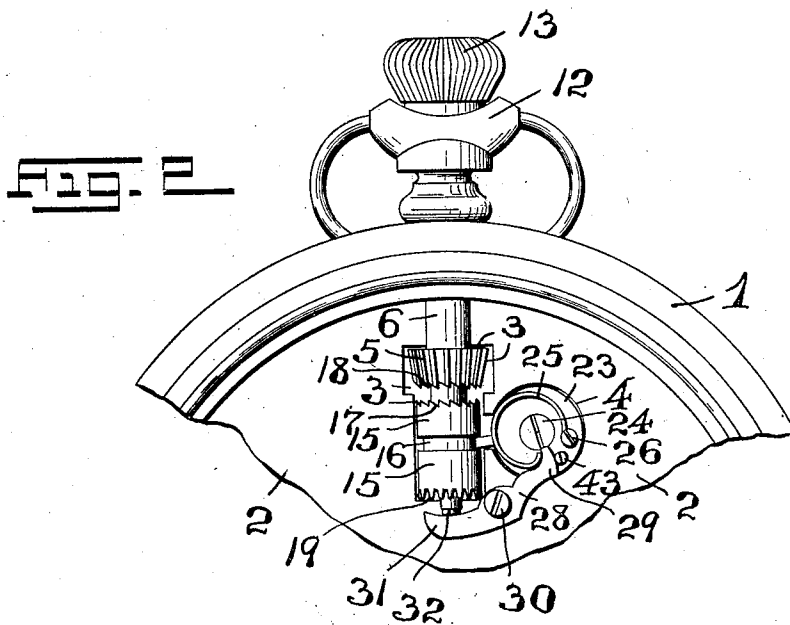
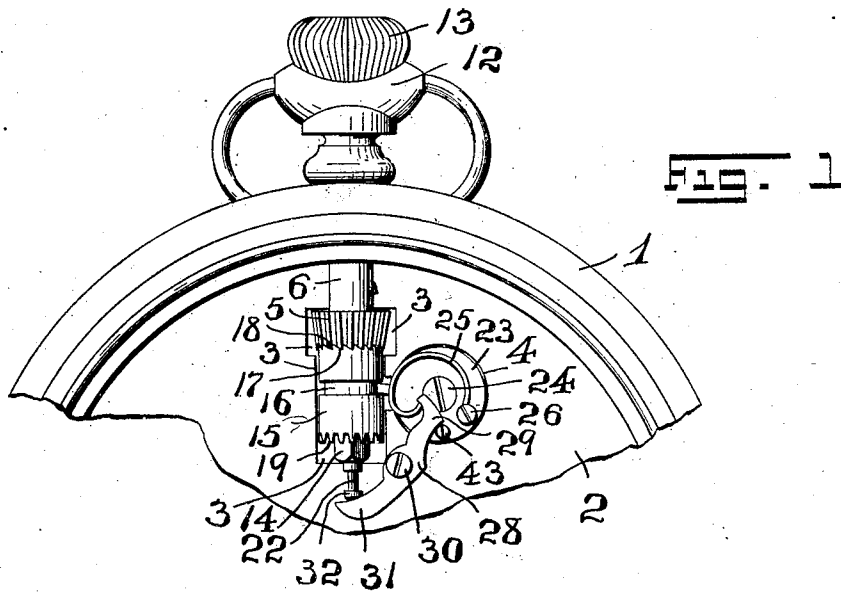


No. 845,000.

PATENTED FEB. 19, 1907.

