

J. A. FREUND.
WATCH MOVEMENT.
APPLICATION FILED NOV. 10, 1911.

1,063,251.

Patented June 3, 1913.

Fig. 1.

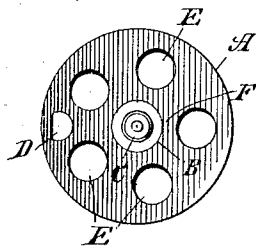


Fig. 3.

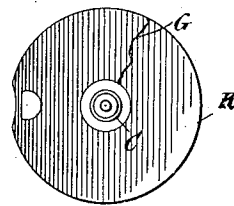


Fig. 2.

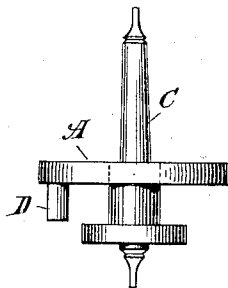
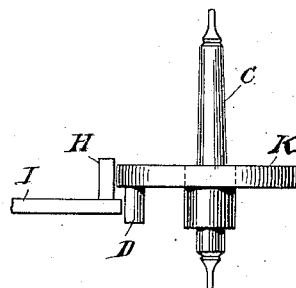


Fig. 4.



WITNESSES

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WATCH-MOVEMENT.

1,063,251.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed November 10, 1911. Serial No. 659,462.

To all whom it may concern:

Be it known that I, JOSEPH A. FREUND, a citizen of the United States, and a resident of Waltham, in the county of Middlesex and State of Massachusetts, have made and invented certain new and useful Improvements in Watch-Movements, of which the following is a specification.

My invention relates to an improvement in watch movements, and more particularly to that part or portion thereof usually known and referred to by those skilled in this particular art as the "impulse roller," or "impulse table," the object of the same being to provide a roller which shall be free from the many objections heretofore urged against the ordinary type or construction thereof. In the production of a roller or table for this purpose, it is usually shaped or formed, and after being punched or drilled, is subjected to heat treatment for the purpose of imparting thereto the necessary hardness. It frequently happens that in hardening the article it is cracked or broken, due to the unequal expansion and contraction of the metal of which the roller is formed. Furthermore, in forcing the roller onto the balance staff, it frequently cracks from the center outwardly, not only during the operation of driving the hardened roller onto the staff, but in many instances, weeks and sometimes months later, due to the constant strain imposed on the metal of which the roller is formed by the tight and driving fit of the staff therein. When these cracks appear in the roller, the accurate time-keeping qualities of the movement are destroyed, the movement running erratically, and frequently stopping. In order to overcome these objections, I have constructed a roller provided with a central opening for the staff, and with one or more openings therein adjacent to the central opening, the walls surrounding the central opening into which the staff is driven being thereby rendered comparatively thin and elastic, and avoiding any and all danger of cracking the roller from the center to the periphery, and incidentally reducing the weight of the roller to a considerable extent, a feature so much desired, and absolutely essential, to secure the accurate time-keeping qualities in a watch movement. By so constructing the roller, it will be understood that in driving the staff into the central

opening, should it happen that the walls of the opening be broken or cracked, such break or crack would extend only from the center to the nearest adjacent opening, and not entirely to the periphery of the roller, thereby avoiding to a large extent the destruction of the time-keeping qualities of the movement. Again, by reason of the provision of the several openings in the roller, the liability of cracking the roller during the operation of heat treatment is materially lessened, the bulk of the metal between the central opening and periphery being materially reduced, and permitting the even distribution of heat throughout the entire article.

A roller involving the features above described is illustrated in the accompanying drawings, wherein—

Figure 1 shows a plan view thereof; Fig. 2 is a view in side elevation of the roller mounted on the balance staff employed in a double roller movement; Fig. 3 is a plan view of a roller or table as ordinarily constructed and shown with a crack therein extending from the central opening to the periphery; Fig. 4 is a view in side elevation showing the roller, illustrated in Fig. 3, assembled with a balance staff as employed in a single roller movement.

Referring to the drawings, A represents an impulse roller or table made of the usual diameter and thickness and provided with a central opening B for the reception of a balance staff C, and having secured therein an impulse or jewel pin D. In this roller or table I form holes or openings E, preferably extending entirely through the roller, and between the central opening and the periphery of the table, the walls F separating the central opening B, and the outer openings E, being rendered comparatively thin and elastic, the metal separating the several openings in the roller being such that the heat during the operation of hardening the metal can readily and evenly penetrate the same.

The walls F being comparatively thin, as above described, will permit of the driving of the roller onto the balance staff C without danger of cracking, and should, perchance, such occur, the crack will extend only from the central opening B to the adjacent opening E, and not entirely to the periphery, as indicated at G in Fig. 3.

When the metal of the roller is cracked

from the central opening to the periphery, the perfect balance of the roller is destroyed, causing the movement to run erratically and at times to stop. Particularly is such cracking of the roller harmful in the case of a single roller movement as illustrated in Figs. 3 and 4, due to the fact that the guard pin H, secured to the pallet lever I, comes in contact with the periphery of the roller or table K, and striking against the cracked portion of the periphery of the roller as the latter oscillates, entirely destroys the accuracy of the movement.

In my improved roller, this objectionable result is avoided, as a slight crack extending from the central opening B to an outer opening E (Fig. 1), should such occur, does not to any appreciable extent destroy the balance of the roller.

What I claim is:—

For use in a watch movement, an impulse roller provided with a central opening, a balance staff tapered to be driven into said opening to form a force fit, portions of the metal of said roller between the periphery thereof and said central opening being removed thereby forming a continuous and elastic wall around said opening and permitting said balance staff to be assembled with said roller without danger of cracking the latter.

Signed at Waltham, in the county of Middlesex and State of Massachusetts, this sixth day of November A. D. 1911.

JOSEPH A. FREUND.

Witnesses:

W. C. COOK,
W. B. MEHL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."