J. A. KEY & F. J. TESSMER.

BALANCE CHUCK.

APPLICATION FILED MAR. 13, 1908.

906,895. Patented Dec. 15, 1908.

Fig. 1

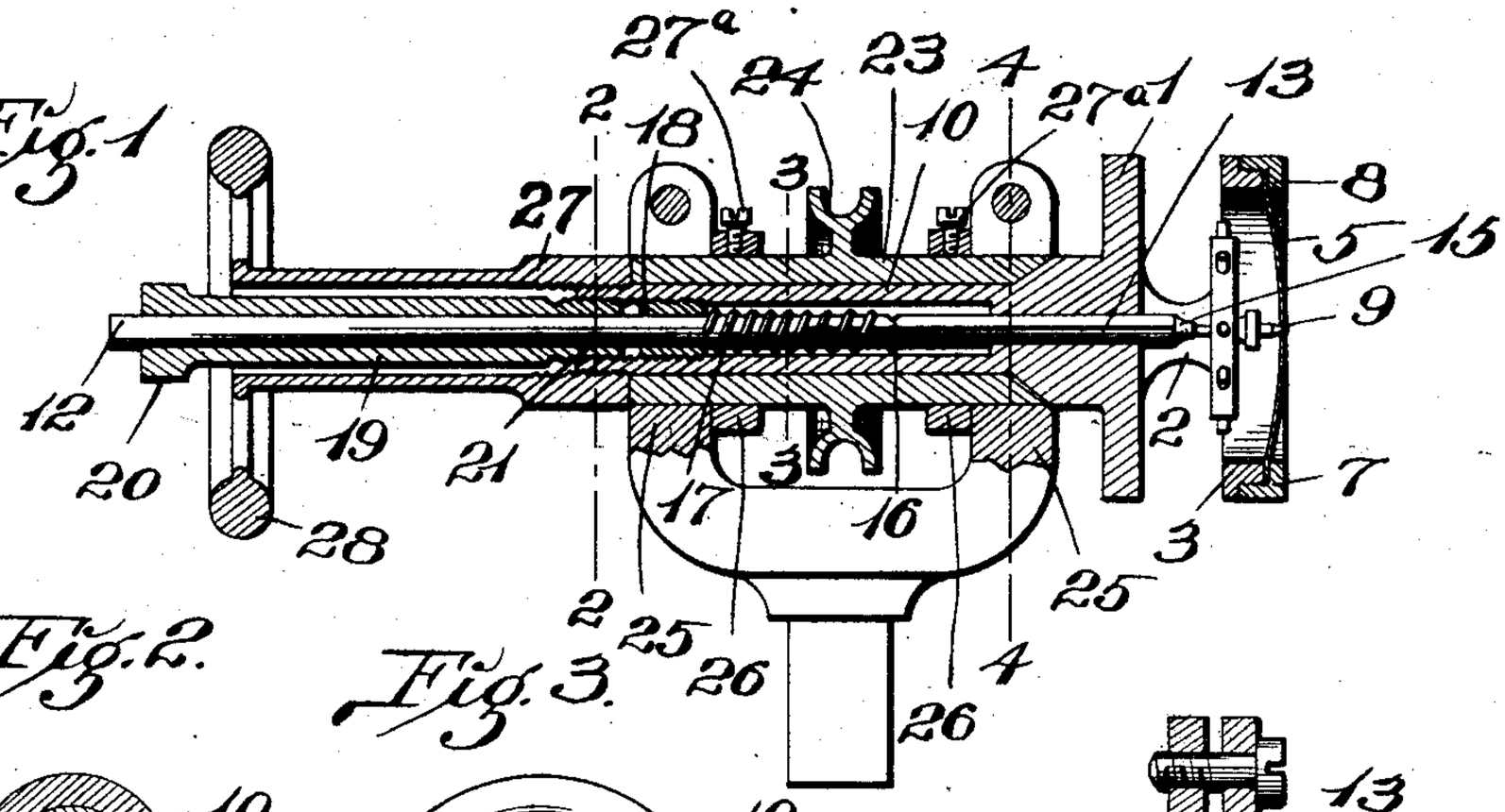


Fig. 2.

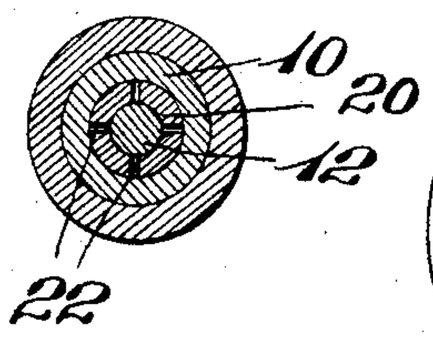


Fig. 3.

