

(No Model.)

T. REEVE, Jr.  
HAIR SPRING PLIERS.

No. 356,729.

Patented Jan. 25, 1887.

Fig. 1.

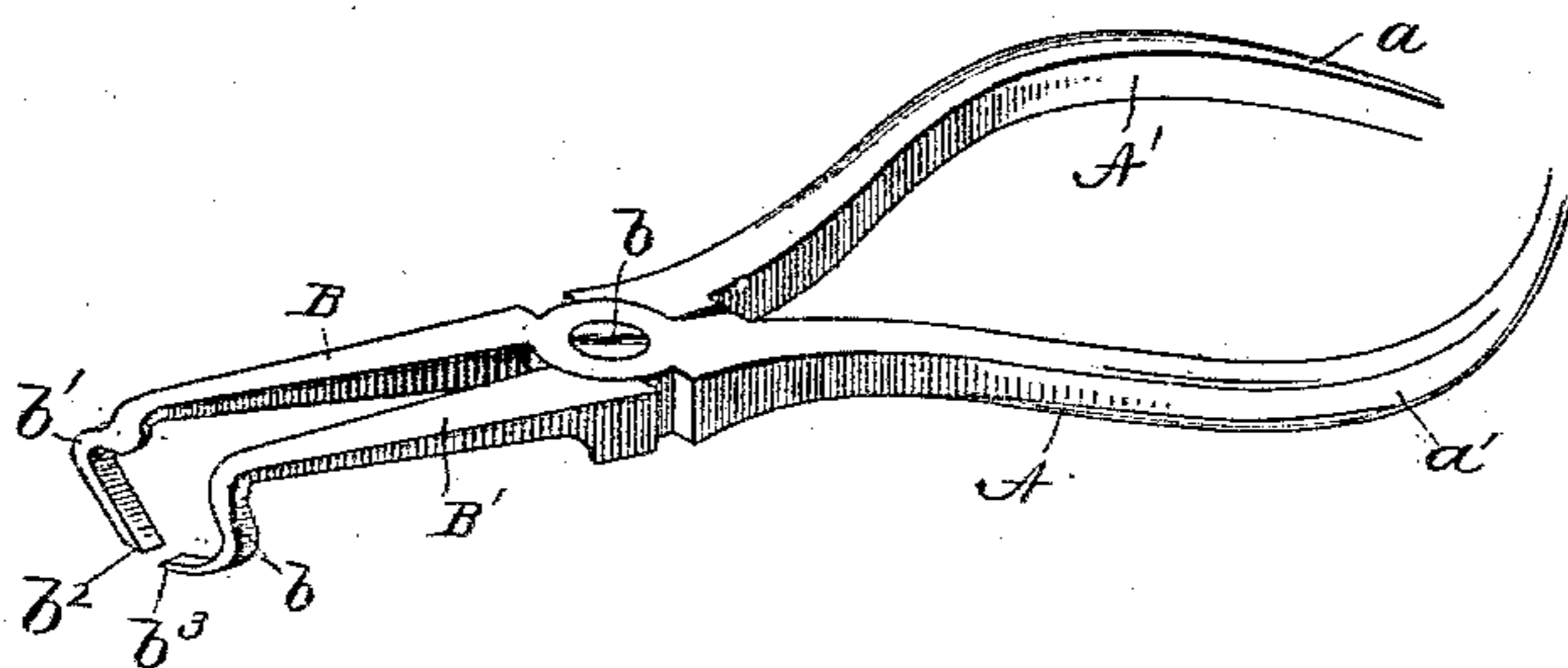


Fig. 2.

