

CHARLES E. RICE.

Improvement in Main-spring Attachment for Watches.

No. 121,004.

Patented Nov. 14, 1871.

Fig. 1.

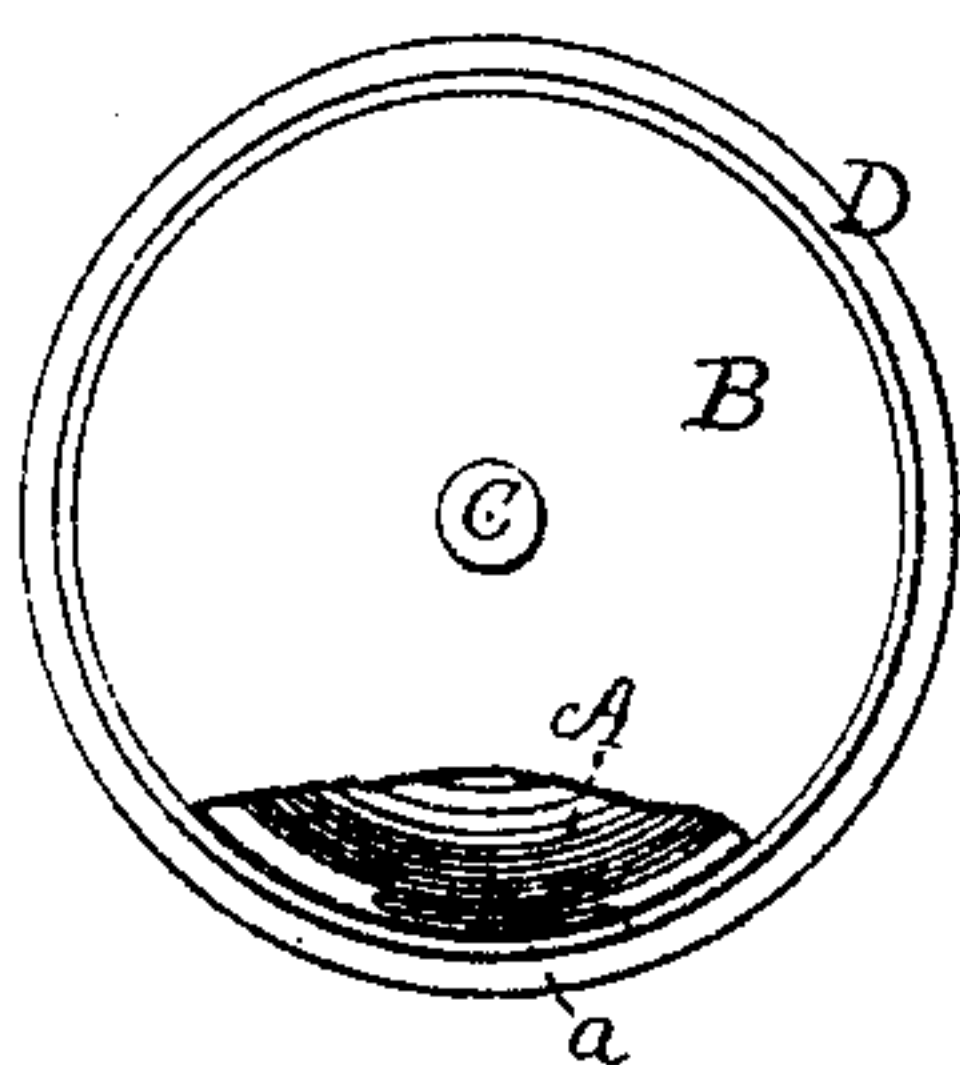


Fig. 2.

