

(No Model.)

G. W. CAMERON.  
WATCHMAKER'S TOOL.

No. 487,988.

Patented Dec. 13, 1892.

Fig. 1

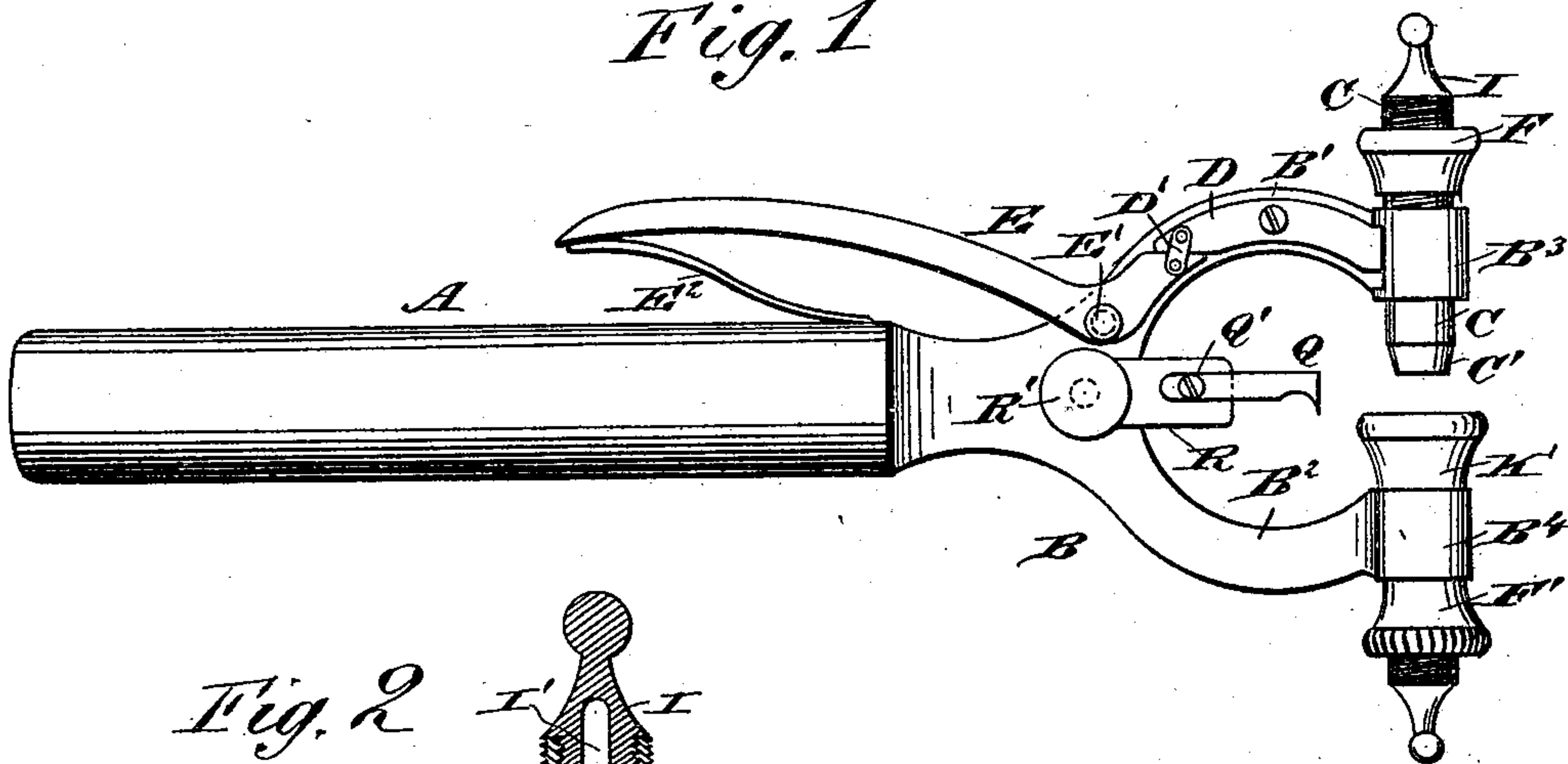


Fig. 2

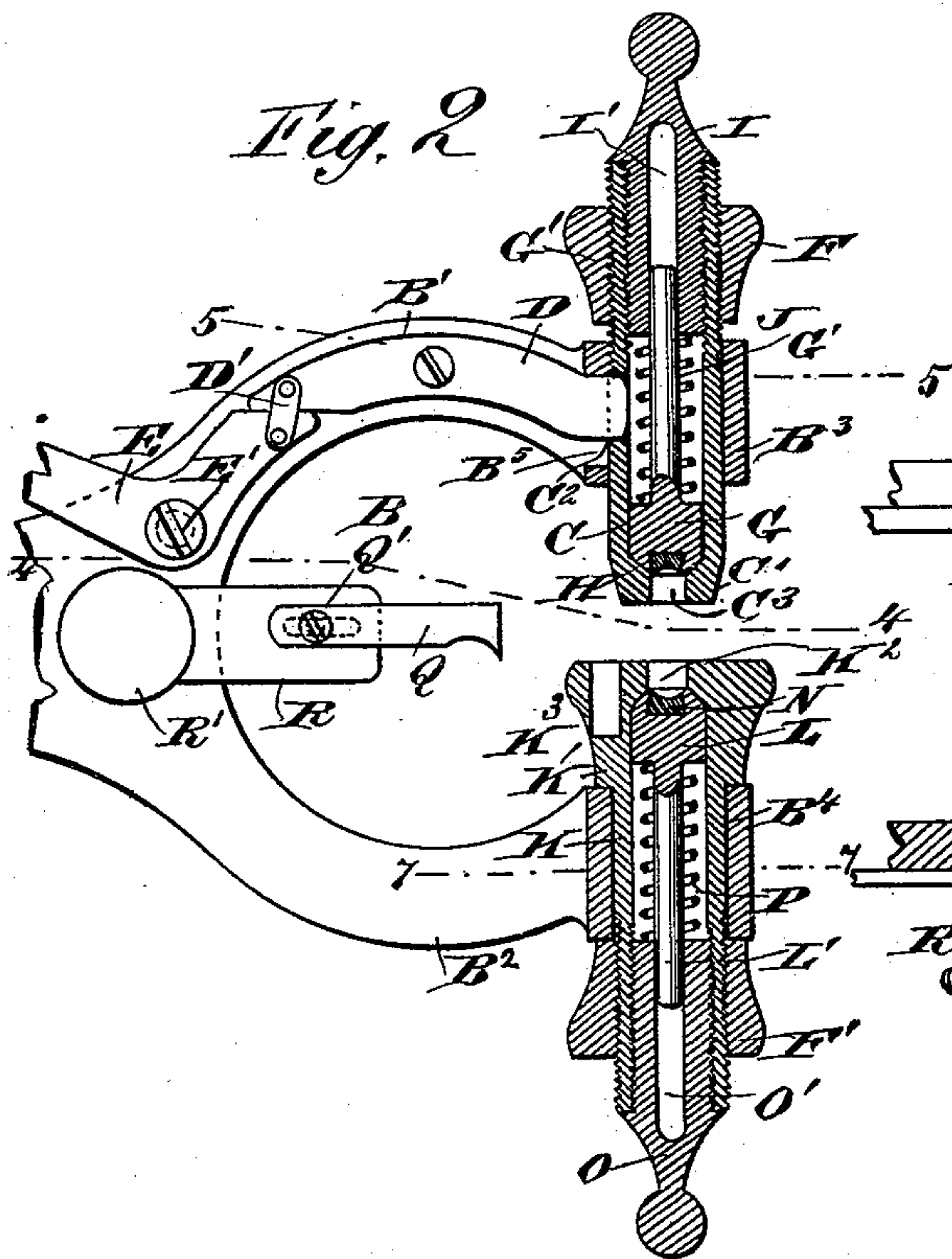


Fig. 3

