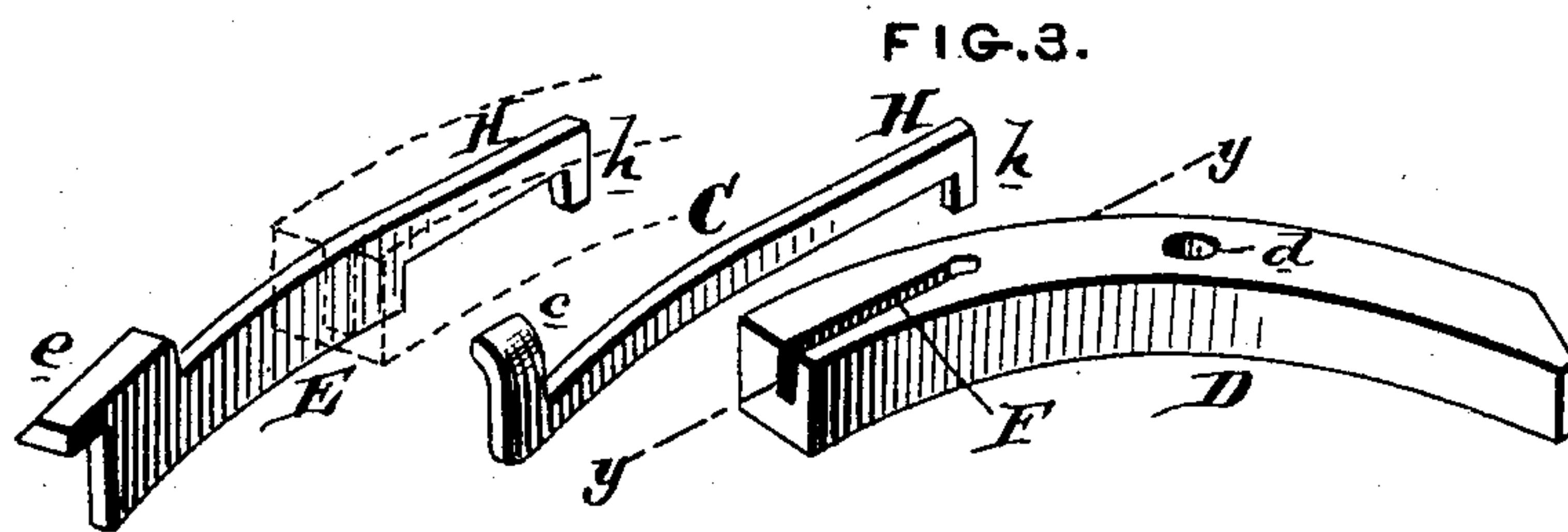
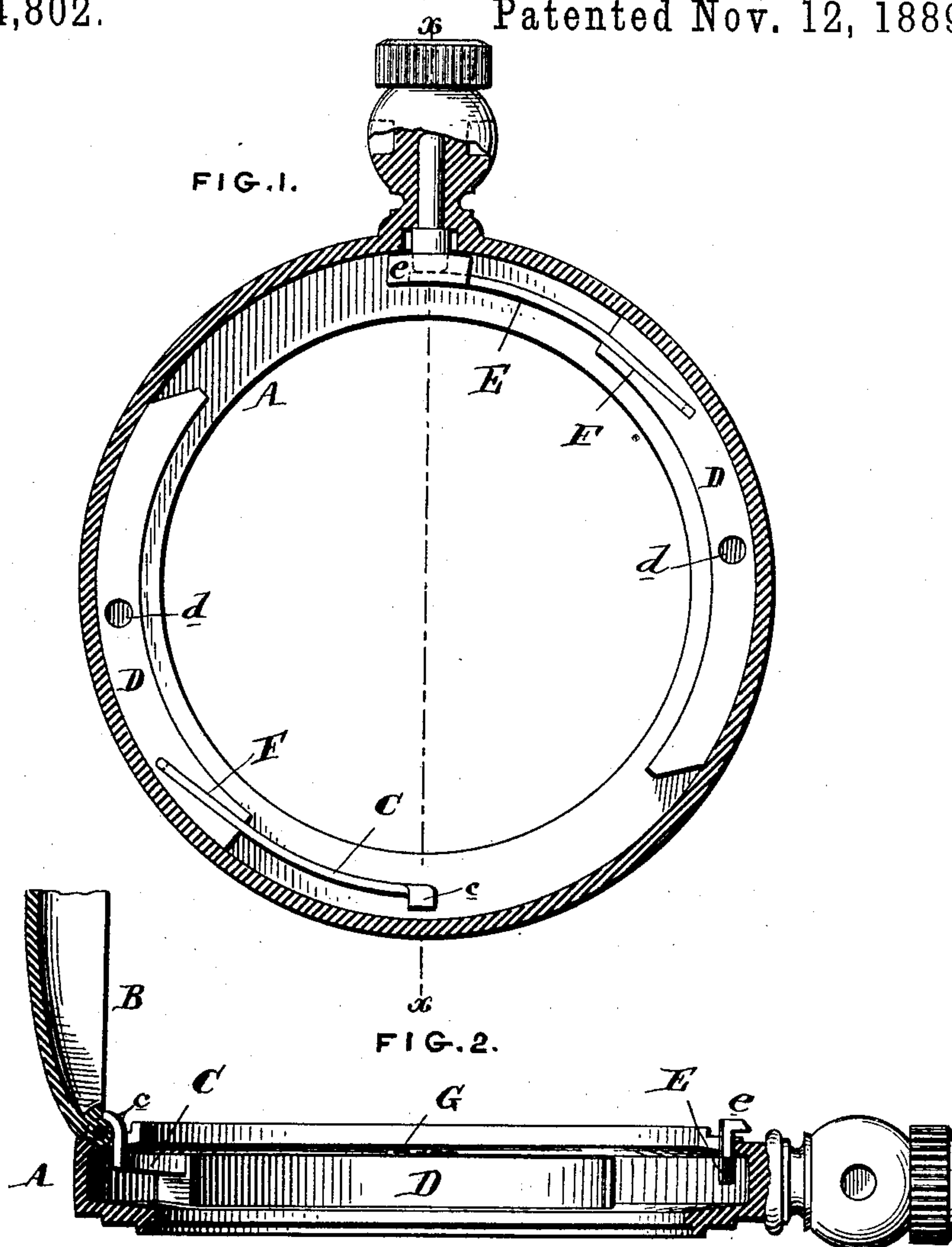


