

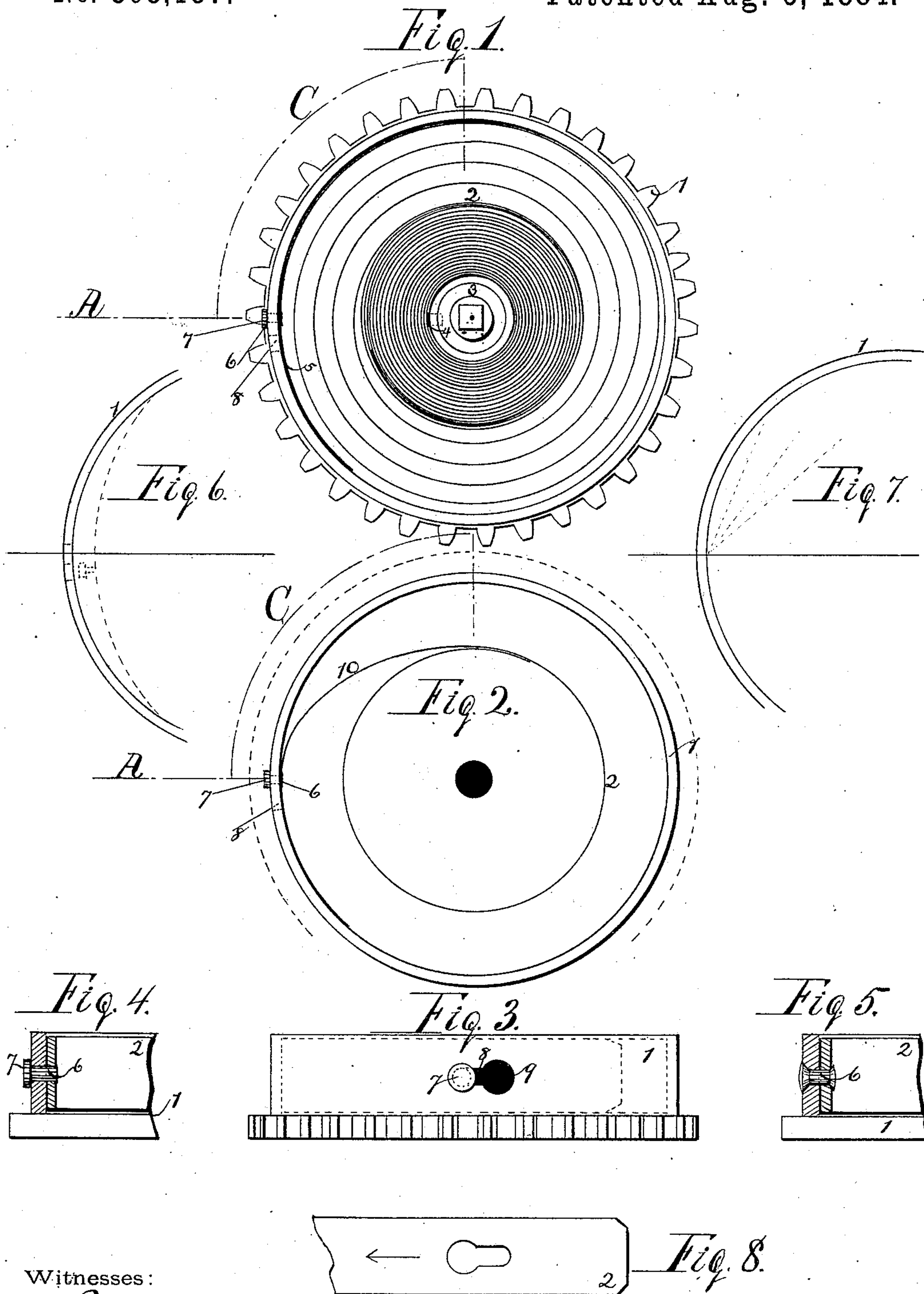
(Model.)

J. HAY.

MAINSRING FASTENING FOR WATCHES.

No. 303,157.

Patented Aug. 5, 1884.



Witnesses:

John H. Brown
Andrew McElwain

Inventor:

John Hay

UNITED STATES PATENT OFFICE.

JOHN HAY, OF ROCHESTER, NEW YORK.

MAINSRING-FASTENING FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 303,157, dated August 5, 1884.

Application filed September 27, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOHN HAY, of Rochester, Monroe county, and State of New York, have invented certain new and useful Improvements in Horological Instruments; and I do hereby declare that the following is a full and exact specification thereof.

