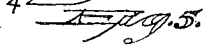
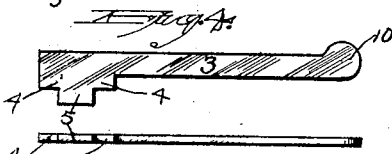
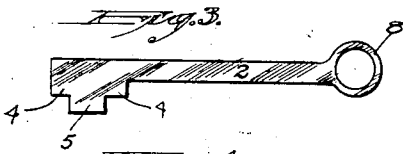
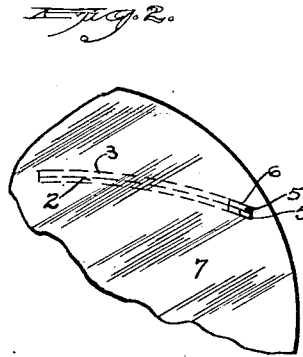
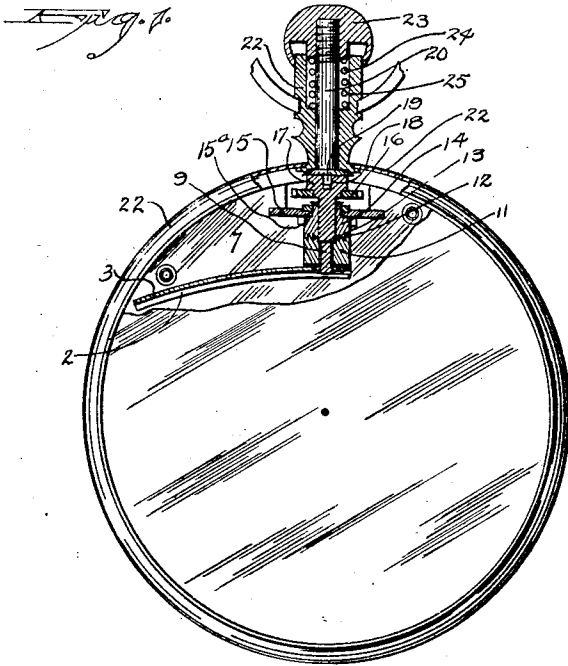


E. H. HORN.
STEM WINDING AND STEM SETTING WATCH.
APPLICATION FILED FEB. 13, 1920.

1,354,300.

Patented Sept. 28, 1920.



Inventor
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att'y

UNITED STATES PATENT OFFICE.

ERNEST H. HORN, OF WATERBURY, CONNECTICUT, ASSIGNOR TO WATERBURY
CLOCK CO., OF WATERBURY, CONNECTICUT, A CORPORATION.

STEM-WINDING AND STEM-SETTING WATCH.

1,354,300.

Specification of Letters Patent.

Patented Sept. 28, 1920.

Application filed February 13, 1920. Serial No. 358,317.

To all whom it may concern:

Be it known that I, ERNEST H. HORN, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Stem-Winding and Stem-Setting Watches; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Figure 1, a view partly in vertical section and partly in rear elevation of a watch embodying my invention.

Fig. 2, a broken view in front elevation of the front movement-plate, showing the mode of attaching the ratchet-wheel spring and the winding-and-setting stem spring thereto.

Fig. 3, a detached plan view of the ratchet-spring.

Fig. 4, a corresponding view of the winding-and-setting stem spring.

Fig. 5, an edge view thereof.

My invention relates to an improvement in that class of stem-winding and stem-setting watches in which the stem is pushed in, in setting the watch, the object being to make watches of this class more reliable in their action by securing greater certainty in the operation of the clutch-mechanism used in the discharge of the winding function.

With this end in view, my invention consists in a winding-and-setting watch having an independent spring each for the winding-ratchet and the winding-and-setting stem.

My invention further consists in certain details of construction as will be hereinafter described and pointed out in the claims.

In carrying out my invention, as herein shown, I employ a ratchet-spring 2 and a winding-and-setting stem spring 3. These springs which correspond to each other in length, are superimposed one upon the other and each is formed at its butt end with a spacing shoulder 4 and a fastening-rivet 5, the said rivets being passed from rear to front through a rectangular opening 6 in the front movement-plate 7 and being peened or headed down upon the outer face thereof, whereby the two springs are fastened to the front movement-plate from

which they are spaced by their shoulders 4. The free end of the ratchet-spring 2 is enlarged to form a ring 8 through which the swaged inner end of the winding-and-setting stem 9 extends into position for engagement with the enlarged rounded end 10 of the spring 3 thereof. The said ring 8 of the ratchet-spring 2 bears directly upon the inner face of the winding-ratchet 11 on opposite sides of the said stem and exerts a constant effort to engage the face-teeth 12 thereof with complementary face-teeth 13 formed upon the lower face of a hub 14 journaled in a bridge 15 and having cut upon it the winding-wheel 15^a constituting an element of a winding-train of ordinary character and not shown. By adapting the spring 2, as by forming it with a ring 8, to engage with the ratchet on opposite sides of the stem, the ratchet is lifted into engagement with the face-teeth 13 of the hub 14 of the winding-wheel 15 in such position that all of their teeth are simultaneously engaged and go into mesh to their full depth, due to the balanced pressures exerted by the spring 2 upon the ratchet 11 on opposite sides of the stem 9, as described.