L. C. HAUBROE.
STEM WINDING AND STEM SET MECHANISM.
APPLICATION FILED JUNE 22, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

Frederick Jamison
Anna H. Alter

INVENTOR:

Lars C. Haubroe,
BY
Fraentzel and Richards,
ATTORNEYS

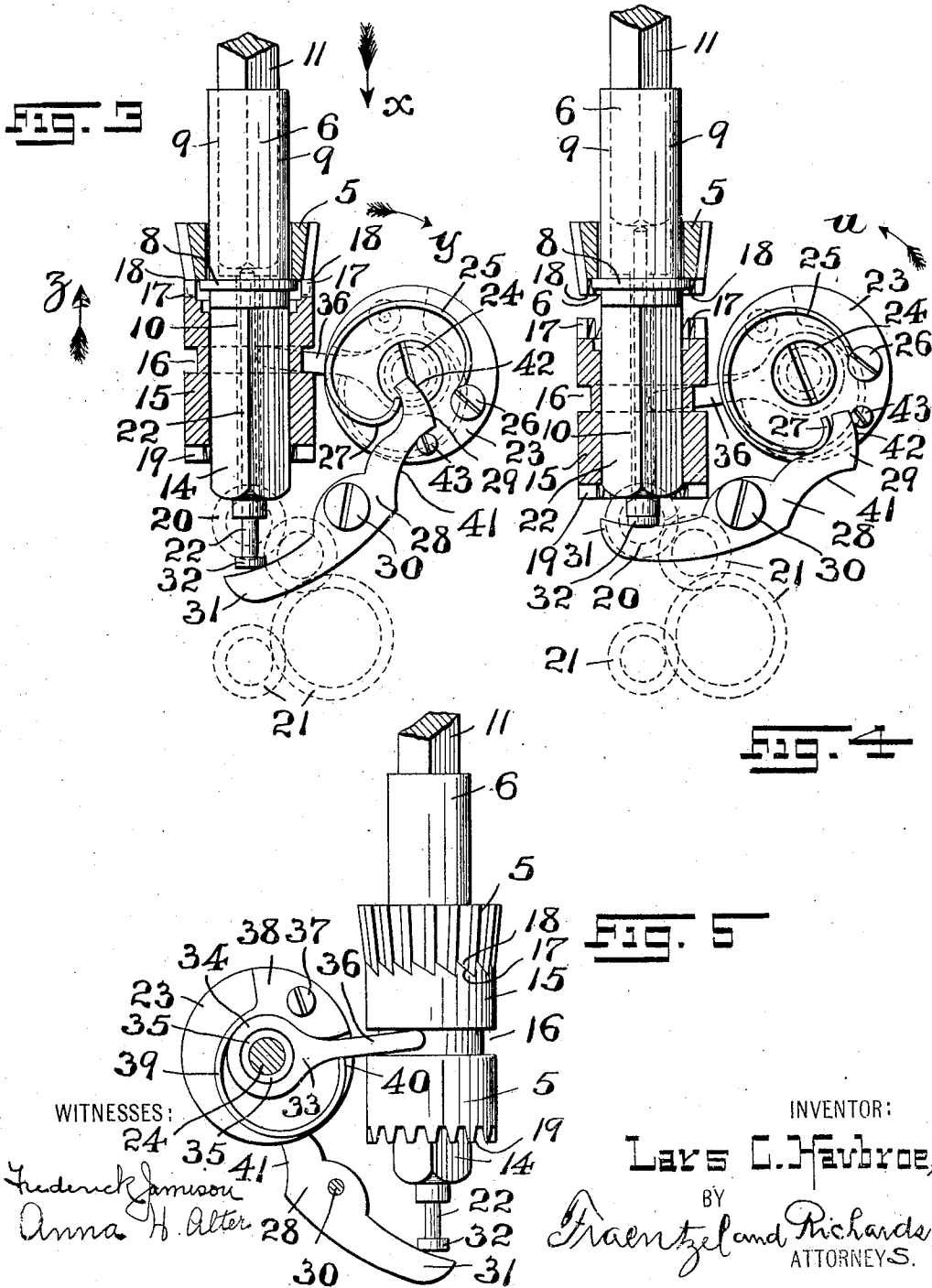
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

LARS C. HAUBROE, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO
THOMAS B. BOOTH, OF NEWARK, NEW JERSEY.

STEM-WINDING AND STEM-SET MECHANISM.

No. 845,000.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed June 22, 1906. Serial No. 322,822.