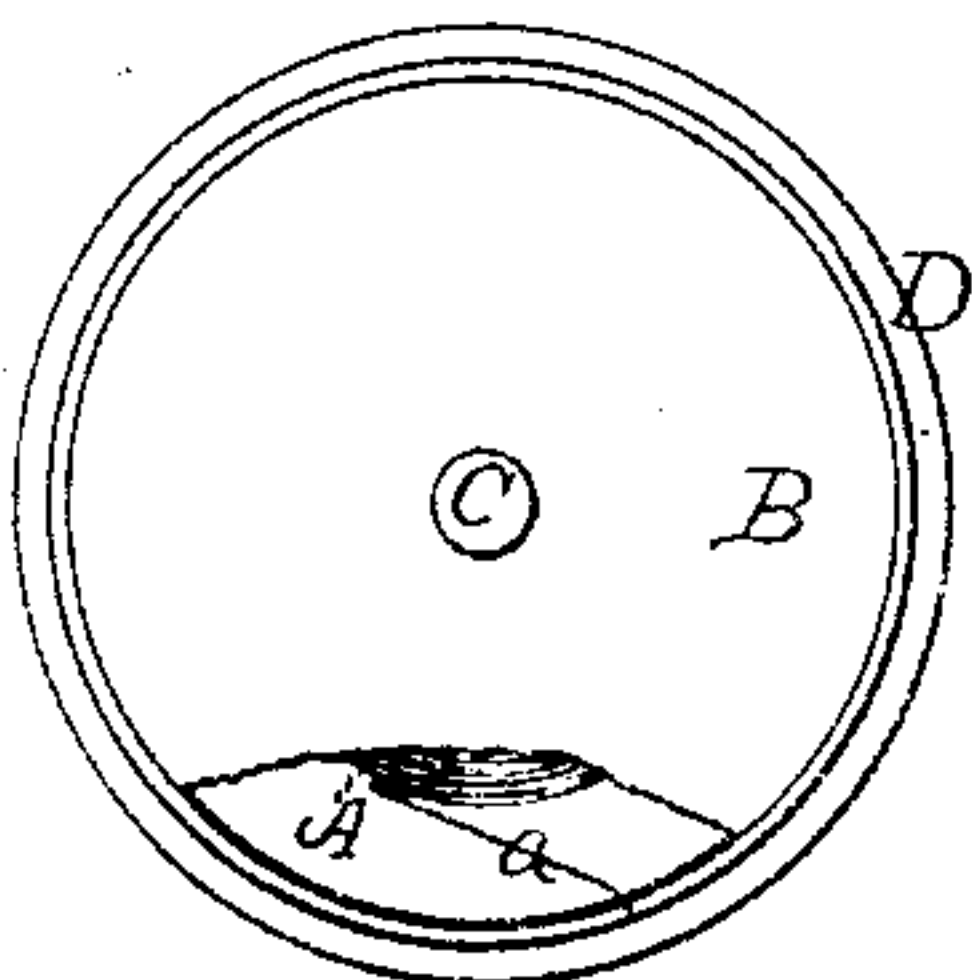
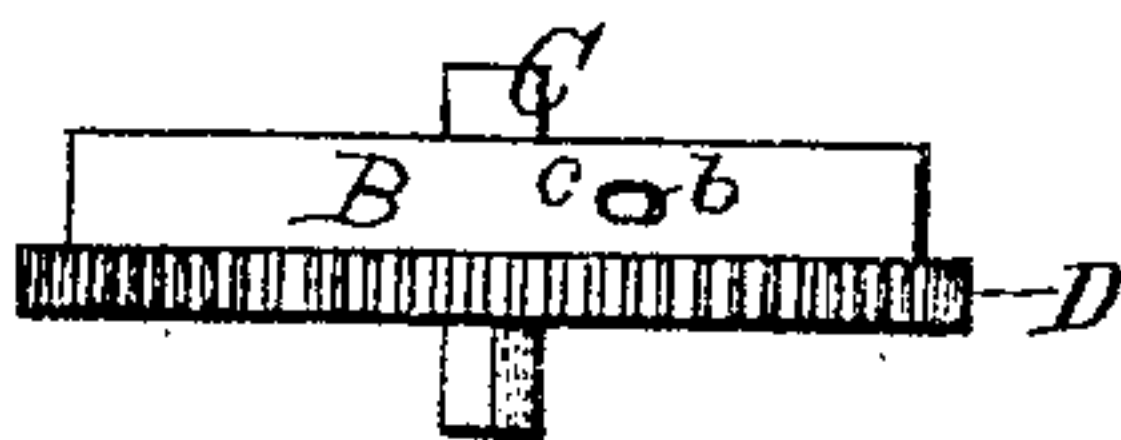


Fig. 3.