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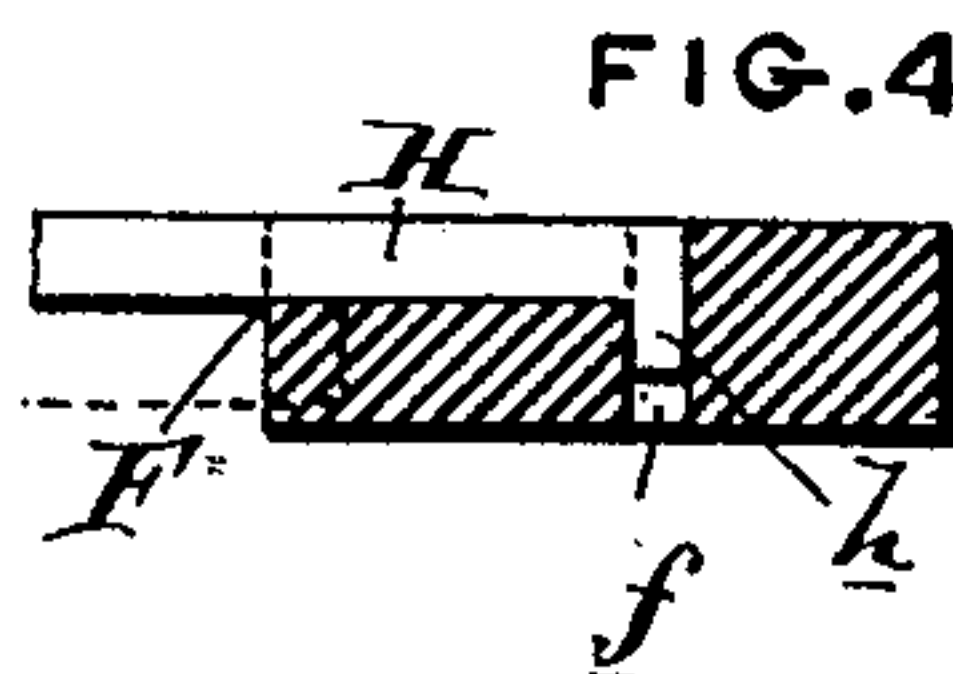
J. D. EWING.
WATCH CASE SPRING.

No. 414,802.

Patented Nov. 12, 1889.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES D. EWING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
KEYSTONE WATCH CASE COMPANY, OF SAME PLACE.

WATCH-CASE SPRING.

SPECIFICATION forming part of Letters Patent No. 414,802, dated November 12, 1889.

Application filed May 16, 1889. Serial No. 311,014. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. EWING, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Watch-Case Springs, of which the following is a specification.

My invention relates to watch-case springs; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to form an effectively operative watch-case spring in an economical manner, and my invention applies equally to the lift-spring and the snap or lock spring.