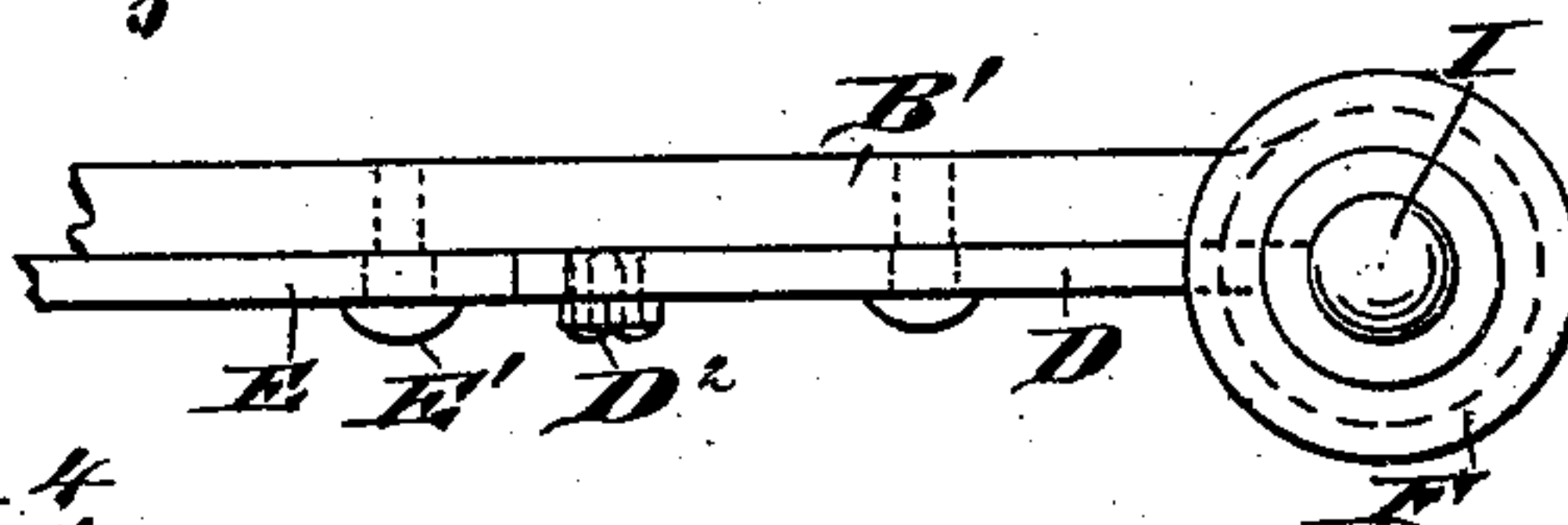


Fig. 4

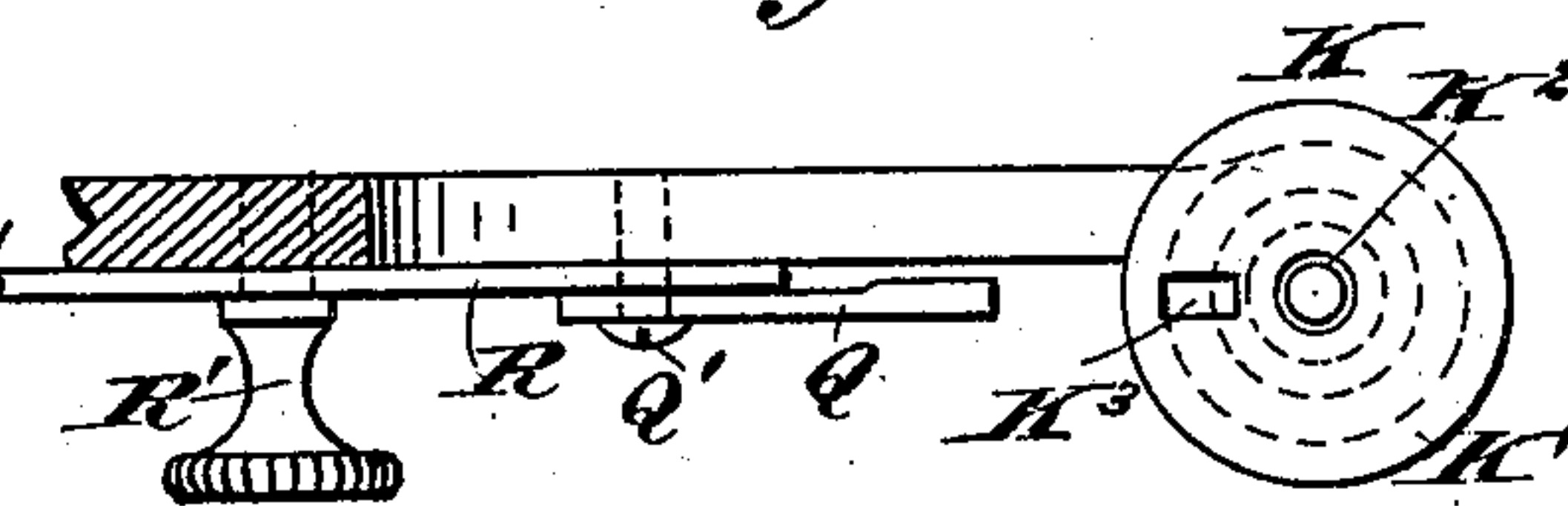