My invention relates to horological instruments—especially to watches; and it consists of an improved device for securing the outer coil of the mainspring to the mainspring-barrel.

The object of my invention is, first, to cause the coils of the spring to act perfectly free, each from the other; and, second, to avoid the attachment of extra "stop-work."

To this end my invention consists of such a mechanical construction and arrangement of what is commonly known as the mainspring "hook," and the mode of securing the hook to the barrel, that the spring is thereby caused to resist the indirect strain tending to pull the outer coil or coils inward toward the center of the barrel, as well as being locked against its direct tensile strain. The object of this is that the indirect strain upon the spring, tending to pull the coils inward, may be equalized by the indirect strain developed by the locking mechanism, tending to pull the coils outward, whereby the working-coils of the spring shall act free of frictional contact and under direct strain only.

Heretofore the effect of securing the outer coil of a mainspring within a barrel by a single hook or point of securement has been to permit considerable free vibrating movement of the outer coils of the spring during its action, in consequence of the manner of securing the hook to the barrel, the locking-point permitting a movement during the uncoiling of the spring analogous to that of a pendulum suspended on a knife-edge; hence the sides of the coils impinge against each other and interfere with the perfect performance of the spring.

In the drawings, Figure 1 is a top plan view of mainspring and barrel, the cover of barrel being removed, showing the spring partially wound. Fig. 2 is a diagram showing spring fully wound. Fig. 3 is an edge or front elevation, as viewed from line A. Fig. 4 is a detached transverse section on line A; and

Fig. 5 is the same, showing a modification of Fig. 4. Figs. 6 and 7 are diagrams illustrating, respectively, the principle of action of my device and that of previous practice; and Fig. 8 is a detached view of a portion of the spring, showing a modification.

In the figures, 1 represents an ordinary mainspring-barrel; 2, the mainspring; 3, the arbor, and 4 the arbor-hook. To the outer coil, toward the extremity of the coil, as at 5, I secure a headed stud-pin, 6, finished flush, or nearly so, to the inner side of the coil, but projecting outward and terminating as a shoulder or head, 7, on the outer side of said coil. The stud is secured some distance from the end of the spring, leaving the temper in the part of the spring projecting beyond the stud. In the perimeter or rim of the barrel I form a slot, 8, one portion of which, 9, is slightly larger than the head of the stud-pin, the restricted portion of said slot exactly corresponding in width with the diameter of the main body of the stud-pin.

To secure the spring to and within the barrel, the headed stud-pin is first simply forced through the enlarged portion of the slot from within out; and then, second, is drawn forward to the terminus of the restricted portion of said slot. This has the effect of practically riveting the end of the spring to the barrel, and also causes the coil to hug the inner surface of the rim of the barrel very tightly within the quadrant C. The end of the spring projecting beyond the stud is of sufficient length to extend partially around the inner side of the barrel, preferably for a distance of about forty-five degrees. The consequence of this arrangement is that, as between the tightly-wound center of the spring and its outer attachment to the barrel, there is a constant equalizing-force resulting in perfect equilibrium with respect to the working-coils, or exactly as shown in Fig. 1. When that portion of the outer coil contained within the quadrant C is caused to yield inward, it will be seen that the manual power required to wind the spring is greatly increased, and will continue to increase, accumulatively, until the coil assumes the position shown at 10. Thus the winding process is gradually and safely stopped, as by a brake.

In Fig. 5 the head of the stud-pin and the slot are shown with beveled edges. The slot

may, furthermore, be made somewhat inclined or wedge-shaped, thus serving to cause a still closer impingement of the spring to the perimeter of the barrel. The resiliency of the
5 tempered end of the spring projecting beyond the stud and bearing upon the inner side of the barrel tends to hold the outer coils of the spring apart and to cause them to act perfectly free from each other.
10 In Fig. 8 a modification is shown, the spring being slotted instead of the barrel. In this instance the headed stud-pin would be secured to the barrel and project inwardly through the spring; but, as this construction would weaken
15 the spring and leave a projection between the coils, that shown in the body of the drawings is preferable.

What I claim is—

The combination, with a barrel having a slot, substantially as described, in its perimeter, of 20 a tempered mainspring having a stud attached thereto at some distance from the end thereof, adapted to be secured in said slot, whereby the resiliency of the extended end of the spring, in connection with the securing-stud, tends to 25 hold the outer coils of the spring apart, and to cause them to act free from each other, as set forth.

JOHN HAY.

Witnesses:

JOHN THOMSON,

ANDREW McELWAIN.