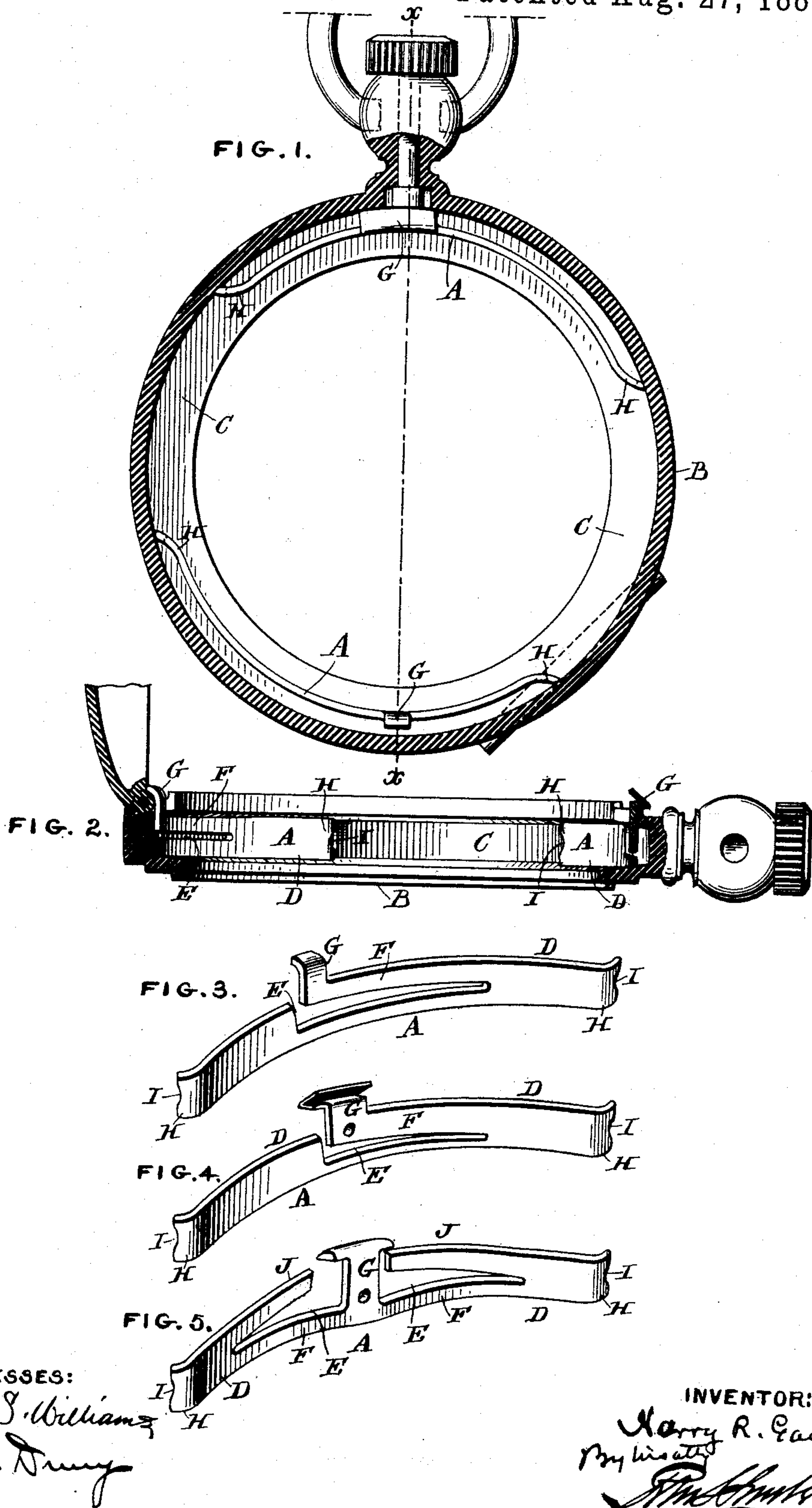


(No Model.)

H. R. GAUL.
WATCH CASE SPRING.

No. 409,745.

Patented Aug. 27, 1889.



UNITED STATES PATENT OFFICE.

HARRY R. GAUL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
KEYSTONE WATCH CASE COMPANY, OF SAME PLACE.

WATCH-CASE SPRING.

SPECIFICATION forming part of Letters Patent No. 409,745, dated August 27, 1889.

Application filed April 2, 1889. Serial No. 305,752. (No model.)

To all whom it may concern:

Be it known that I, HARRY R. GAUL, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement
5 in Springs for Watch-Cases, of which the following is a specification.

My invention has reference to springs for watch-cases; and it consists of certain improvements, which are fully set forth in the
10 following specification, and shown in the accompanying drawings.