Fig. 6



Fig. 5

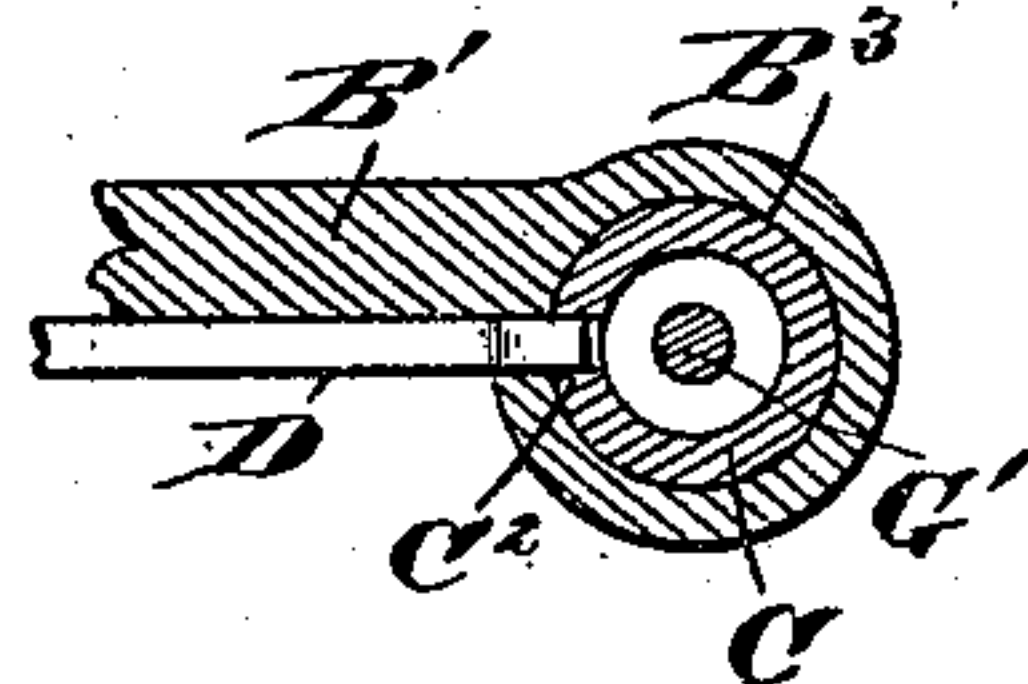
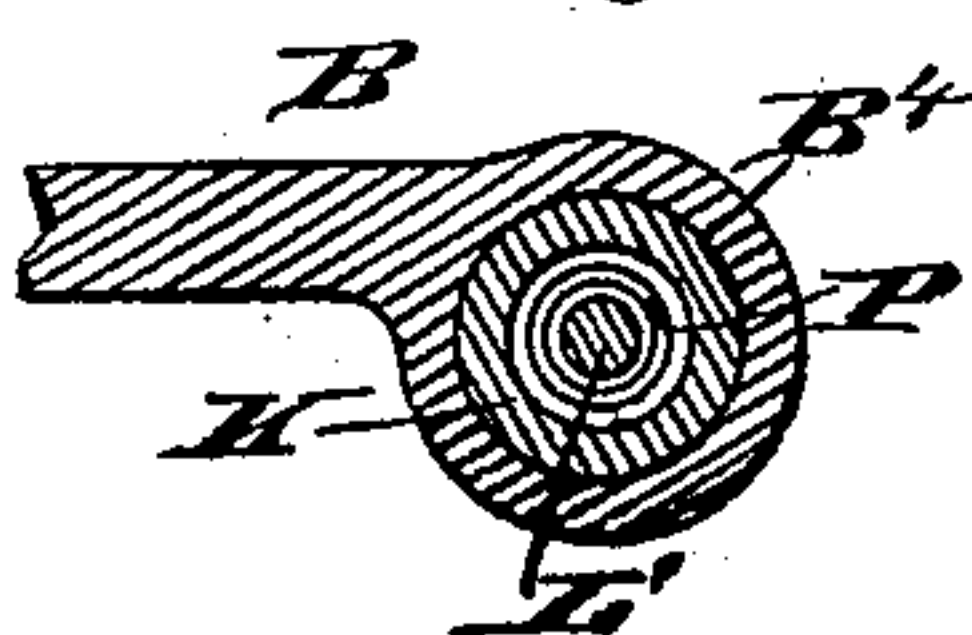