To all whom it may concern:

Be it known that I, LARS C. HAUBROE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Stem-Winder and Stem-Set Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates generally to improvements in watches; and the invention has reference more particularly to a novel stem-winder and stem-set mechanism for watches.

The present invention therefore has for its principal object to provide a simply-constructed and efficiently-operating stem-winder and stem-set mechanism for watches the parts of which have been reduced to a minimum, so as to take up but very little space when arranged in the main disk or plate within the watchcase.

Other objects of this invention not at this time more particularly mentioned will be clearly understood from the following detailed description of the same.

The invention consists, primarily, in the novel stem-winder and stem-set mechanism hereinafter more fully set forth; and, furthermore, this invention consists in the various arrangements and combinations of devices and parts, as well as in the details of the construction of the same, all of which will be fully described in the following specification and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a plan or top view of the stem-winder and stem-set mechanism embodying the principles of my present invention, said view showing a portion of the watchcase and the main disk or plate therein, the parts of the mechanism being shown in their relative positions when used for winding the mainspring of the watch; and Fig. 2 is a similar view of the same parts when arranged for actuating the train of small gears for setting the hands of the watch. Fig. 3 is a detail

view of the parts of the mechanism made upon a larger scale, the clutch pinion or sleeve and the winding-pinion being represented in longitudinal vertical section, but the remaining parts of the mechanism being shown in plan, the several parts of the mechanism being illustrated in their relative positions ready for the winding of the mainspring of the watch. Fig. 4 is a similar view of the same parts of mechanism shown in their relative positions ready for setting the hands of the watch, and Fig. 5 is a reverse view in plan of the various parts illustrated in said Fig. 3.

Similar characters of reference are employed in all of the said above-described views to indicate corresponding parts.

Referring now to the several figures of the drawings, the reference character 1 indicates a portion of a watchcase in which is arranged and suitably secured the usual main disk or plate 2, the said disk or plate being made with a depression or opening 3, of a suitable configuration necessary for the purposes of my present invention, and with a circular depression 4. The reference character 5 indicates a winding-gear which is loosely arranged upon a spindle 6 and has a portion fitted over an annular shoulder or enlargement 8 of said spindle, the said gear 5 being rotatively arranged in the depression or opening 4 and bearing against said shoulder or enlargement, substantially as illustrated in the several figures of the drawings. The said spindle 6 is made with an angularly-formed, preferably square, receiving-socket 9, the shouldered end of the spindle being closed and provided with a longitudinally-extending cylindrical duct 10, all of which is clearly indicated in dotted outline in Figs. 3 and 4 of the drawings. Slidably arranged within the receiving-socket 9 of the spindle is the one end portion of a correspondingly-formed arbor, stem, or shank 11, the upper end of which extends through a suitable opening in the edge of the watchcase and also through the usual pendant 12, being provided with a crown or finger-piece 13 for the purpose of turning said arbor or stem. The lower end portion of the said spindle is angular made or is of a squared cross-section, as at 14, and slidably arranged thereon is a clutch-sleeve 15. Owing to the arrangement and construction of these parts the said angular or squared member 14 causes the said sleeve 15

to revolve with the said spindle when actuated by means of the arbor or stem 11. The said sleeve is provided with an annular recess or depression 16, and at its upper end it is provided with a ratchet portion 17, adapted to be brought in engagement with the ratchet-shaped end 18 of the winding-gear 5. The lower end portion of the said sleeve is provided with suitably-constructed gear-teeth 19, which are adapted to be thrown into and out of mesh with a pinion 20 of a set of gear mechanism 21, as clearly indicated in dotted outline in the drawings and for the purpose of setting the hands of the watch.

A small rod 22 is arranged in the longitudinally-extending duct 10, one end of said rod projecting into the receiving-socket of the spindle 6 and being in engagement with the inner end portion of the main stem or arbor 11.

