F. M. MARTIN.

HAIR-SPRING STUD FOR WATCHES.

No. 190,230 Patented May 1, 1877.

Fig. 1.

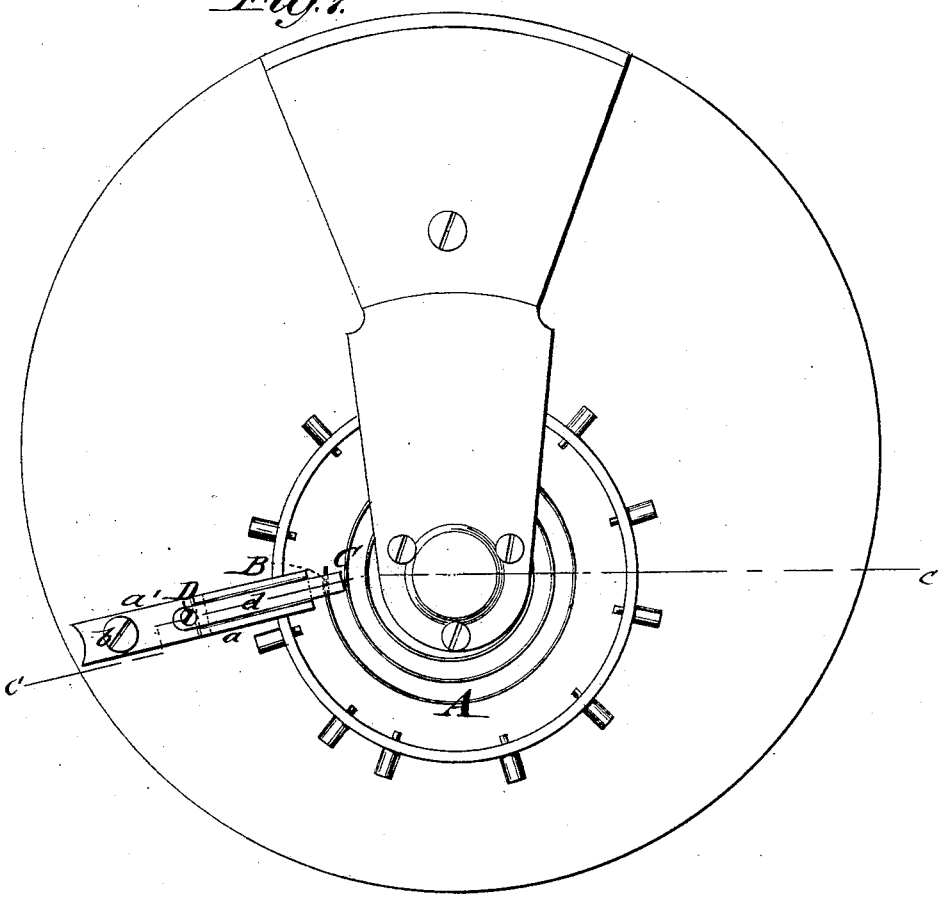
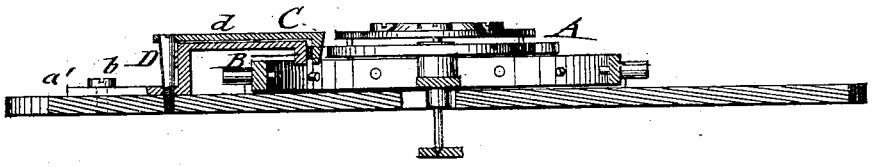


Fig. 2.



WITNESSES:

Francis McArdle.

J. H. Scarborough

INVENTOR:

F. M. Martin

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANCIS M. MARTIN, OF CAMBRIDGE, ILLINOIS, ASSIGNOR TO HIMSELF AND JOHN A. HART, OF SAME PLACE.

IMPROVEMENT IN HAIR-SPRING STUDS FOR WATCHES.

Specification forming part of Letters Patent No. **190,230**, dated May 1, 1877; application filed January 6, 1877.

To all whom it may concern:

Be it known that I, FRANCIS M. MARTIN, of Cambridge, in the county of Henry and State of Illinois, have invented a new and Improved Hair-Spring Stud for Watches, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view, and Fig. 2 a vertical transverse section on line *c c*, Fig. 1, of a balance-wheel with hair-spring and stud of a watch.

Similar letters of reference indicate corresponding parts.

The invention relates to an improved hair-spring stud for the balance-wheel of watches, by which the hair-spring may be shortened or lengthened with great facility, and adjusted higher or lower, so as to be placed at a perfect level above the balance. The stud fastens to the hair-spring without changing the same at the least at that point, so that it retains equal strength all around and moves in perfect isochronism.

The invention consists of a stud, composed of a fixed and movable jaw, projecting downwardly, and clamped to the hair-spring by a screw with tapering or eccentric head. The jaws are made to fit the curvature of the outer coil of the spring, so as to clamp the same without bending it out of its true shape.

In the drawing, A represents the hair-spring of a watch; B, the fixed, and C the movable, jaw of my improved hair-spring stud. The lower fixed jaw B is arranged at the end of a longitudinally-recessed bridge-piece, *a*, that is placed at or slightly above the level of the hair-spring, and supported on a short upright part with a horizontal extension, *a'*, fastened by a screw, *b*, to the frame-work of the watch. The movable jaw C is arranged at the end of sliding piece *d*, that is guided in the recessed bridge-piece *a*, and adjusted to clamp the hair-spring to the fixed jaw, or release the same, by a screw, D, with tapering or eccentric head, turning in a circular recess of the slide-piece on a seat or projection of the fixed piece.

By tightening the screw D the movable jaw is drawn toward the fixed jaw, so as to firmly clamp the hair-spring A between the jaws, while by loosening the screw the movable jaw slides away from the fixed jaw and liberates the spring.

The faces of the jaws, which clamp to the spring, are made with a curve to fit the outer coil of the spring, so that the same cannot be bent out of its true shape by being fastened in the stud. This forms an important point, as in the common stud the hole in which the spring is fastened, as well as the retaining-pin, are round, and cause thereby the spring to assume a similar shape at that point, bending and stiffening it, so that, when the spring is lengthened after being once fastened in this way, it is not of equal strength all around, and loses its perfectly isochronous motion.

With my stud no such change in the shape of the spring, either lengthwise or widthwise, can occur, and the spring may be shortened or lengthened with great facility, and also the watch be put in beat.

The spring may be readily adjusted higher and lower, so as to stand perfectly level above the balance; and, furthermore, as stud and spring are both made true there is no need of adjusting the spring after being fastened, as the clamping of the stud on the spring brings it to a perfectly true and level position.

Having thus described my invention, what I claim is—

The combination of tapering screw D, fastened into the watch-plate and outside of the balance-wheel, and the downwardly-projecting jaws B C, the jaw B being rigidly fixed to the end of bridge *a*, and the movable jaw C being attached to a sliding arm, *d*, arranged in a longitudinal recess in the upper side of bridge, as shown and described.

FRANCIS M. MARTIN.

Witnesses:

JOHN A. HART,

GEO. GOODRICH.