No. 801,443. PATENTED OCT. 10, 1905.

C. E. DE LONG.

BALANCE STAFF FOR WATCHES.

APPLICATION FILED JUNE 15, 1904.

Fig. 1.

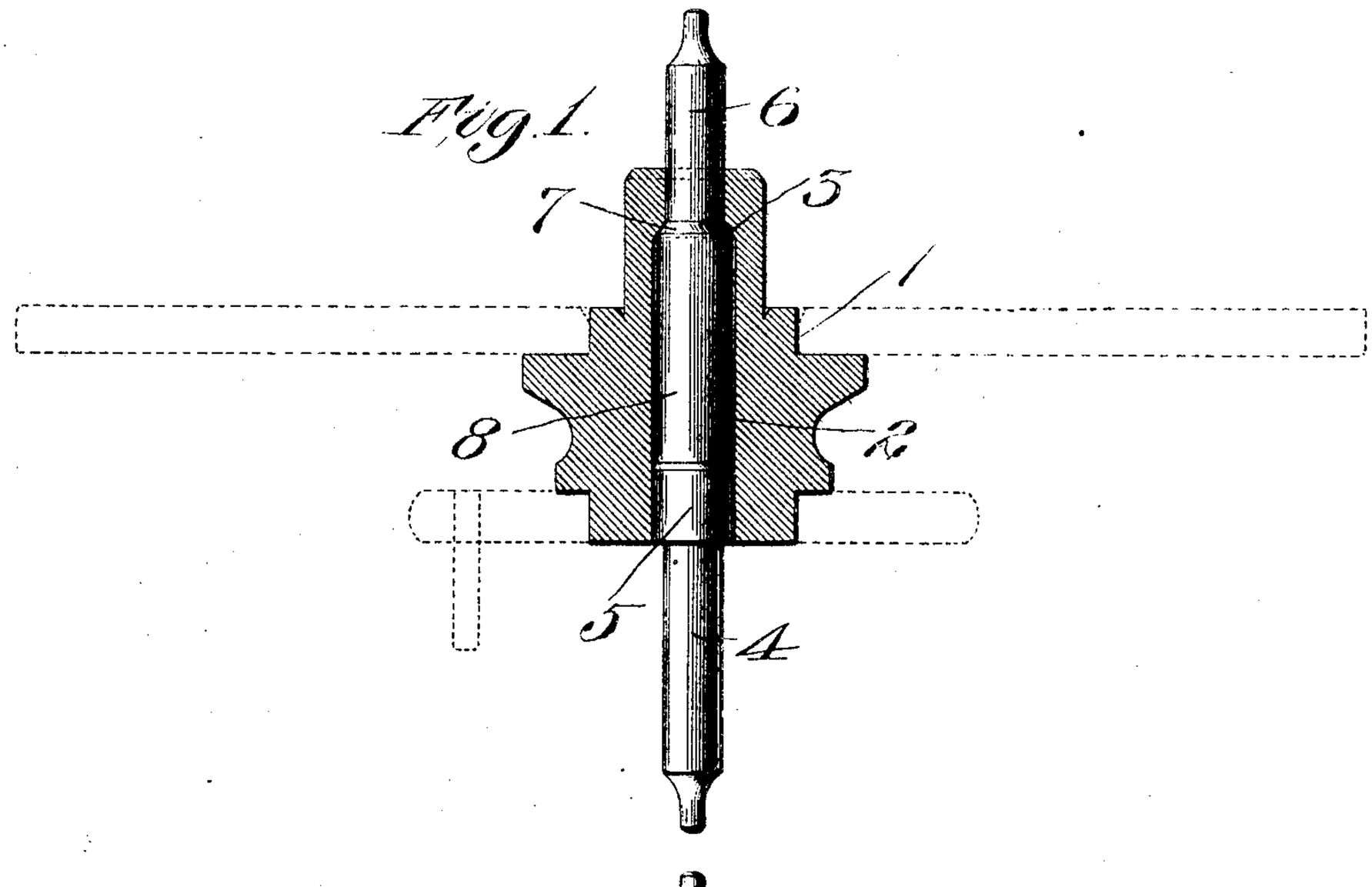
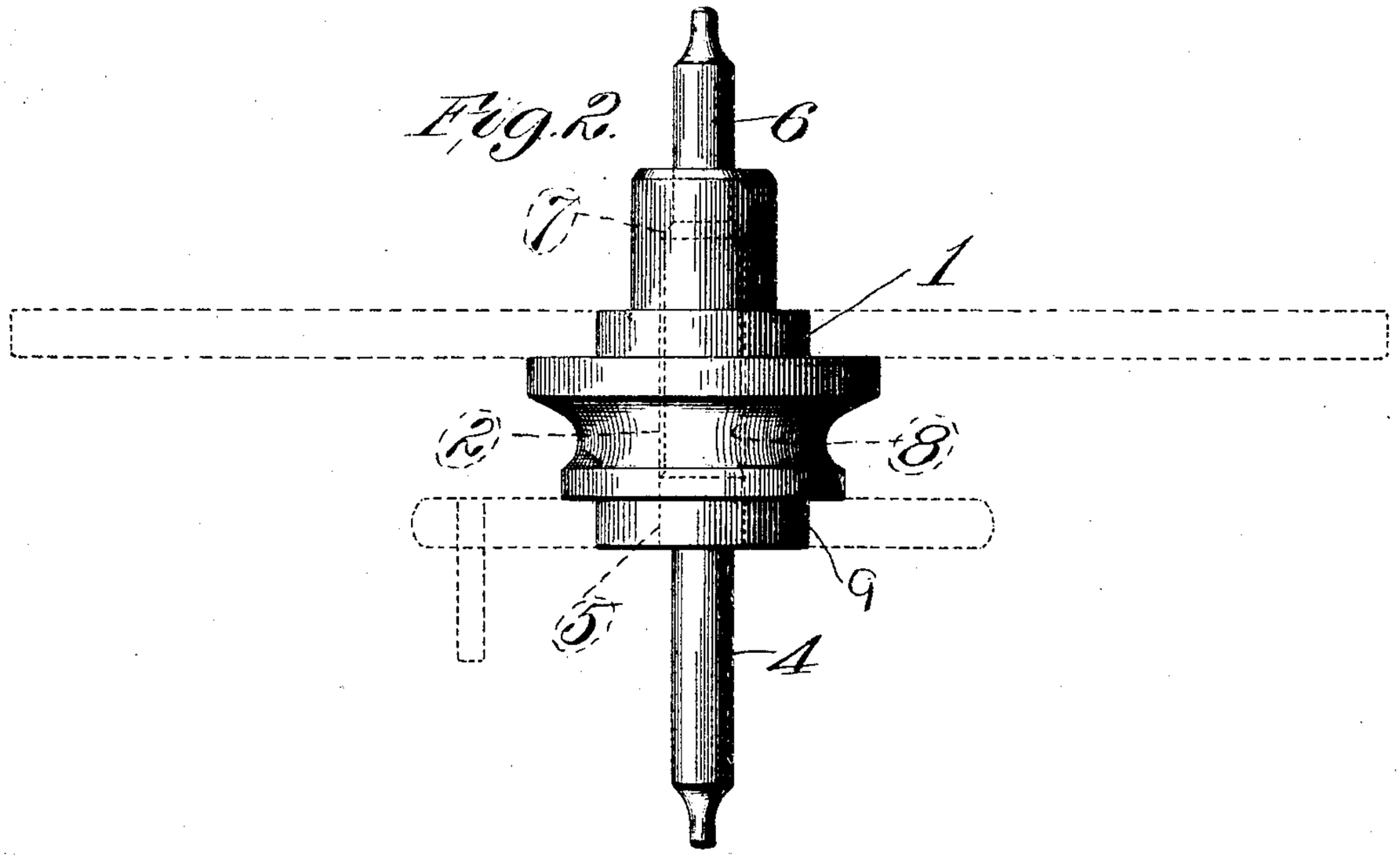


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES E. DE LONG, OF SOUTH McALESTER, INDIAN TERRITORY, ASSIGNOR TO FRED McINTYRE, OF SOUTH McALESTER, INDIAN TERRITORY.

