(No Model.)

J. E. ECKERT.

BALANCE WHEEL PLIERS AND CALIPERS.

No. 481,936. Patented Sept. 6, 1892.

Fig. 1.

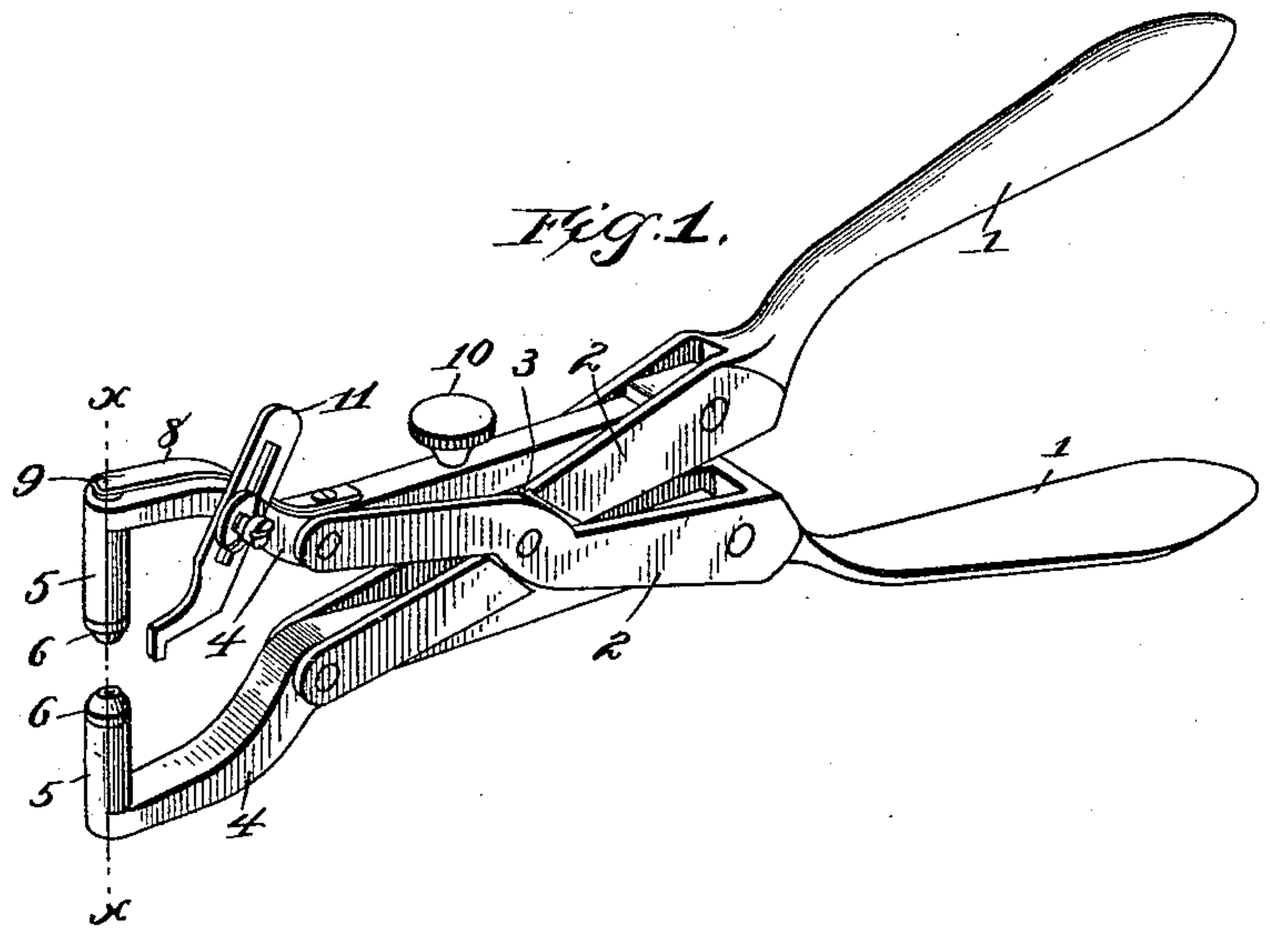
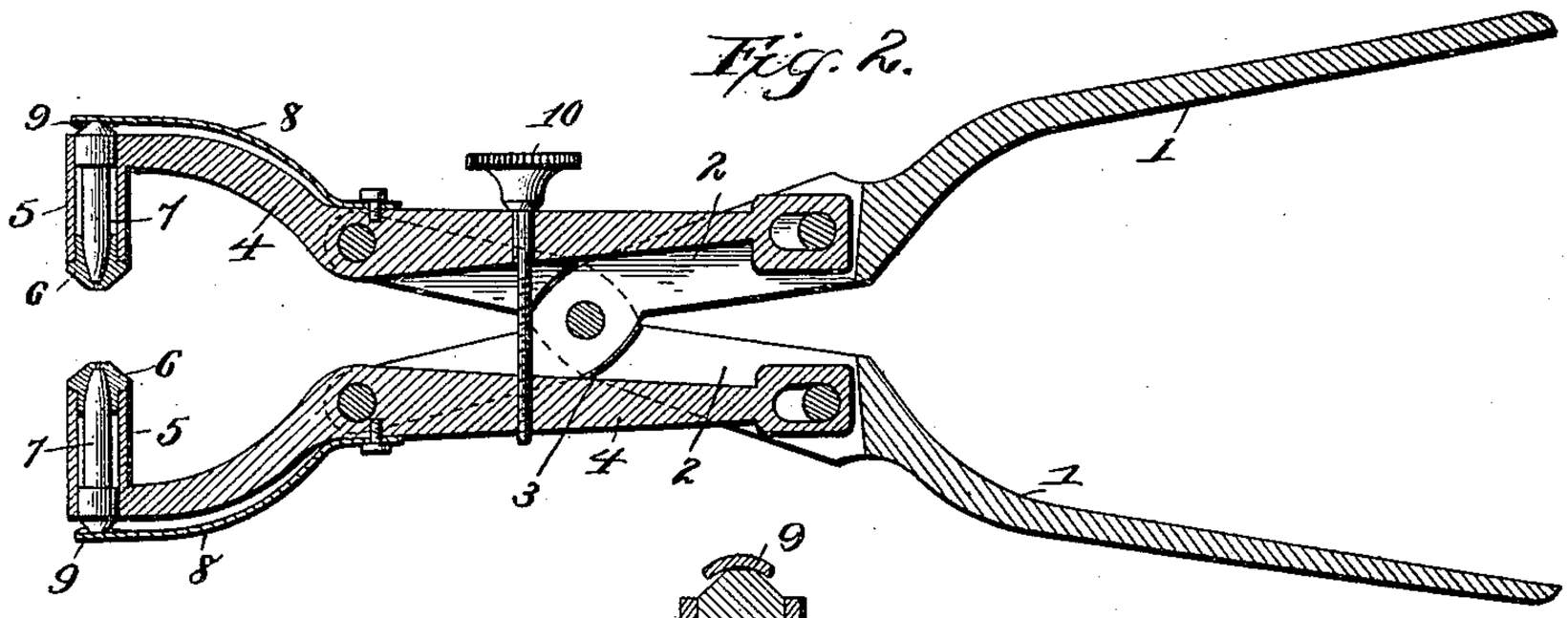