The winding-ratchet 11, aforesaid, has a square central opening and is loosely mounted upon the square lower end of the stem 9 so as to rotate therewith, and have limited endwise and lateral play thereupon, the said stem passing outwardly through and clearing the winding-wheel 15^a and carrying a setting-wheel 16 constituting an element of a setting-train of approved form, and not illustrated. As shown, the setting-wheel 16 is mounted upon the shoulder of a coupling-hub 17 formed integral with the outer end of the stem 9 and transversely slotted, as at 18, for the reception of a driving-edge 19 located upon the inner end of the pendant stem 20 which is mounted in a pendant 21 secured in the usual manner to the watch-case ring 22. The stem 20 mounts a crown 23 and is normally held at the limit of its outward movement by the action of a helical spring 24 interposed between it and the bottom of a recess 25 in the outer end of the pendant.

Under the construction described, the ratchet-spring 2 by its direct engagement with the adjacent inner face of the winding-ratchet 11, exerts a constant effort to keep the face-teeth 12 thereof in engagement with the

face-teeth 13 of the hub 14 of the winding-wheel 15^a. This engagement is maintained entirely independent of the action of the winding-and-setting stem spring 3 which exerts a constant effort to push the winding-and-setting stem 9 to the limit of its outward movement. When the face-teeth of the winding-ratchet 11 are engaged with the face-teeth of the hub 14 of the winding-wheel 15^a (which is the normal position of the parts), the watch is in readiness for winding. At this time, the setting-wheel 16 is out of mesh with the next wheel in the setting-train so that the act of winding the watch does not disturb the setting of the watch. On the other hand, when the two stems 9 and 20 are simultaneously pushed inward by inward pressure on the crown 23, the setting-wheel 16 is carried into engagement with the adjacent wheel of the setting-train and the winding-ratchet 11 carried away against the tension of the spring 2, from the face-teeth 13 of the hub 14 of the winding-wheel 15^a, the winding-and-setting stem 9 having a shoulder 26 which engages with the outer face of the winding-ratchet 11 to push the same inward as described. On the other hand, as soon as pressure is removed from the crown 23, the spring 2 reasserts itself and acting directly upon the winding-ratchet 11 reengages the same with the face-teeth 12 of the hub 14 of the winding-wheel 15^a.

As herein shown, my improvement has been applied to a watch of the particular construction shown and described in United States Patent No. 926,329, dated June 29th, 1909; but my invention is not limited to use with watches of that particular construction, and I would have it so understood, the essence of my invention being the provision of a separate spring for operating the winding-ratchet instead of relying upon the spring employed to push the winding-stem outward into its normal position and sustain it normally in that position.

I claim:

1. In a stem-winding and stem-setting watch of the push-in-to set type, the combination with the winding-ratchet and the winding-and-setting stem thereof, of a spring for operating the said winding-ratchet from opposite sides of the said stem, and an independent spring for operating the said stem.

2. In a stem-winding and stem-setting watch of the push-in-to set type, the combi-

nation with the winding-ratchet and the winding-and-setting stem thereof, of two springs superimposed upon each other and respectively acting independently of each other upon the said winding-ratchet and the said stem to move the same outwardly in discharge of their respective functions the ratchet-spring engaging the ratchet on opposite sides of the said stem.

3. In a stem-winding and stem-setting watch of the push-in-to-set type, the combination with the front movement-plate thereof, of winding-and-setting mechanism including a winding-ratchet and a winding-and-setting stem, and two springs secured to the front movement-plate and respectively acting independently of each other upon the said winding-ratchet and the said stem to move the same outwardly in discharge of their respective functions, the ratchet-spring engaging the ratchet on opposite sides of the said stem.

4. In a stem-winding and stem-setting watch of the push-in-to set type, the combination with the winding-ratchet and the winding-and-setting stem of the winding-and-setting mechanism, of two springs respectively acting independently of each other upon the said ratchet and stem to move the same outwardly in discharge of their respective functions, the spring acting upon the ratchet being formed at its end with a ring which engages with the inner face of the ratchet and through which the said stem is engaged with the other spring.

5. In a stem-winding and stem-setting watch of the push-in-to-set type, the combination with one of the movement-plates thereof, of winding-and-setting mechanism including a winding-ratchet and winding-and-setting stem, of two springs superimposed upon each other, attached at a common point to the said movement-plate from which they are spaced apart, and respectively acting independently of each other upon the said winding-ratchet and stem to move the same outwardly in discharge of their respective functions the ratchet-spring acting upon the ratchet upon opposite sides of the said stem.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ERNEST H. HORN.

Witnesses:

K. E. MARSHALL,
G. H. CLOSE.