G. G. BUGBEE.

Balance Staff and Wheel for Watches.

No. 227,726. Patented May 18, 1880.

Fig. 1

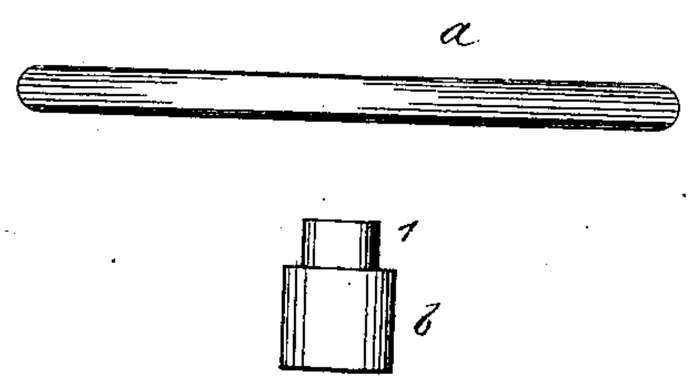

Fig. 2

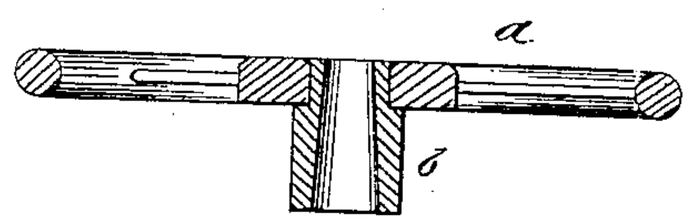

Fig. 3

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE G. BUGBEE, OF GONZALES, TEXAS.

BALANCE STAFF AND WHEEL FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 227,726, dated May 18, 1880.

Application filed October 16, 1879.

To all whom it may concern:

Be it known that I, GEORGE G. BUGBEE, of Gonzales, in the county of Gonzales and State of Texas, have invented a new and useful Improvement in Balance Staff and Wheel for Watches, of which the following is a specification.

Heretofore balance-staffs for watches have been made in one piece with the collet rigidly attached to the staff, and the collet formed with a countersunk end for entering the balance-wheel center, the parts being attached firmly by riveting down the countersunk end of the collet. With this construction the work of replacing a broken staff with a new one involves considerable labor and risk of injury to the balance-wheel.

The object of my invention is to construct and fit these parts in such manner that a broken staff may be replaced with little labor and expense and without risk of injury to the wheel; and my invention consists, first, in attaching the collet permanently to the balance-wheel; and, second, in connecting the staff thereto by a wedge or screw joint, whereby the staff is rendered adjustable and may be readily removed.

The invention will be described more particularly with reference to the accompanying drawings, wherein—

Figure 1 is an elevation showing the wheel, collet, and staff separated, in enlarged size. Fig. 2 is a cross-section of the wheel with the collet attached. Fig. 3 is an elevation of the staff in modified form.

Similar letters of reference indicate corresponding parts.

a is the balance-wheel; *b*, the collet, and *c* the staff. The collet *b* is formed with the countersunk shouldered portion 1 of a diameter for fitting snugly within the central aperture, 2, of wheel *a*, and through the center, lengthwise of the collet, is drilled or formed a tapering hole.

The staff *c* is formed with upper and lower pivot-shoulders, as usual, and next to the upper pivot-shoulder is formed tapering, as at 3, of a size to fit the tapering hole of the collet *b*.

The collet will be connected by inserting its shouldered portion into the central aperture of the wheel and riveting down the countersunk end, so that the collet will be rigidly held. The staff is attached by inserting its tapering portion 3 into the tapering hole of the collet and wedging it securely to place by a slight tap with a hammer upon a hollow punch placed against the lower pivot-shoulder of the staff. The parts will be thus firmly attached, and the staff may be readily removed by placing a hollow punch against the upper pivot-shoulder and giving it a light tap, thus permitting a new staff to be placed without the labor of refitting the collet or risk of stretching or otherwise injuring the wheel.

The tapering end of the staff may be formed with a screw-thread, as shown in Fig. 3, to fit a corresponding thread in the tapering hole of the collet, and, if desired, a nut may be used with a screw-threaded staff to connect the parts.

I do not limit myself to any especial means for holding the staff to the collet whereby it may be readily removed.

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

1. A balance-staff for watches formed with a tapering end, in combination with collet having tapered hole, as shown and described.

2. A balance-wheel for watches having the collet *b* formed with or attached to it, the collet being formed with a tapering hole for receiving the staff, substantially as described and shown.

GEORGE G. BUGBEE.

Witnesses:
ED TITCOMB,
E. F. BATTE.