WITNESSES.  
M. L. Orton  
C. A. Shepard.

INVENTOR.  
Charles E. Rice.  
By James Shepard Atty.

# UNITED STATES PATENT OFFICE.

CHARLES E. RICE, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN MAIN-SPRING ATTACHMENTS FOR WATCHES.

Specification forming part of Letters Patent No. 121,004, dated November 14, 1871.

*To all whom it may concern:*

Be it known that I, CHARLES E. RICE, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Coiled Springs, of which the following is a specification:

My invention consists in the peculiar arrangement of an arm upon the outer end of the main-spring and within the barrel, as hereinafter more fully described.

In the accompanying drawing, Figures 1 and 2 are side elevations of a barrel and spring embodying my invention, and Fig. 3 is an edge view of the same.

On the outer end of the spring A I form an arm, *a*, by simply turning backward the end of said spring before the same is hardened and tempered, including the extreme end thereof. Although I prefer to form the arm *a* and spring A of one and the same piece, the same may be formed of two pieces. On the outer end of the arm *a* I form a small point, *b*, (Fig. 3,) which rests in a hole, *c*, (Fig. 3,) made to receive the same in the barrel B. If it is desired to apply the spring to a barrel which has previously had the ordinary hook attached to it for securing the end of the ordinary spring I dispense with the point *b* and bifurcate the end of the arm *a*, so that it will engage with such hook; but for new work I consider the first-described method of connecting the barrel and spring preferable as more economical. The inner end of the coil-spring A is secured to the shaft C in any of the ordinary modes. D designates a gear, by means of which the power of the spring may be applied to the movement of a watch or other mechanism.

The operation of the spring is as follows: By turning the shaft C so as to wind up the coils of the spring A the whole body of the spring is wound in a solid coil, so that its outer coil as closely approaches the inner ones as that of any other two coils, the arm *a* meanwhile simply swinging on the point *b* so as to allow the outer

end of the spring A to move from the edge of the barrel B toward its shaft C and back in substantially a direct line. The position of the arm *a* and spring A when unwound or "run down" is shown in Fig. 1, and this position, when wound up, is shown in Fig. 2. The ordinary and other springs are so attached that the power of the spring when wound is constantly pulling the end of the spring away from the hook or other fastening at the side of the barrel, while the outer end of the arm *a* (by being bent in an opposite direction from the coil of the spring) is in such a position that the power of the spring is constantly exerted toward the connection of said arm with the barrel and assists in holding the arm and barrel together, instead of having a tendency to disconnect them, as in the ordinary springs.

The advantages of my invention are that all strain on the outer coil of the spring is exerted in the same direction when the spring is wound up as when run down, and consequently less liable to break or injure the spring; that the liability of the spring and barrel to disengage is not increased by winding the spring tight, as is the ordinary spring, but, instead, their connection becomes, if anything, more secure as the spring is wound tighter; and that the simplicity and ease by which the device can be constructed render it less expensive than the ordinary attachment. The ratchet, &c., for retaining the power of the spring being the same in my invention as in the well-known and ordinary spring, it is deemed unnecessary to describe it.

I claim as my invention—

A coil-spring, A, when provided with the arm *a*, projecting in an opposite direction to the coil of the spring and arranged within the barrel B, substantially as described, so that the power of the spring bears the arm *a* toward its connection with the barrel, for the purpose set forth.

Witnesses: CHARLES E. RICE.

JAMES SHEPARD,  
C. A. SHEPARD.

(36)