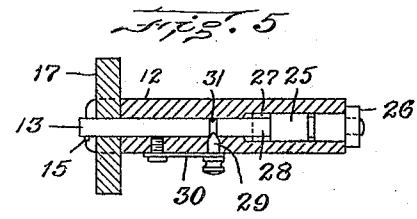
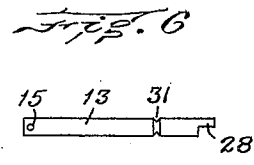
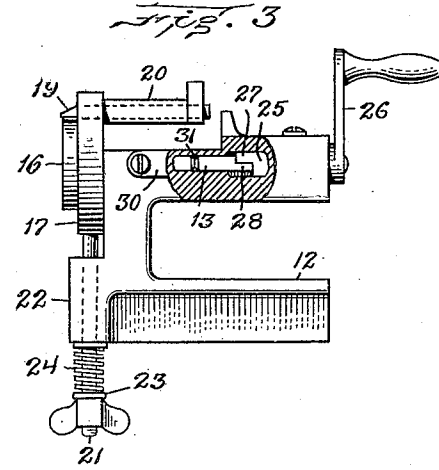
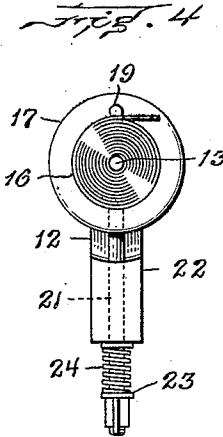
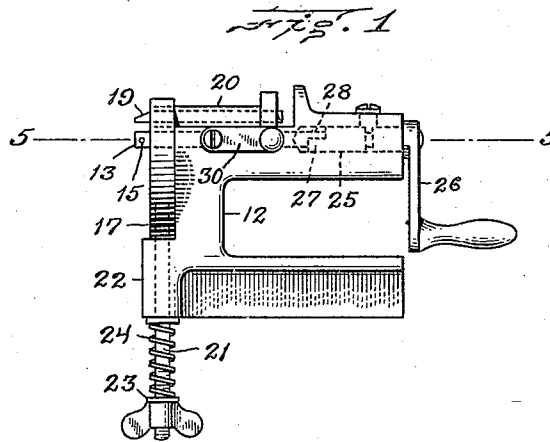
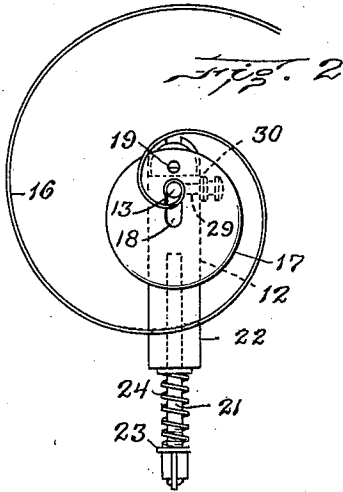


G. W. BOWERS.
MAINSRING WINDER.
APPLICATION FILED JAN. 22, 1909.

938,818.

Patented Nov. 2, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE W. BOWERS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HAMMEL, RIGLANDER & CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MAINSRING-WINDER.

938,818.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed January 22, 1909. Serial No. 473,725.

To all whom it may concern:

Be it known that I, GEORGE W. BOWERS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Mainspring-Winders, of which the following is a specification.

This invention has for its object to provide a simple and effective device for winding or unwinding the mainspring of a watch or clock, and permitting its convenient application to the barrel with which it coöperates.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation of a mainspring winder embodying my invention, the winder being shown in its condition prior to the winding operation, or at the commencement of the same. Fig. 2 represents an end elevation of the winder in the condition shown in Fig. 1. Figs. 3 and 4 represent views similar to Figs. 1 and 2 showing the winder at the close of the winding operation. Fig. 5 represents a section on line 5—5 of Fig. 1. Fig. 6 represents a side view of one of the winding mandrels removed from the machine.

The same reference characters indicate the same parts in all the figures.

In the drawings,—12 represents a supporting frame having a bearing in which is removably mounted a rotatable spring-engaging and winding mandrel 13, one end of which is provided with a stud 15 adapted to engage the orifice usually formed in the inner end of a mainspring 16, so that the rotation of the mandrel will wind the spring upon the mandrel in a constantly increasing spiral coil, means being employed, as hereinafter described, for supporting one side of the growing coil, and for exerting pressure on one side of the spring strip to cause the convolutions of the coil to lie in close contact with each other during the entire winding operation, the result being the formation of a closely wound coil upon the mandrel, the coil and mandrel being removable together from the frame so that the coiled spring may be conveniently transferred to the accompanying barrel.

The preferred means for supporting and

causing the compact winding of the spring include a face plate 17 which is preferably of circular form, and has a slot 18 through which the outer end portion of the mandrel 13 projects, said slot permitting the face plate to move crosswise of the mandrel from the position shown in Figs. 1 and 2 to that shown in Figs. 3 and 4.