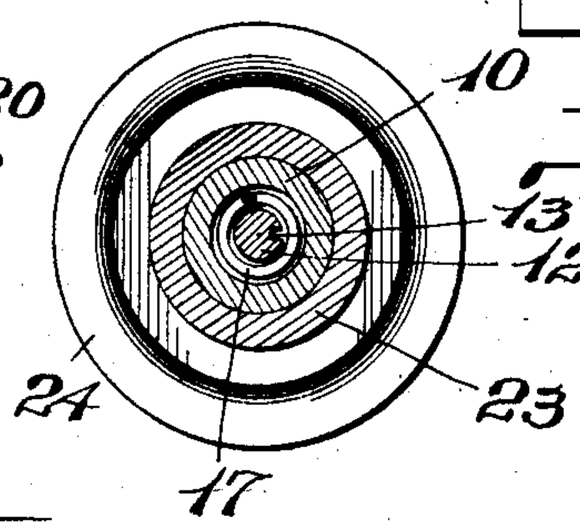


Fig. 4.

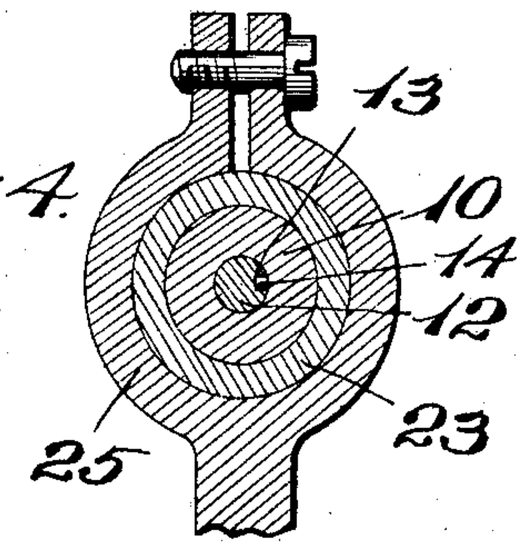


Fig. 5.

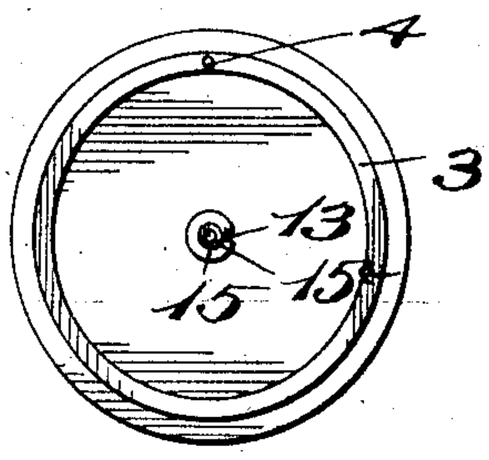


Fig. 6.

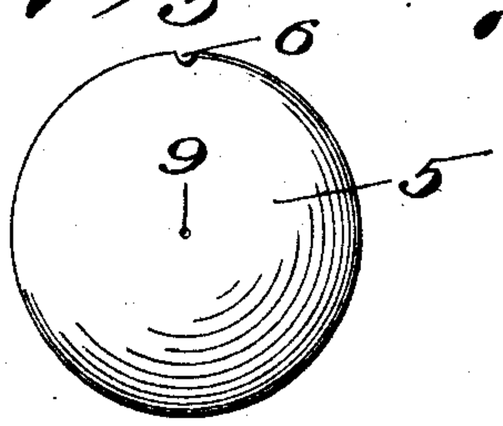


Fig. 7.

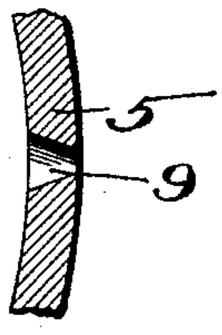


Fig. 8.