My object is to form a watch-case spring—either the lift-spring or the catch-spring—of sheet metal and of such form that it can be
15 struck up out of sheet metal and then tempered and finished. By making a spring of sheet metal not only is great cheapness in manufacture the result, but a more durable and desirable spring is formed. The spring
20 has more elasticity and is much lighter, and is readily secured in the watch-center without screws or expensive fitting or auxiliary devices.

In carrying out my invention I stamp the
25 springs out of sheet-steel or other spring metal, and after bending them into the proper shape to fit the case, and so as to be adapted to act upon the lid, either to lift it or catch it, I temper the spring and then finish the exposed
30 parts by polishing them. The exposed parts are the lift-extension or the catch. The shape of the spring is important, as it is due to the shape that the spring is retained within the center without screws and good elasticity results. The part which acts upon the lid comes
35 midway, or thereabout, of the two ends, and a part of the spring-plate is removed, so as to form a tongue, which also acts upon the lid. The end parts of the spring are of a depth
40 equal to the width of the groove in the watch-case center.

The essential feature of my invention is that the spring is formed of spring metal, and is retained within the center without the use of
45 screws.

In the drawings, Figure 1 is a sectional plan of a watch-case, showing my improved spring applied thereto, and Fig. 2 is a cross-section of Fig. 1 on line $x x$. Fig. 3 is a perspective

view of my improved spring as a lift-spring. 50
Fig. 4 is a perspective view of the spring when used as a catch-spring. Fig. 5 is a perspective view of a modification.

A are the springs.

B is the watch-case center, and C is its in- 55
ternal groove.

The spring has the two body parts D D at the two extreme ends, which are united by a thin or narrow part bounded by the slit or
60 slits F. The slit E removes a part of the metal from spring action, and this forms the narrow part F, having great elasticity, and carrying the projecting part G, which directly acts on the lid of the case. In Fig. 3 this projecting
65 part is the lifting-projection, while in Figs. 4 and 5 it is the catch. The spring is curved to conform to the circle of the case-center, and the ends are curved in the opposite direction at H and are notched at I. The curvature at
70 H is to enable the ends to fit tightly in the groove C of the center B, and the notches are to enable an instrument to be inserted to loosen the spring when it is desired to remove it.

In the modification shown in Fig. 5 the narrow 75
part F, holding the projection G, is arranged at the lower part, and the upper parts above the slits E are bent in at J to fit against the inner walls of the groove of the center. The spring is held within the groove by the
80 pressure of the bent-in parts J and the ends D, and by reason of the inclination of the walls of the groove of the center, as shown in Fig. 2, the narrow part F, carrying the projection G, has freedom of movement without bind- 85
ing on the lower wall of the groove of the center. In all of the constructions the two end parts or body portions are connected by a narrow portion, and slits are employed to produce a narrow spring part, with which the
90 projection for acting on the lid is made integral.

It will be seen that the spring is wholly supported by the case-center, and is held in place, even against the operation of the spring, by 95
the elasticity of the spring within the groove of the case-center.

I do not confine myself to the mere details

of construction, as they may be modified in various ways without departing from the spirit 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 formed of stamped sheet spring metal, with free ends bent outwardly, and having a slit or slits at its middle part to make that of less width than the end parts and a part projecting from said middle part to act on the lid.

2. A watch-case spring formed of stamped sheet spring metal, made curved and having a slit or slits at its middle part to make that of less width than the end parts, and a part projecting from said middle part to act on the lid, and in which said end parts at their most distant edges are curved in the opposite direction to the main curvature of the spring.

3. A watch-case spring formed of stamped sheet spring metal, made curved and having a slit or slits at its middle part to make that of less width than the end parts, and a part projecting from said middle part to act on the lid, in which said end parts at their most distant edges are curved in the opposite direction to the main curvature of the spring and provided with notches for the insertion of an instrument for their removal.

4. A watch-case spring formed of stamped sheet spring metal, curved to conform to the

curvature of the groove of the case-center and having its ends curved outwardly, and also having a portion of its middle formed with a slit or slits and reduced in width and provided with an upwardly and outwardly extending projection which points away from the inner curve of the spring.

5. A watch-case spring formed of stamped sheet spring metal and curved to form a segment of a circle and to conform to the curvature of the groove of the case-center, and having a slit by which a portion of its middle is reduced in width, and an upwardly and outwardly extending projection from said narrowed portion which points away from the inner curve of the spring, in combination with a watch-case center having an inner annular groove, in which the spring is received and held by its elasticity.

6. The combination of the case-center having an internal annular groove with a spring formed like a segment of a circle and of stamped spring metal, and having its ends bent outwardly from the main curvature and shaped to tightly fit in said groove and be retained therein by friction.

In testimony of which invention I hereunto set my hand.

HARRY R. GAUL.

Witnesses:

HARRY B. STANGER,
E. C. CHAPPATTE.