Fig. 2.



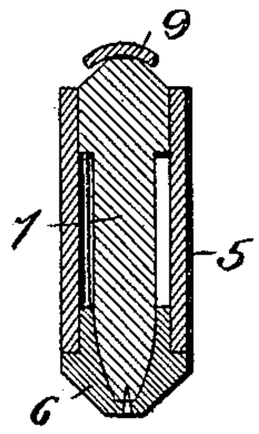
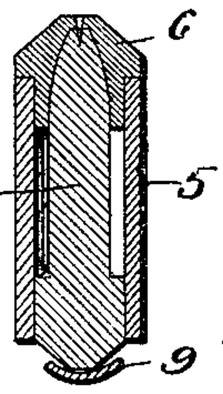


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JACOB E. ECKERT, OF MARENGO, IOWA.

BALANCE-WHEEL PLIERS AND CALIPERS.

SPECIFICATION forming part of Letters Patent No. 481,936, dated September 6, 1892.

Application filed April 7, 1892. Serial No. 428,176. (No model.)

To all whom it may concern:

Be it known that I, JACOB E. ECKERT, a citizen of the United States, residing at Marengo, in the county of Iowa and State of Iowa, have invented a new and useful Combined Calipers and Pliers, of which the following is a specification.

This invention relates to an improved tool for the use of watchmakers, which comprises a combined calipers and balance-wheel truing-pliers, as will be more fully hereinafter described and claimed.

The object of the invention is to provide convenient and practical combination implements of this character for holding a balance-wheel loosely or with slight friction on its pivots while truing or training the wheel, said tools being also adapted to be quickly changed, so as to grasp the arm of the wheel firmly, in order to bend the arms and true the wheel entire for use in a watch.

In the drawings, Figure 1 is a perspective view of the improved implement. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section on the line *x x*, Fig. 1, on an enlarged scale.

Similar numerals of reference indicate corresponding parts in the several views.

Referring to the drawings, the numeral 1 designates the handles, which have their forward ends bifurcated to form arms 2, a portion of which are recessed, as at 3, to receive the other arm and are pivotally connected at this point. To the front portion of the said arms 2 and extending between the same rearward are the jaws 4, whose front ends are bowed and have inwardly-projecting hollow posts 5, with centers 6 in the ends thereof. Within said posts 5 are removably mounted brass punches 7, which are held in position by spring-arms 8, pivotally connected to the rear portions of the jaws and having their front ends bent or arched, as at 9, to take over the projecting ends of the said punches. The rear ends of the jaws 4 move in the bifurcations of the arms 2 and are held in position therein by the pivots passing through the forward ends of said arms 2 and through the rearmost portions of the jaws 4. A gage-screw 10 extends through the jaws 4 and regulates the adjustment of the post 5 for various purposes, and through the medium of said gage-screw the degree of movement of the posts 5 to and from each other may be readily controlled and adapt the device for use in connection with different lengths of staffs and pinions and to keep the wheel from dropping out when opening the calipers for the purpose of trying the wheel to ascertain if it is true after bending. By the construction set forth loose joints are wholly avoided and the brass punches are provided with sufficient play in the posts, in order that if the calipers should give a little in bending the wheel or if any of the joints should happen to become loose there will be no danger of breaking or bending the pivots.

In this device it is not necessary to remove the wheel from the calipers, but merely squeezing shut the handles with the left hand, thereby clamping the female steel centers in the posts 5 on the heavy parts of the staff or pinion, as the case may be, letting the pivots go through the female steel centers and rest in the centers of the brass punches. The said centers are supported in the posts 5 by friction, being driven thereinto, as well known in the art.

The punches can be changed, if desired, to fit certain odd parts, such as the long pivot on the third wheel for the seconds-hand.

On the side of one of the jaws is a slotted gage 11, which is movable and adjustable in the range of work, and it is well understood by those skilled in the art.

Having thus described the invention, what is claimed as new is—

1. In a tool of the character described, the combination of the jaws, handles to which said jaws are pivoted and having a loose connection with the rear portions of said jaws, so that the latter can have a sliding movement at their rear ends in said handles, and a gage-screw extending through the said jaws intermediate of the rear ends and the pivotal points thereof, substantially as described.

2. In a tool of the character described, the combination of jaws loosely connected at their rear ends to have a sliding movement and having inwardly-extending posts with centers fixed to the ends thereof and brass punches movably mounted in said posts, substantially as described.

3. In a tool of the character described, the

combination of jaws loosely connected at their rear ends to have a sliding movement and having hollow posts extending inward from the ends thereof, brass punches mounted in said posts, and spring-arms secured to said jaws and bearing on the ends of said punches to hold the same in position, substantially as described.

4. In a tool of the character described, the combination of the handles with their front portions bifurcated to form arms which receive and are pivoted to each other and jaws pivotally connected to the front ends of said arms and having their rear ends moving in and through said bifurcated portions of the handles, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JACOB E. ECKERT.

Witnesses:
J. B. MURPHY,
M. A. SIMMONS.