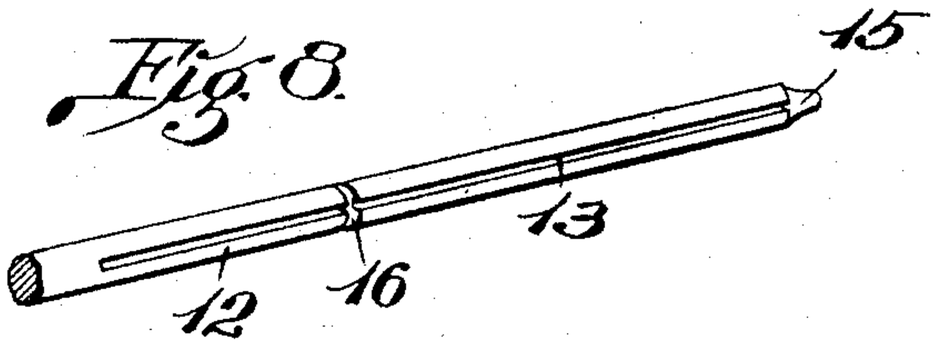
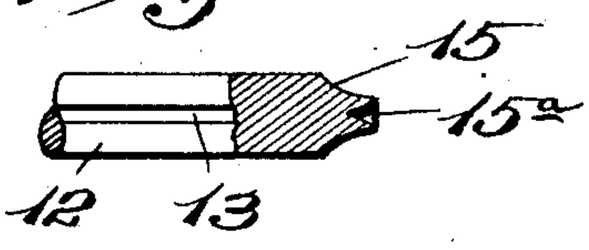


Fig. 9.



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UNITED STATES PATENT OFFICE.

JEREMIAH A. KEY AND FRANK J. TESSMER, OF ST. LOUIS, MISSOURI.

BALANCE-CHUCK.

No. 906,895. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed March 13, 1908. Serial No. 420,926.

To all whom it may concern:

Be it known that we, JEREMIAH A. KEY and FRANK J. TESSMER, citizens of the United States, and residents of St. Louis, Missouri, have invented certain new and useful Improvements in Balance-Chucks, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to an improved balance chuck for dressing and refinishing the balance pivots of watch movements without removing the hairspring and roller thereof, and which chuck serves as a protection for the pivots while the same are being polished, and the object of our invention is to provide a simple, inexpensive chuck adapted to be used in connection with an ordinary jeweler's lathe, and which is adapted to hold any part of a watch or clock movement having pivots, such as balance wheels, escape wheels, pallets, and third and fourth wheels.

To the above purposes, our invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully described, pointed out in the claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a vertical section taken longitudinally through the center of a chuck of our improved construction, showing the same positioned in a suitable holder; Fig. 2 is an enlarged transverse section taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged transverse section taken on the line 3—3 of Fig. 1; Fig. 4 is an enlarged transverse section taken on the line 4—4 of Fig. 1; Fig. 5 is an elevation of the head of the chuck, with the locking ring removed; Fig. 6 is an elevation of a metal disk which is removably positioned on the head of the chuck; Fig. 7 is an enlarged section taken through the center of the disk, and showing the shape of the bearing therein; Fig. 8 is a perspective view of a portion of the center rod or spindle of the chuck; and Fig. 9 is an enlarged detail of the forward end of the center rod or spindle, showing the bearing therein.

Referring by numerals to the accompanying drawings: 1 designates a disk which forms the main body portion of the head of the chuck, and integral with the outer face thereof are the oppositely arranged webs 2, with which is formed integral a ring 3, which is exteriorly screw-threaded, and formed integral with the outer face of said ring is a small lug or pin 4.

5 designates a thin metal disk which is slightly convex, and of such a size as to fit on the ring 3, and formed in the edge of said disk is a notch 6, which, when the parts are assembled, receives the lug or pin 4, and adapted to screw on the ring 3 is a circular nut or ring 7, provided with an integral flange 8, which engages the edge of the disk 5. Formed integral with the center of the disk is a conical opening 9, which is adapted to receive the conical bearing on the end of a pivot. Formed integral with the rear side of the disk 1 is a tubular stem 10, the opening in the outer portion of said stem being larger than the opening through the inner portion and through the disk 1.

Arranged to move longitudinally through the opening in the disk 1 and the body portion of the stem 10 adjacent thereto is a rod or spindle 12, the forward portion of which is provided with a groove 13 which receives the pin 14, fixed on the interior of the tubular stem 10, thus permitting the rod to move longitudinally, and holding the same against rotation.

The forward end of the rod or stem is tapered, as designated by 15, and is provided with a bearing 15^a, adapted to receive the end of the pivot of a balance wheel or the like opposite the end seated in the conical opening 9.