The circular disk or plate 23 is arranged within the depression or opening 4 in the main disk or plate 2, said disk or plate 23 oscillating upon the shank of a screw 24. Upon the upper surface of the said disk 23 is secured a spring 25, substantially of the conformation shown in Figs. 1 and 3 of the drawings. The one end of the said spring is secured upon the said disk by means of a screw 26, and its opposite free end 27 engages with an angularly-formed end 29 of an oscillating lever 28, the same being pivotally arranged upon the post or screw 30, which is screwed into the said main plate or disk 2, as shown. The lower end portion of the said lever is in frictional engagement with the lower end 32 of the previously-mentioned rod 22.

Suitably secured upon the opposite side of the said disk or plate 23 is the shifting-lever 33, as clearly indicated in Fig. 5 of the drawings, the said shifting-lever having a hub 34, which is pivotally arranged upon the shoulder 35 of the said disk or plate. The finger 36 extends from the said shifting-lever into the annular recess or depression 16 of the previously-mentioned sleeve 15. Secured upon the said lower face of the said disk or plate 23, preferably by means of a screw 37, is the end portion 38 of a spring 39, said spring passing about the hub 34 of the shifting-lever 33 and having its free end portion 40 bearing against the one edge of the finger 36, as clearly indicated in said Fig. 5 of the drawings.

When the various parts of the mechanism are in their relative positions, (indicated in Figs. 1 and 3 of the drawings,) the mechanism is ready for winding the mainspring of the watch, the winding or finger piece 13 is pushed down into its normal position, and the inner end of the stem or arbor 11 being in engagement with the upper end portion of the rod 10. This downward movement of the said finger-piece 13 forces the arbor 11 in the direction of the arrow x (see Fig. 3) and pushes the rod 22 against the end por-

tion 31 of the lever 30. This in turn forces the lever down and causes the other end of the said lever to engage with the spring 25. Said spring is thereby compressed and produces a slight rotary movement of the disk or plate 23 in the direction of arrow y . (Shown in Fig. 3.) Thus when the said disk or plate 23 has been moved in the direction of the said arrow y the finger 36 of the shifting-lever has produced the sliding motion of the sleeve 15 in the direction of the arrow z in Fig. 3, whereby its ratchet or tooth end 17 is brought in active engagement with ratchet or tooth end 18 of the winding-wheel 5, and it will be seen that when the parts are in this position the turning of the arbor or stem 11, spindle 6, and sleeve 15 will produce the rotary motion of the winding-gear 5 for winding the mainspring of the watch, as will be clearly evident. When in these relative positions, the shifting-lever is held in its operative position by means of the spring 39, as indicated in Fig. 6, a function of the said spring 39 being to allow the sleeve 15 and shifting-lever 33 to receive a slight reciprocatory motion upon the square or angular end portion 14 of the spindle 6 upon the backward turning of the finger-piece 13 during the winding operation, the spring 39 always returning the sleeve 15 in an upward direction, so that it will engage with the winding-gear during the forward turning of the finger-piece while winding the mainspring of the watch. For setting the hands of the watch the finger-piece 13 and stem or arbor 11 are drawn or moved upwardly to the positions indicated in Figs. 2 and 4 of the drawings. The rod 22 follows the upward movement of the said stem or arbor 11, and the end portion 27 of the spring 25 forces the lever 28 to the position indicated in Fig. 4, its end portion 31 still bearing against the end 32 of the rod 22, and the cam-like movement of the peculiarly-formed edge portions 41 and 42 of the lever against the screw or lug 43 upon the disk or plate 23 causes the latter now to revolve in the direction of the arrow u . (Shown in said Fig. 4.) The consequent movement of the shifting-lever in a downward direction is thereby produced, carrying the sleeve 15 from its position indicated in Fig. 3 to that shown in Fig. 4 until its gear-teeth 19 are brought in operative engagement or mesh with the teeth of the pinion 20. The winding-gear is now loosely arranged upon the spindle 6 out of operative engagement with the sleeve 15, and it will be seen that upon the turning of the said arbor or stem 11 the sleeve 15 actuates the pinion 20, and through the intermediate system of gearing 21 the hands of the watch may be turned and properly set. By again forcing the crown or finger-piece 13 in its inward direction the various parts are forced from their relative positions

shown in Fig. 4 back to the positions represented in Fig. 3, so as to bring the mechanism in its proper condition for winding the mainspring of the watch.