Fig. 7



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# UNITED STATES PATENT OFFICE.

GEORGE W. CAMERON, OF POPLAR BLUFF, MISSOURI.

## WATCHMAKER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 487,988, dated December 13, 1892.

Application filed April 6, 1892. Serial No. 427,994. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. CAMERON, of Poplar Bluff, in the county of Butler and State of Missouri, have invented a new and Improved Watchmaker's Tool, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved watchmaker's tool which is simple and durable in construction and combines a calipers for truing balance-wheels, a beat-indicator, and a poising-tool.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is an enlarged sectional side elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a sectional plan view of the same on the line 4 4 of Fig. 2. Fig. 5 is a similar view of part of the same on the line 5 5 of Fig. 2. Fig. 6 is an inverted plan view of the movable sleeve, and Fig. 7 is a sectional plan view of the fixed sleeve and its bearing on the line 7 7 of Fig. 2.

The improved watchmaker's tool is provided with a handle A, on one end of which is secured or formed a fork B, having its arms B' and B<sup>2</sup> curved, as plainly illustrated in Figs. 1 and 2, the end of the arm B' being provided with a bearing B<sup>3</sup>, and a similar bearing B<sup>4</sup> is formed on the end of the arm B<sup>2</sup>. In the bearing B<sup>3</sup> is fitted to slide vertically a sleeve C, formed at its lower end with a head C', preferably cone-shaped, as plainly illustrated in the drawings. In the sleeve C is formed an opening C<sup>2</sup>, engaged by the free end of a lever D, which extends through a notch B<sup>5</sup> in the bearing B<sup>3</sup>, as will be readily understood by reference to Fig. 2.

The lever D is pivoted to one side of the arm B', and its outer end is pivotally connected by a link D' with a hand-lever E, also pivoted at E' to the arm B', the rear end of the said lever extending on top of the handle A and is held in a normal position by a spring E<sup>2</sup>, interposed between the handle of the lever

E and the handle A. The upper end of the sleeve C is preferably provided with a screw-thread, on which screws a nut F, adapted to hold the sleeve in place while truing a balance-wheel, the said nut F abutting on the top of the bearing B<sup>3</sup> when the lever E is pressed, and the sleeve slides downward into its lowermost position, for the purpose mentioned.

Within the sleeve C is arranged a block G, provided at its bottom with a jewel H, located directly opposite an opening C<sup>3</sup>, formed in the head C' of the sleeve C. On the block G is formed an upwardly-extending stem G', fitted to slide in a recess I', formed in a plug I, screwed in the upper end of the sleeve C. A spring J is coiled on the said stem G' and rests with its lower end on the block G and at its upper end abuts on the under side of the plug I. The spring J serves to hold the block G seated on the inside of the head C' of the sleeve C; but the said spring permits an upward sliding of the said block G, as hereinafter more fully described.

Opposite the head C' of the sleeve C is arranged the head K' of the sleeve K, held in the bearing B<sup>4</sup> and secured therein by a nut F', screwing on the lower threaded end of the said sleeve K. In the head K' and directly opposite the opening C<sup>3</sup> is formed an opening K<sup>2</sup>, leading to the jewel N, held in the block L, fitted to slide in the sleeve K and adapted to be seated on the head thereof, as plainly illustrated in Fig. 2.