Formed in the rod or spindle 12 is an annular groove 16, in which is seated one end of an expansive coil spring 17, the same occupying the enlarged outer portion of the opening in the tubular stem 10, and the rear end of said coil spring bears against a tubular stop 18, which is screwed into the outer end of the enlarged portion of the opening through the tubular stem.

19 designates a sleeve, provided on its rear end with a head 20, and the opposite end of said sleeve is screw-threaded, as designated by 21, and said screw-threaded portion being slotted lengthwise, as designated by 22, in order that when the threaded end is screwed into the end of the tubular stem 10, the rod or spindle 12 will be clamped and locked against longitudinal movement.

When in use, the tubular stem 10 is positioned in a sleeve 23, provided with a grooved wheel 24, and arranged for rotation in suitable bearings 25, and said sleeve being held against longitudinal movement in said bear-

ings by collars 26, located upon said sleeve and held by set screws 27[a]. The end of the stem 10 opposite the disk 1 is exteriorly screw threaded, and adapted to receive a tubular stop 27 operated by a hand wheel 28, which stop rigidly locks the chuck in the sleeve 23.

To position work, such as a balance wheel, in a chuck of our improved construction, the sleeve 19 is loosened to permit the rod or spindle to move freely lengthwise, and one end of the pivot is now positioned in the bearing 15[a] in the rod or spindle 12, after which the opposite end of the pivot is engaged in the bearing formed by the conical opening 9 in the disk 5, during which movement the rod or spindle 12 will be forced rearwardly through the tubular stem 10 against the pressure of the coil spring 17. The sleeve 19 is now rotated to cause the slotted forward end thereof to clamp and lock the rod or spindle 12 against movement in either direction, and thus the balance wheel or other work positioned between the disk 5 and the forward end of the rod or spindle 12 is held in a true and convenient manner. The stem 10 is now positioned in the sleeve 23, which occupies a position in the bearings 25, and after the stem is locked to said sleeve by means of the stop 27 the device is ready for use, and the pivots and shafts of the work can be cleaned, polished and refinished very quickly, without necessitating the removal of the hairspring and roller.

The disk 5 can easily and quickly be detached and replaced by a disk having a different bearing aperture by unscrewing the ring 7, and when a disk is applied to the ring 3, it is very easily and quickly placed in proper position by engaging the pin 4 in the notch 6.

The disks 5 are interchangeable and can be made in different shapes to accommodate different work, and the entire tool is easily assembled or taken apart and saves much time and labor in refinishing and polishing the pivots of balance wheels, escape wheels, and of third, fourth and center wheels.

The chuck is easily placed in position in the rotating sleeve 23, and the work can readily be placed in position in the chuck without removing the same from the lathe.

We claim:

1. In a device of the class described, a rotatable tubular stem having a skeleton head comprising a concentric ring spaced from the end thereof, a longitudinally adjustable center mounted in said stem, a centrally-apertured removable bearing disk seated on said ring, and an annular nut for securing said bearing disk to said ring.

2. A device of the class described, comprising a skeleton head, a disk detachably applied thereto, in the center of which disk is formed a bearing, a tubular stem integral with the head, a spring actuated spindle passing through the tubular stem and the head, in the end of which spindle is formed a bearing, and a split-ended sleeve screw seated in the end of the tubular stem for locking the spindle against longitudinal movement.

3. A device of the class described, comprising a tubular stem, a skeleton head integral with one end thereof, a disk detachably applied to said skeleton head, in the center of which disk is formed a bearing, the end of the tubular stem opposite the head being interiorly screw threaded, a screw stop located within said screw threaded end, a spindle passing through the tubular stem and screw stop, a coil spring located on the spindle and bearing against the screw stop, there being a bearing formed in the outer end of the spindle, and a split tube screw seated in the end of the tubular stem for locking the spindle against longitudinal movement.

4. A device of the class described, comprising a tubular stem, a skeleton head integral with one end thereof, a disk detachably applied to said skeleton head, in the center of which disk is formed a bearing, the end of the tubular stem opposite the head being interiorly screw threaded, a screw stop located within said screw threaded end, a spindle passing through the tubular stem and screw stop, a coil spring located on the spindle and bearing against the screw stop, there being a bearing formed in the outer end of the spindle, a split tube screw seated in the end of the tubular stem for locking the spindle against longitudinal movement, and means whereby the spindle is held against rotation in the tubular stem.

In testimony whereof, we have signed our names to this specification, in presence of two subscribing witnesses.

JEREMIAH A. KEY.
FRANK J. TESSMER.

Witnesses:
M. P. SMITH,
E. L. WALLACE.