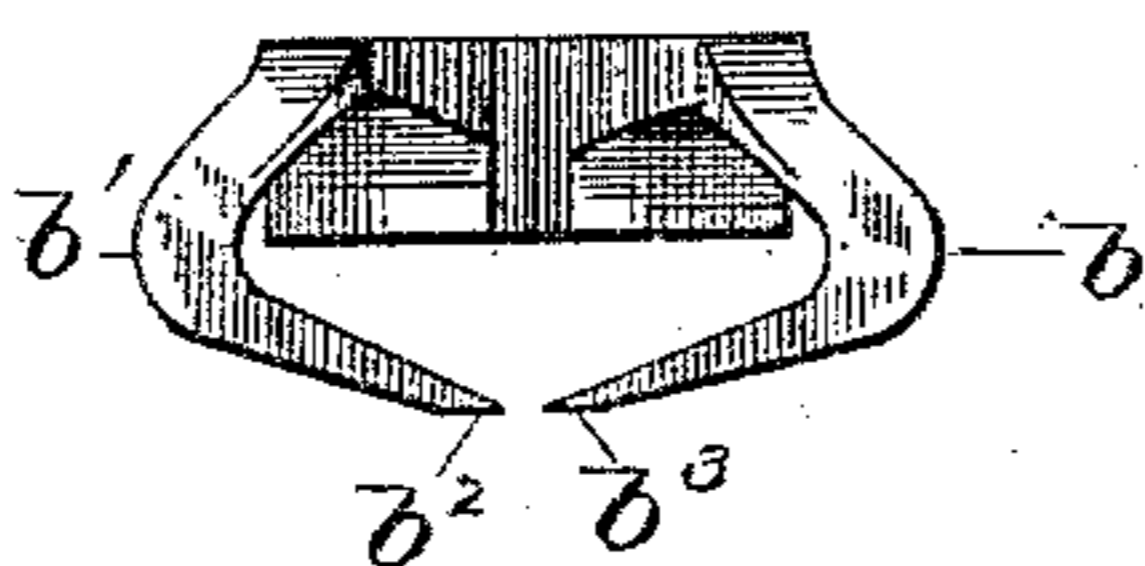
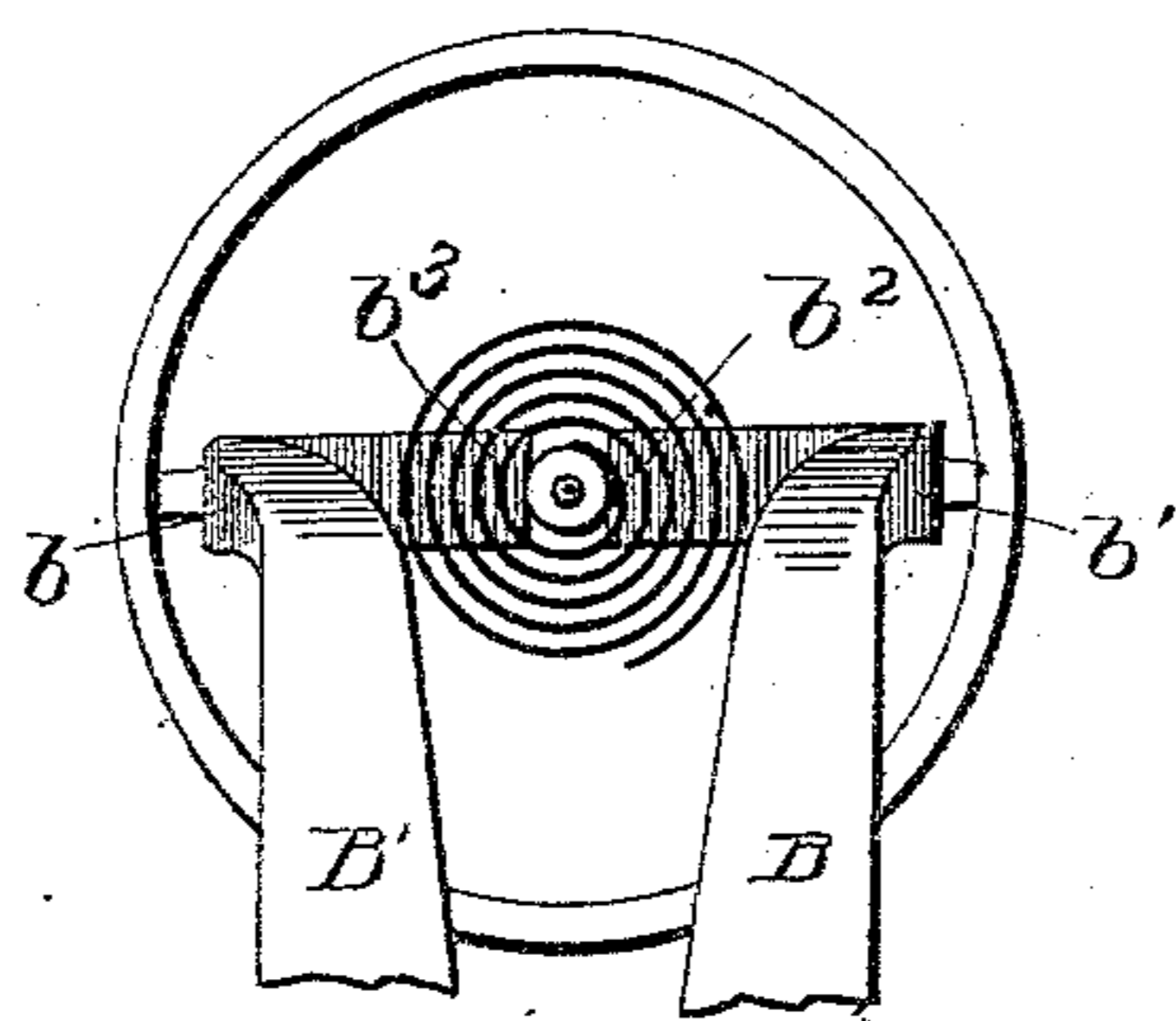