The block L is provided with a stem L', engaging a recess O' in the plug O, screwing in the lower end of the sleeve K, as shown. A spring P is coiled on the stem L' and abuts with its upper end on the block L and with its lower end on the plug O. In one side of the aperture K<sup>2</sup> in the head K' is arranged a recess K<sup>3</sup>, adapted to receive the roller, as hereinafter more fully described.

On the head B is secured an arm R by means of a thumb-screw R', the said arm extending into the opening between the fork-arms B' and B<sup>2</sup>, and on this arm is held adjustably the indicator-arm Q, arranged in line with the space between the two heads C' and K'. The indicator-arm Q is held longitudinally adjustable on the arm R by means



of a set-screw Q', screwing in the arm R and passing through a longitudinal slot in the said indicator-arm Q.

When the several parts are in the position shown in Figs. 1 and 2, then the springs J and P hold the blocks G and L on their seats in the heads C' and K', respectively. Now when it is desired to use the tool as a calipers the operator loosens the nut F, so that the balance will pass into position as in an ordinary calipers. The nut F is adjusted so that the balance will move freely without much friction, it being understood that the ends of the staff of the balance pass through the openings C<sup>3</sup> and K<sup>2</sup> to be engaged by the jewels H and N. The operator then adjusts the indicator-arm Q, so as to bring the same into the proper position. The operator now presses the handle end of the lever E, so that a downward motion is given to the sleeve C, whereby the balance or wheel is held rigidly between the faces of the heads C' and K'. By this downward movement of the sleeve C the blocks G and L, carrying the jewels H and N, respectively, give sufficiently to permit the heads C' and K' to engage the opposite sides of the balance-wheel. The operator can now bend the balance as desired, and when finished the pressure on the handle of the lever E is released, so that the balance will resume its position under the indicator-arm Q.

To use the tool for beat block or indicator for retaining position of roller and hair-spring upon staff of balance-wheel after they have been removed from the same, the balance is placed upon the heads C' and K', as in ordinary calipers, but with the hair-spring and roller-table on the head K' and the roller-jewel in the recess K<sup>3</sup>. The operator then loosens the nut F' and turns the sleeve K until the hair-spring stud is directly under the indicator-arm Q, and then tightens nut F to hold sleeve K in the desired position. The operator then takes out the balance, removes the hair-spring and roller, and then places balance in tool and proceeds to true up, as before described. To replace the roller and the spring, the roller is put in position on the face of the head K', then the balance is inserted and the lever E is depressed, so that the roller is forced into

position on the staff. The hair-spring is then placed upon the staff with the hair-spring stud directly under the indicator-arm Q, after which the operator presses the handle of the lever E, so that the hair-spring is forced in position on the staff and the balance is on beat.

In order to use the device as a poise-tool, the balance is placed in the tool with the roller and hair-spring removed. The nut F is then adjusted so that there is no pressure on the pivots. Then the tool is turned so as to rest upon the extreme ends of handles and the thumb-screw R', after which the balance is adjusted to the poise.

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

1. The combination, with the tool-handle and its fork B, having tubular bearings, a sleeve K, held in the lower bearing, and a spring-sliding block and screw-plug contained in said sleeve, of a sliding sleeve C, fitted in the upper bearing, a sliding block, spring, and screw-threaded plug which are carried by such sleeve, the plug serving to adjust the tension of the spring without changing the position of the block, and the lever mechanism applied to the fork and serving to positively adjust the sliding sleeve and its contained parts up or down, as shown and described.

2. The combination, with the tool-handle, its fork and a threaded sleeve K, held in the lower bearing, the jewel-block, spring, and screw-plug carried by this sleeve, and a nut F', applied to the latter for clamping it in place, of a sliding threaded sleeve C, carried by the upper bearing, the jewel-block and spring contained in such sleeve C, and a screw-plug which serves to adjust the tension of the spring without changing the position of the jewel-block, a nut F, applied to said sleeve and serving as a stop to limit its downward movement, and lever mechanism applied to the handle and fork and adapted to positively adjust the sliding sleeve, substantially as shown and described.

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Witnesses:

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