5 From the foregoing description of my present invention it will be seen that I have devised a simply-constructed and easily-operative means which serves the double purposes of winding the mainspring of a watch
10 and also for setting the hands of the same.

I claim—

1. In a stem-winder and stem-set mechanism for watches, the combination, with a main stem and a gear system for setting the
15 hands, of a winding-pinion on said stem, a slidably-arranged clutch-sleeve, and means for producing a reciprocatory motion of the clutch-sleeve for bringing it alternately in operative engagement, either with the wind-
20 ing-pinion or said gear system, consisting of an oscillatory disk, a spring-controlled shifting-lever, movable upon one side of the disk, an oscillating lever having a portion in engagement with said disk, and a spring se-
25 cured to said disk and having a portion in engagement with said lever, substantially as and for the purposes set forth.

2. In a stem-winder and stem-set mechanism for watches, the combination, with a
30 main stem, and a gear system for setting the hands, of a spindle provided with a socketed receiving portion in which a portion of said stem is slidably arranged, a winding-pinion on said spindle, a slidably-arranged clutch-
35 sleeve on said spindle, and means for producing a reciprocatory motion of the clutch-sleeve for bringing it alternately in operative engagement, either with the winding-pinion or said gear system, consisting of an oscil-
40 latory disk, a spring-controlled shifting-lever, movable upon one side of the disk, an oscillating lever having a portion in engagement with said disk, and a spring secured to said disk and having a portion in engagement
45 with said lever, substantially as and for the purposes set forth.

3. In a stem-winder and stem-set mechanism for watches, the combination, with a main stem having an angular cross-section,
50 and a gear system for setting the hands, of a spindle provided with a socketed receiving portion in which a portion of said stem is suitably arranged, said spindle being provided also with a longitudinally-extending
55 duct, a winding-pinion on said spindle, an annular shoulder on said spindle against which said winding-pinion rests, a slidably-arranged clutch-sleeve on said spindle, a rod in said duct of the said spindle having one
60 end in engagement with the end of the main stem and having its other end projecting from the end of the spindle, and means for producing a reciprocatory motion of the clutch-sleeve for bringing it alternately in
65 operative engagement, either with the wind-

ing-pinion or said gear system, consisting of an oscillatory disk, a spring-controlled shifting-lever, movable upon one side of the disk and in engagement with said clutch-sleeve,
70 an oscillating lever having one end portion in engagement with said disk and its other end portion in engagement with the end portion of the rod which projects from the clutch-sleeve, and a spring secured to said disk and having a portion in engagement
75 with said lever, substantially as and for the purposes set forth.

4. In a stem-winder and stem-set mechanism for watches, the combination, with a main stem having an angular cross-section,
80 and a gear system for setting the hands, of a spindle provided with a socketed receiving portion in which a portion of said stem is slidably arranged, said spindle being provided also with an annular shoulder and an
85 end portion of an angular cross-section provided with a longitudinally-extending duct, a winding-pinion on said spindle, said pinion resting against said annular shoulder and said pinion being provided with a ratchet-
90 shaped end, a slidably-arranged clutch-sleeve on the angular portion of said spindle, said sleeve being provided at its one end with a ratchet-shaped tooth end adapted to be brought in engagement with the ratchet-
95 shaped end of said winding-pinion, and said sleeve being provided at its other end with gear-teeth adapted to be brought in engagement with a pinion of said gear system, a rod in said duct of the said spindle having one
100 end in engagement with the end of the main stem and having its other end projecting from the end of the spindle, and means for producing a reciprocatory motion of the clutch-sleeve for bringing its toothed end
105 portions alternately in operative engagement, either with the ratchet-shaped end portion of the winding-pinion or with the pinion of said gear system, consisting of an oscillatory disk, a shifting-lever in engagement
110 with said clutch-sleeve, and an oscillatory lever having one end in engagement with said disk and the other end portion in engagement with the end portion of the rod which projects from the clutch-sleeve, sub-
115 stantially as and for the purposes set forth.