The face plate has a flat outer side at right angles with the mandrel, said side being formed to support the growing coil formed on the mandrel.

19 represents a finger or wiper which is connected with the face plate so as to move therewith in a direction at right angles to or crosswise of the mandrel, and is arranged to bear upon the outer side of the spring 16, and press the successive convolutions toward the mandrel, and thus cause the compact winding of the spring. The wiper 19 is preferably a rod or pin removably inserted in a sleeve 20 affixed to the face plate above the mandrel, one end of said pin projecting from the outer side of the face plate in position to bear on the spring strip during the winding operation.

Means are provided for pressing the wiper yieldingly toward the mandrel, and permitting the wiper and the face plate to move together in the direction required to separate the wiper from the mandrel, and accommodate the increasing diameter of the coil, said means, as here shown, comprising a rod or stem 21 attached to the face plate 17 and movable in a guide 22 formed on the frame 12, said rod having a spring abutment 23 preferably formed by a thumb nut adjustably engaged with the threaded outer end portion of the rod, and a spring 24 interposed between the guide 22 and the shoulder 23, said spring acting to normally hold the face plate and wiper in the position shown in Figs. 1 and 2, and permitting said parts to be displaced by the increasing coil, as indicated in Figs. 3 and 4.

As above stated, the mandrel is removably mounted in the frame so that at the conclusion of the winding operation the mandrel and spring coiled thereon may be removed from the frame. To permit the convenient rotation of the mandrel when it is in its operative position, I provide an operating shaft 25 which is journaled in a bearing in the frame in alinement with the mandrel, said shaft being rotatable by suitable means, such

as a crank 26. The shaft is provided with a coupling member 27 adapted to detachably engage a complementary coupling member 28 on the inner end of the mandrel, said members being so formed as to cause the rotation of the mandrel by the shaft, and to permit the mandrel to be moved endwise out of engagement with the shaft and from the frame.

To prevent accidental removal of the mandrel from the frame during the winding operation, I provide a securing device comprising a latch pin 29 which is carried by a spring 30 attached to the frame 12, and is normally pressed inwardly by said spring into engagement with a peripheral groove 31 in the mandrel. When the mandrel is inserted in the frame and engaged with the operating shaft, the latch pin 29 springs into engagement with the groove 31 and thus prevents removal of the mandrel.

I claim:

1. A mainspring winder comprising a supporting frame, a rotatable spring-engaging and winding mandrel removably mounted in the frame, and projecting therefrom, a movable side support and a wiper engaged therewith, the support and wiper being adapted to bear respectively on the side and perimeter of a coiled spring accumulating on the mandrel, the said support and wiper being movable crosswise of the mandrel, and means for exerting a yielding pressure on the side support and wiper to press the wiper yieldingly toward the mandrel, the said side support and wiper being movable against such pressure by the enlargement of the coil.

2. A mainspring winder comprising a supporting frame, a slotted face plate forming a bearing for one side of a coiled spring, and provided with a wiper adjacent to the slot, a rotatable spring-engaging and winding mandrel removably mounted in the frame and projecting therefrom through the face plate slot, said face plate and wiper being movable crosswise of the mandrel, and means for exerting pressure on the face plate to yieldingly press the wiper against the perimeter of the coil formed by winding a spring on the mandrel.

3. A mainspring winder comprising a supporting frame, a slotted face plate forming a bearing for one side of a coiled spring, and

provided with a wiper adjacent to the slot, a rotatable spring-engaging and winding mandrel removably mounted in the frame and projecting therefrom through the face plate, the frame being provided with a guide and the face plate with a stem extending through said guide, and a spring interposed between the guide and an abutment on the stem and adapted to yieldingly press the wiper toward the mandrel.

4. A mainspring winder comprising a supporting frame, a rotatable spring-engaging and winding mandrel removably mounted in the frame and projecting therefrom, a movable side support and a wiper connected therewith adapted to bear respectively on the side and perimeter of a coiled spring accumulating on the mandrel, said side support and wiper being movable crosswise of the mandrel, means for pressing the wiper yieldingly toward the mandrel, and an operating shaft journaled in the frame in alignment with the mandrel, said shaft and mandrel being provided with complementary separable coupling members adapted to impart rotation from the shaft to the mandrel.

5. A mainspring winder comprising a supporting frame, a rotatable spring-engaging and winding mandrel removably mounted in the frame and projecting therefrom, a movable side support and a wiper connected therewith adapted to bear respectively on the side and perimeter of a coiled spring accumulating on the mandrel, said side support and wiper being movable crosswise of the mandrel, means for pressing the wiper yieldingly toward the mandrel, an operating shaft journaled in the frame in alignment with the mandrel, said shaft and mandrel being provided with complementary separable coupling members adapted to impart rotation from the shaft to the mandrel, and means for preventing the removal of the mandrel from the frame during the winding operation.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE W. BOWERS.

Witnesses:

C. F. BROWN,
P. W. PEZZETTI.