N. S. NORTH.

MAINSPRING WINDER.

APPLICATION FILED NOV. 18, 1910.

1,009,852. Patented Nov. 28, 1911.

Fig. 1.

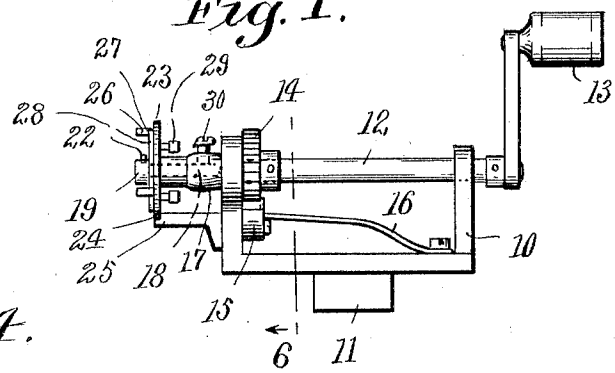



Fig. 6.

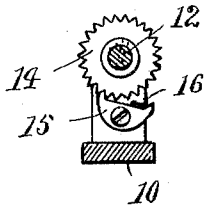
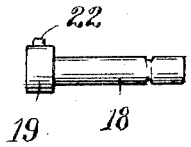



Fig. 4.



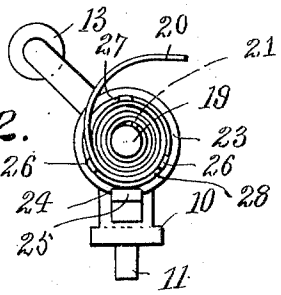




Fig. 2.

Fig. 3.

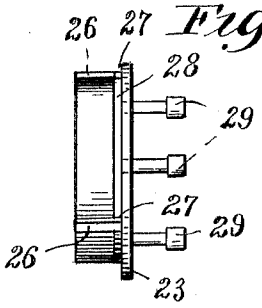
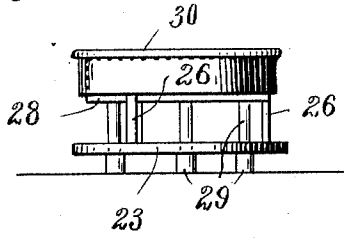



Fig. 5.




Witnesses

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# UNITED STATES PATENT OFFICE

NORMAN S. NORTH, OF MOODUS, CONNECTICUT.

## MAINSPRING-WINDER.

1,009,852. Specification of Letters Patent. **Patented Nov. 28, 1911.**

Application filed November 18, 1910. Serial No. 592,961.

*To all whom it may concern:*

Be it known that I, NORMAN S. NORTH, a citizen of the United States, and resident of Moodus, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Main-spring-Winders, of which the following is a specification.

My invention relates to new and useful improvements in main spring winders, of the class employed for winding watch or clock springs, preparatory to placing the same in a spring case as employed in watch or clock movements.

It is the object of my invention to generally improve and simplify the construction of main spring winders of the above class and particularly to provide an improved form of head upon which the spring is wound, and through the medium of which it is transferred into the spring case in a simple and desirable manner, as will later be described.

Similar characters of reference will be found to designate like or corresponding parts throughout the several figures of the accompanying drawings, and of which—

Figure 1, shows a side elevation of my improved form of spring winder complete. Fig. 2, is a front end view of the construction shown in Fig. 1, with a spring indicated therein as in the act of being wound. Fig. 3, is an enlarged detached side view of the spring winding head, with arbor removed and a wound spring contained therein and ready to be covered by a spring case. Fig. 4, is a detached side view of arbor removed. Fig. 5, is a further enlarged detached side view of the head seated upon its side as in the act of transferring the spring from head to the spring case, and Fig. 6, is a cross sectional elevation through the winder, and taken on line 6 of Fig. 1.