In carrying out my invention I construct the entire spring in two parts, one part consisting of the heavy non-spring or body portion, which is secured within the groove of the watch-case center, and the other part being the tongue or true spring part, which carries the snap or lift projection. By constructing these parts separately I am enabled to use different materials, so that only the tongue or true spring part need be made of tempered steel or fine spring metal. I prefer to construct the heavy portion of the spring of brass curved in shape, so as to fit within the groove of the watch-case center, while the tongue or true spring part is struck up from sheet metal and then tempered. These spring-tongues are removably secured to the heavy brass portion, fitting into suitable notches or grooves therein, as is hereinafter more fully disclosed. The heavy portions are identical for both characters of springs and may be manufactured without regard to the spring portion.

In the usual way of making watch-case springs the body part and the thin or flexible part were forged of one piece of steel, which was not tempered until after being fitted to the case-center and the hole for the screw drilled. This operation was expensive, as it required too much handling of the parts. Besides it is difficult to temper a spring where one part is so thin and another integral part is so thick; hence the expense was great, and when the spring was done it was liable to

break after a short usage. My invention overcomes these defects.

In the drawings, Figure 1 is a sectional plan view of a watch-case having my improved springs applied thereto. Fig. 2 is a cross-sectional view of the same on the line *x x* of Fig. 1. Fig. 3 is a perspective view of my improved spring with the parts detached, showing both the lift and snap springs; and Fig. 4 is a cross-sectional view on the line *y y* of Fig. 3 with the parts connected.

A is the watch-case center, and B the lid or cover.

C is the lift-spring, having the lifting projection *c*.

D is the thick or body part of the spring, which is preferably made of brass, and may be provided with a hole *d* to receive a screw for attachment in the groove of the watch-case center. This thick or body part D is made curved to fit within the center.

F is a groove terminating in a notch or hole *f*, formed in the front or forward end of the portion D, and preferably inclining slightly inwardly toward the inner corner of the portion D, as shown.

E is the snap-spring, provided with the snap *e*.

The ends H of the springs C and E are adapted to fit into the grooves F of the heavy portions D, and are provided with legs or prongs *h* on their extremities, which are received in the holes or notches *f*, to prevent them being drawn out from the grooves F. When the entire spring is inserted within the groove of the watch-center, the spring part C or E is held within the groove F of the portion D by this leg *h* extending into the notch *f* and the upper part of the case-center. By this construction a very effective snap and lift spring is formed, while the heavy or body portion need not be made of steel, but of some less expensive metal which may be more cheaply constructed and in which the holes *d* for the screws may be more readily drilled. The heavy portions D are all alike and may be made in large numbers without reference to the spring portions, and are equally adapted to receive either the snap or lift springs, so that in case the spring becomes broken or in-

jured it is not necessary to replace the entire spring, but simply to fit a new spring portion into the old part D. The spring parts C and E may be struck up out of sheet metal and, if of steel, then tempered. The foot or back of the heavy part D may be made beveled for the insertion of an instrument for the purpose of removing the spring from the center.

While I prefer the details of construction here shown, I do not limit my invention thereto, as it is apparent that they may be altered in many ways without departing from the principles of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A watch-case spring consisting of the heavy or non-spring body portion, in combination with a separate thin spring portion provided with a projection to act upon the lid of a watch, detachably connected by means of a prong or leg with said heavy or non-spring portion, which is provided with a slot and hole for receiving the end and prong of said spring portion.

2. A watch-case spring consisting of a heavy non-spring body portion having a groove of different depths and terminating in a transverse hole, combined with a detachable separate thin steel portion of different depths to fit the groove in the body portion, and also with a transverse leg or prong to fit into the hole of said body portion.

3. A watch-case spring consisting of a heavy or non-spring body portion provided

with a recess or groove of different depths and a separate spring portion of different depths detachably fitting into said groove and projecting from said body portion.

4. A watch-case spring consisting of a curved heavy non-spring portion provided with a recess or hole upon one of its surfaces and a separate thin spring portion for operating the lid, having a transverse leg or prong upon its end adapted to fit into said recess in the non-spring portion to hold said parts together.

5. The watch-case spring consisting of the heavy non-spring portion D, adapted to be secured within the groove of the watch-case center, having a groove F upon its upper surface terminating in a hole or recess *f*, and a spring portion to operate the lid of the watch, having an end H, adapted to fit into said groove F, provided with a leg or prong *h* to fit into the recess or hole *f*.

6. A watch-case spring consisting of the combination of two parts, one of which is made heavy and shaped to fit the watch-case center and provided with an aperture, and the other of which is made of thin spring metal formed with a projection which acts on the lid, and a transverse leg or prong which fits into the hole in the heavy part.

In testimony of which invention I have hereunto set my hand.

JAMES D. EWING.

Witnesses:

E. C. CHAPPATTE,
A. MINNICK.