BALANCE-STAFF FOR WATCHES.

No. 801,443. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed June 15, 1904. Serial No. 212,725.

To all whom it may concern:

Be it known that I, CHARLES E. DE LONG, a citizen of the United States, residing at South McAlester, Indian Territory, have invented a certain new and useful Improvement in Balance-Staffs for Watches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional view through the hub of a balance-wheel, the balance-wheel staff being shown in elevation; and Fig. 2 is a side elevational view of the hub and staff.

This invention relates to improvements in watches, and particularly to means for attaching the staff to its balance-wheel. As is well known, the pivots or points of the balance-wheel staff of a watch frequently become ruptured or broken, necessitating the removal of the staff from the balance-wheel for repairs or for the insertion of a new one. In the ordinary method the staff being riveted through the arm of the balance-wheel the removal of said staff frequently causes the wheel to become untrue, resulting in considerable difficulty in retruing it so that it will properly perform its function.

The purpose of my invention is to provide a balance-wheel staff which may be easily attached to and detached from the hub, the assemblage or removal of the parts in no wise affecting or distorting each other and requiring no riveting to hold in position.

As illustrated in the drawings, the hub 1 of the balance-wheel is formed of a single piece and is provided with a central longitudinal bore 2, having a constricted portion therein near the upper end which provides a shoulder 3, forming a stop for the balance-staff therein near one end, which provides a shoulder forming a stop for the balance-wheel staff. The balance-wheel staff is designated by the numeral 4, the diametrically oppositely disposed faces of the staff being parallel, although of different diameters. In other words, all sides of the staff are parallel. 5 is a collar, which is turned up or otherwise formed upon the staff, being of greater diameter than the remaining portion of the staff and of approximately the same diameter as the portion of the bore 2 of the hub. The staff is provided with a constricted portion 6, on which an annular shoulder 7 is formed to bear against the stop 3 of the hub, thereby limiting the longitudinal movement of the staff. It will be seen that there are two frictional bearing-points for the staff, one of which also limits the longitudinal movement of the staff, which engage the inner walls of bores 2 and 3, so that the balance-wheel will not turn upon said staff. It will be observed that the portion designated by the numeral 8, which is between the shoulder 5 and the shoulder 7, is so formed that it will be spaced away from the walls of the hub. The purpose of this is to permit the hub to be engaged at only the two points, so that the staff will be out of engagement therewith at all other points between. The shoulder 9 is formed on the hub of the balance-wheel so as to fit the opening in the roller-table, from which the hub can be removed, if necessary. The frictional engagement of the contacting surface of the staff with the inner walls of the bore of the hub is sufficient to hold the wheel rigid with the staff under normal conditions, but is such that when occasion demands the staff can be easily forced from the hub without any liability of disrupting any of the parts.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. The combination with a balance-wheel hub having a differential bore providing a stop-shoulder within the hub, and a staff extending through the hub and having supporting contact with the hub only at points other than the middle portion, thereof, substantially as described.

2. The combination with a balance-wheel hub having a differential bore providing a stop-shoulder near one end thereof, and a

staff extending through the hub and having corresponding differential diameters and a stop-shoulder, said parts being so constructed that when assembled there is a space between the hub and staff extending from the stop-shoulders to a point near the opposite end of the hub, substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 26th day of May, 1904.

CHARLES E. DE LONG.

Witnesses:

JOHN B. CHALLES,

FRANK SMITH.