(Model.)

D. H. CHURCH.

WATCH MAINSPRING.

No. 385,908. Patented July 10, 1888.

Fig. 1.

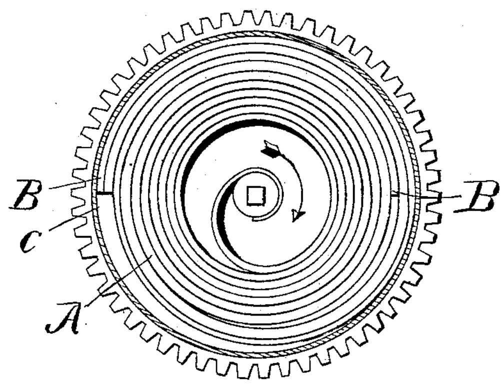


Fig. 2.

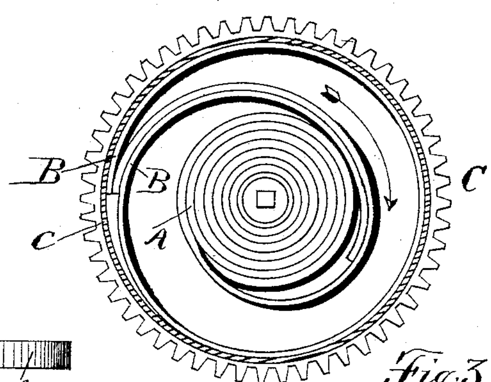


Fig. 5.

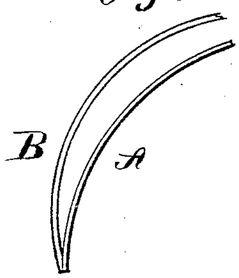


Fig. 4.

Fig. 3.

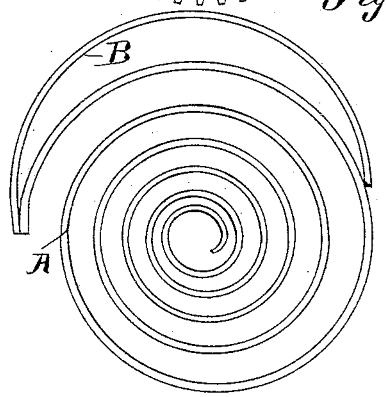
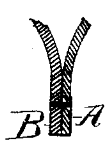


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

DUANE H. CHURCH, OF WALTHAM, MASSACHUSETTS.

WATCH-MAINSPRING.

SPECIFICATION forming part of Letters Patent No. 385,908, dated July 10, 1888.

Application filed June 17, 1884. Serial No. 135,127. (Model.)

To all whom it may concern:

Be it known that I, DUANE H. CHURCH, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Watch-Mainsprings, of which the following is a specification.

In the drawings, Figure 1 represents a top or plan view of the mainspring inserted in the barrel when it is unwound. Fig. 2 represents it when the watch is wound up. Fig. 3 is a side view of the mainspring when removed from the watch. Fig. 4 is an edge view of a spring. Fig. 5 represents a detached view of the end of the mainspring where it is bent back upon itself; and Fig. 6 is a sectional view of the end of the spring, showing a supplemental piece riveted thereto.

The object of my invention is to overcome the annoyance as well as the expense occasioned by the frequent breakage of the mainspring by overwinding a watch, as well as the breakage and injury to the train and winding mechanism; and it consists in providing the outer end of the mainspring with a short supplemental piece or spring extending back upon the mainspring, which supplementary piece presses upon the inside of the barrel when the spring is in place in the watch.

In the drawings, A represents the mainspring, C the barrel, and B the supplemental portion of the spring, which may be formed by uniting a piece of spring-steel to the outer end of the mainspring, or by bending the mainspring near its outer end to form said supplemental portion. In practice the supplemental portion is interposed between the mainspring proper and the barrel, and presses against the inner surface of the barrel, and thereby produces sufficient friction to hold the outer end of the spring in place, excepting when the spring is tightly wound or contracted, as hereinafter described. The supplemental portion is sufficiently long to reach more than once around the barrel, preferably about one and a half times around, as clearly shown in Fig. 2.

The free end of the supplemental portion passes around inside of the outer end of the mainspring A. As the mainspring becomes compressed by the winding operation, the supplemental portion is drawn inwardly from the inner surface of the barrel until its friction upon said surface is sufficiently relieved to enable it with the mainspring to turn or slip, so that however much the watch may be wound no injury will be done. The friction caused by the pressure of the supplemental piece B against the barrel holds the spring sufficiently in place, so that no stop is required, and there is no occasion for perforating the barrel for any permanent or positive attachment of the spring thereto.

I am aware that supplemental springs extending back part way around the inner surface of the barrel have been used in connection with mainsprings of watches for a similar purpose; but these require very delicate adjustment, both with regard to length and stiffness and the degree of curve given the supplemental spring, so as to give the proper bearing upon the inner surface of the barrel. If the spring is not properly adjusted with reference to these points, it will either slip too easily around the barrel, preventing the mainspring from being fully wound, or it will cling too closely to the inner surface of the barrel, leaving the mainspring still liable to breakage, and the train and winding mechanism subject to the same strain as before. Various ineffectual expedients have been adopted for the purpose of overcoming this difficulty, and, among others, in some Swiss watches, the inner surface of the barrel has been made with corrugations having slight depressions, in which the supplemental spring would rest; but this construction is found not to be durable, owing to the wear upon the corrugations.

By extending the supplemental spring so that its free end passes around inside of the outer end of the mainspring to engage in the coil, as hereinbefore set forth, these difficulties are overcome, as during the winding of the mainspring the supplemental spring has a bearing-surface entirely around the inside of the barrel, which prevents any slipping, and when the mainspring is fully wound the end of the supplemental spring, engaging in the coil, is drawn in from the inner surface of the barrel to relieve the pressure and admit of its slipping in case of further or excessive winding.

Having fully described the construction and

operation of my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, with the barrel C, of the mainspring A and the supplemental spring B, secured to the outer end of spring A, and having its free end wound within the coils of the mainspring, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 3d day of June, A. D. 1884.

DUANE H. CHURCH.

Witnesses:
EDWARD A. MARSH,
C. F. BROWN.