Referring by numerals to the characters of reference marked upon the drawings 10 indicates the frame of the device which is provided with a lug 11 by means of which the winder may be rigidly supported in a watch maker's vise, during the winding operation. This frame includes two uprights that form bearings for a rotary shaft 12 operated by means of a crank and handle 13. This shaft is provided with a ratchet 14 that is engaged by a pawl 15 pivotally connected to one of the uprights and provided with a spring 16 that is movably secured to the frame, and is designed to insure the engagement of the pawl with the ratchet. The forward end of the spring 16 that engages the pawl is intended to be shifted toward either end of the pawl so as to throw either end of the pawl into engagement with the ratchet, to hold it against either forward or backward movement. The forward end of the shaft outside of the upright is provided with a sleeve 17 that forms a socket for an arbor 18 secured to the sleeve by a screw 30 and thus made to turn with the shaft. The outer end of this arbor is provided with an enlargement that forms a hub 19 around which the spring 20 is wound and which together with the disk 23 and plate 28 constitute the head. These heads are made in different sizes for different size springs and can be readily detached and different sizes substituted as occasion requires. These watch springs are all made with a small hole 21, through their inner end, that in practice serves to engage a part of the watch movement, not shown, and which also serves to be engaged by a teat 22 upon the periphery of the hub of the arbor 18. The disk 23 is mounted upon this arbor and is provided with a notch 24 in its lower edge to engage an arm 25 of the frame to hold the disk against turning, and otherwise serves to stiffen and support it in position. A series of guide lugs are rigidly secured to this disk and extend out upon its front side at a right angle and engages a notch 27 in the edge of the face plate 28. The face plate 28 is also mounted upon the arbor and is provided with several stop pins 29 that are disposed inward and pass on freely through the disk 23 to hold the face plate against turning and to limit the amount of movement of the plate from the disk.

In practice the inner end of the watch spring is made to engage the arbor by placing the hole 21 of the spring over the teat 22. The turning of the shaft in a forward direction will then draw the spring in between the lugs 26, and wind it upon the hub of the arbor as indicated in Fig. 2. After the spring has been all wound in between the said lugs 26, the spring 16 is shifted to throw the pawl to engage the other side of the ratchet wheel whereupon the shaft 12 is given a short backward turn to disengage the teat 22 from the inner end of the watch spring. The screw 30 is next loosened to permit the arbor, head and spring, to be de-

tached from the winding shaft, and free for the removal of the arbor 18 (see Fig. 4) from the head, leaving it and the watch spring intact as seen in Fig. 3. The head containing the spring is thus taken and laid over upon its side and supported upon the ends of pins 29 together with the spring wound therein, whereupon the spring case 30 is placed over the head and spring. A suitable instrument such as the point of a screw driver is next shoved in between the plate and disk in a manner to separate the same and force the latter and its lugs 26 down and out of the spring case as shown in Fig. 5 and thus leaving the spring free within the case.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In a main spring winding device of the character described, the combination with a shaft, of a head detachably mounted on the end thereof and comprising an arbor having means to engage one end of a main spring, a disk also made detachable with said head and bearing a series of rigidly attached lugs intermediate of which the main spring is wound, a face plate arranged alongside of the disk and intermediate of its lugs and also adapted to be removed with the head and separated from the disk to draw the lugs off from the wound spring, and means for limiting the amount of such movement of the plate with relation to the disk.

2. In a main spring winding device, the combination with a winding device, of a detachable head adapted to fit upon the end of the winder shaft, and comprising a detachable arbor having a hub upon the outer end and bearing a teat to engage the main spring, a normally stationary disk within which the arbor turns but adapted to be removed therewith and bearing a series of fixed lugs upon one side, a face plate arranged alongside of the disk and also adapted to be removed therewith, said disk and plate being made movable with respect to each other so that the plate can be operated to draw its lug off from the wound main spring contained therein.

3. In a main spring winding device of the character described, the combination with a shaft, of a head mounted on the end thereof and comprising a removable spring winding arbor, a removable face plate against which the side of the spring is wound and having guide pins upon one side to limit the movement of the plate, a disk mounted upon the arbor and having lugs extended out past the face plate to form guides for the main spring, the whole constructed and arranged to first permit of the removal of arbor plate and disk, and then the separation of the plate and disk to discharge the wound spring into a spring case.

4. In a main spring winding device of the character described, the combination with a shaft, of a head mounted on the end thereof and comprising a face plate and disk movably connected together, one having guide pins to limit the amount of said movement and the other having lugs between which the spring is wound, a removable spring winding arbor adapted to normally hold the plate and disk upon the shaft to permit of their removal for the detachment of the spring.

Signed at Moodus in the county of Middlesex and State of Conn. this 12th day of November A. D., 1910.

NORMAN S. NORTH.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."