5. In a stem-winder and stem-set mechanism for watches, the combination, with a main stem having an angular cross-section,
120 and a gear system for setting the hands, of a spindle provided with a socketed receiving portion in which a portion of said stem is slidably arranged, said spindle being provided also with an annular shoulder and an end
125 portion of an angular cross-section provided with a longitudinally-extending duct, a winding-pinion on said spindle, said pinion resting against said annular shoulder, and said pinion being provided with a ratchet-shaped end, a slidably-arranged clutch-sleeve on the an-
130

gular portion of said spindle, said sleeve being provided at its one end with a ratchet-shaped tooth end adapted to be brought in engagement with the ratchet-shaped end of said winding-pinion, and said sleeve being provided at its other end with gear-teeth adapted to be brought in engagement with a pinion of said gear system, a rod in said duct of the said spindle having one end in engagement with the end of the main stem and having its other end projecting from the end of the spindle, and means for producing a reciprocatory motion of the clutch-sleeve for bringing its toothed end portion alternately in operative engagement, either with the ratchet-shaped end of the winding-pinion or the spindle of said gear system, consisting of an oscillatory disk, a spring-controlled shifting-lever, movable upon one side of the disk and in engagement with said clutch-sleeve, an oscillating lever having one end portion in engagement with said disk and its other end portion in engagement with the rod which projects from the clutch-sleeve, and a spring secured to said disk and having a portion in engagement with said lever, substantially as and for the purposes set forth.

6. In a stem-winder and stem-set mechanism for watches, a setting means consisting of an oscillatory disk, a post or pin on which said disk oscillates, a shifting-lever loosely arranged on said post or pin, upon one side of said disk, and a spring secured at one end to said disk and having a portion in engagement with said shifting-lever, substantially as and for the purposes set forth.

7. In a stem-winder and stem-set mechanism for watches, a setting means consisting of an oscillatory disk, a post or pin on which said disk oscillates, a shifting-lever loosely arranged on said post or pin, upon one side of said disk, and a spring secured at one end to said disk and having a portion in engagement with said shifting-lever, combined with an oscillating lever having an end portion extending over a portion of the opposite side of said disk, and a second spring having its one end

secured upon the face of said disk and having its other end in engagement with said end portion of the lever, substantially as and for the purposes set forth.

8. In a stem-winder and stem-set mechanism for watches, a setting means consisting of an oscillatory disk, a post or pin on which said disk oscillates, of an oscillating lever having an end portion extending over a portion of a side of said disk, a shifting-lever loosely arranged on said post or pin, upon one side of said disk, and a spring secured at one end to said disk and having a portion in engagement with said shifting-lever, and a post or stop on said disk with which an edge portion of said lever is in slidable engagement, substantially as and for the purposes set forth.

9. In a stem-winder and stem-set mechanism for watches, the combination, with an oscillatory disk, and a post or pin on which said disk oscillates, of an oscillating lever having an end portion extending over a portion of a side of said disk, and a spring having its one end secured upon the face of said disk and having its other end in engagement with said end portion of the lever, substantially as and for the purposes set forth.

10. In a stem-winder and stem-set mechanism for watches, the combination, with an oscillatory disk, and a post or pin on which said disk oscillates, of an oscillating lever having an end portion extending over a portion of a side of said disk, and a spring having its one end secured upon the face of said disk and having its other end in engagement with said end portion of the lever, and a post or stop on said disk with which an edge portion of said lever is in slidable engagement, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 16th day of June, 1906.

LARS C. HAUBROE.

Witnesses:

FREDK. C. FRAENTZEL,
FREDERICK JAMISON.