Fig. 3.



Witnesses:  
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Inventor:  
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# UNITED STATES PATENT OFFICE.

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## HAIR-SPRING PLIER.

SPECIFICATION forming part of Letters Patent No. 356,729, dated January 25, 1887.

Application filed May 8, 1886. Serial No. 201,545. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS REEVE, Jr., a citizen of the United States, residing at Glassborough, in the county of Gloucester and State of New Jersey, have invented certain new and useful Improvements in Hair-Spring-Collet Removers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to tools used by watch-makers for removing the hair-spring collet with its attached spring from the staff of the balance-wheel of a watch when it is desired to remove the spring for any purpose.

The object of the invention is to produce an implement by the aid of which the hair-spring collet and the attached spring may be removed quickly from the staff of a balance-wheel, and without in any way disarranging, bending, or distorting the spring, and without requiring that the balance-wheel and spring be removed from the watch-case before separating them.

With this object in view the invention resides in an instrument made in the general form of a pair of pinchers, and having its pivoted arms provided at their operative ends with depending portions so formed as to pass around the hair-spring when in position, and to wedge themselves between the collet and the staff of the balance-wheel in such way as effectually to remove the collet and spring.

The invention resides particularly in an instrument made in the general form of a pair of pinchers, provided at their operative ends with depending portions bent outward and then inward at inclines, and having their ends so beveled as to wedge themselves, when proper pressure is applied, between the collet and the top of the balance-wheel, in order to raise the collet from its seat, the bend of the ends being such as to receive the spring between them and prevent injury to the spring by bending or distorting.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a perspective view of a hair-spring-collet remover made in accordance with my invention. Fig. 2 is an end view of the same, and Fig. 3 is a plan view showing the instrument in position for operation.

In the drawings, A and A' represent piv-

oted arms, provided with suitable handles,  $a$  and  $a'$ , of such form as to be grasped conveniently by an operator, and pivoted together at  $b$ . The operative ends B and B' are provided with depending portions  $b$  and  $b'$ . These ends are first bent outward from the portions B and B', and thence inward, forming a space of such form between the two as to provide a receptacle for the hair-spring when the instrument is in use. The lower ends,  $b^2$  and  $b^3$ , of the ends  $b$  and  $b'$  are quite sharp, and are beveled in such way as to present lower plain surfaces, which slide along the upper portion of the balance-wheel in such manner as to allow the sharp edges to enter the collet and the wheel and exert a wedging action to unseat the collet, and consequently to remove it and the spring attached thereto from the balance-wheel.

In using the tool the operative ends are moved apart as far as required to pass over the spring, and the ends  $b^2$  and  $b^3$  allowed to rest upon the spoke of the balance-wheel. The handle portions A and A' are then slowly drawn together, sliding the sharp edges  $b^2$  and  $b^3$  along the spoke. As the sharp edges come in contact with the collet, and sufficient force is applied, they wedge themselves between the collet and the balance-wheel, and thus separate the collet from the wheel, and the spring and collet may then easily be lifted off.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An instrument for removing hair-spring collets, made approximately in the form of pinchers, provided with depending operative ends which are bent first outward and then inward, forming a receptacle for the spring while being removed, substantially as described.

2. A hair-spring-collet remover, made approximately in the form of a pair of pinchers, provided with depending operative ends which are bent first outward and then inward, and provided with beveled edges, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOS. REEVE, JR.

Witnesses:

DAVID H. MEAD,  
WM. H. GIVEN.