

(No Model.)

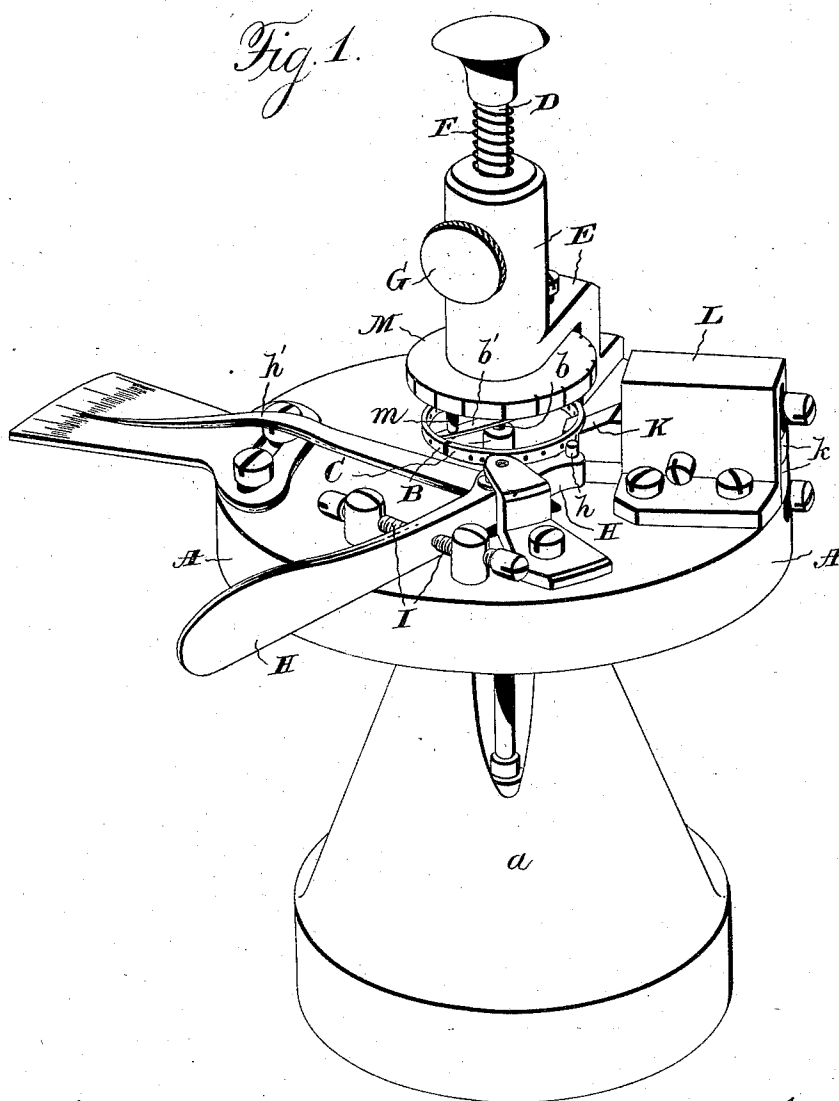
4 Sheets—Sheet 1.

G. E. HUNTER.

MECHANISM FOR TRUING WATCH BALANCES.

No. 558,811.

Patented Apr. 21, 1896.



Witnesses:

Jas. E. Hutchinson.
Henry C. Hazard.

Inventor.

George C. Hunter, by
Quindlen & Russell his Attys

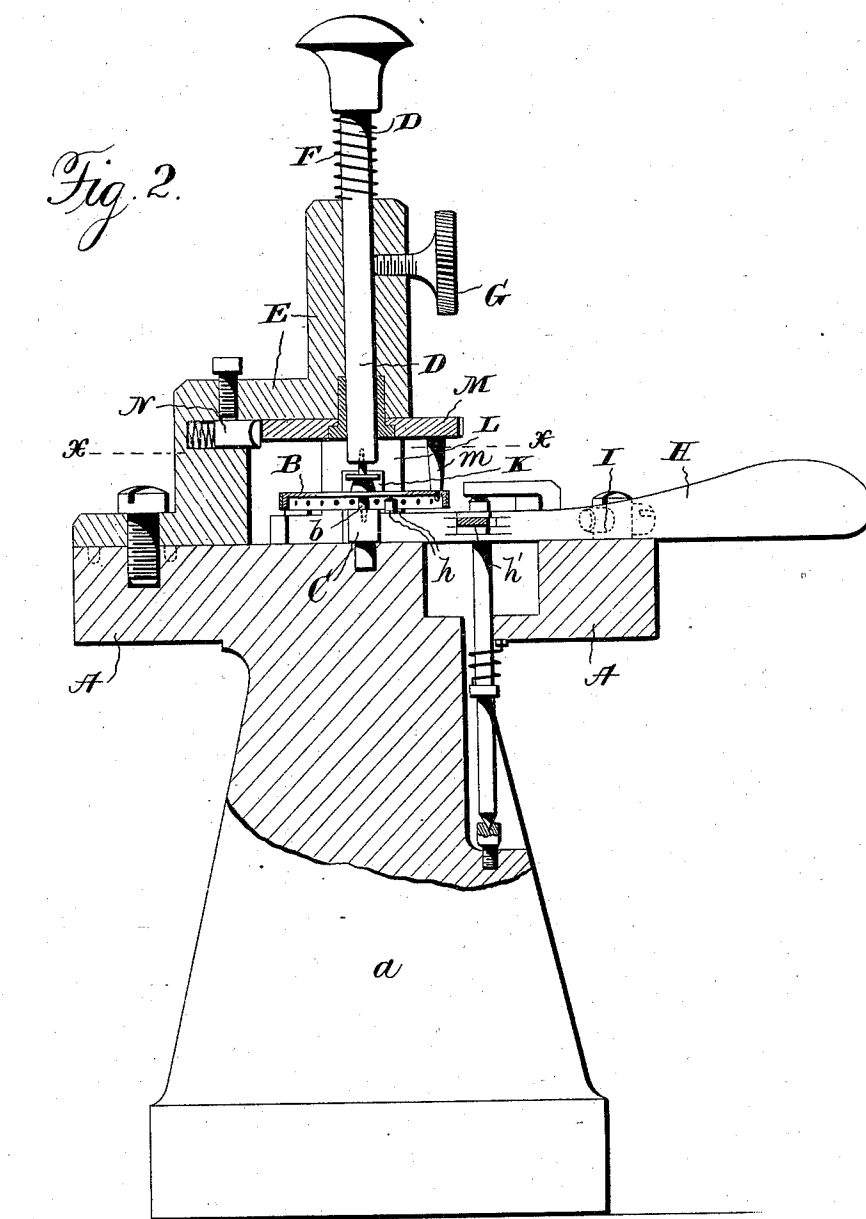
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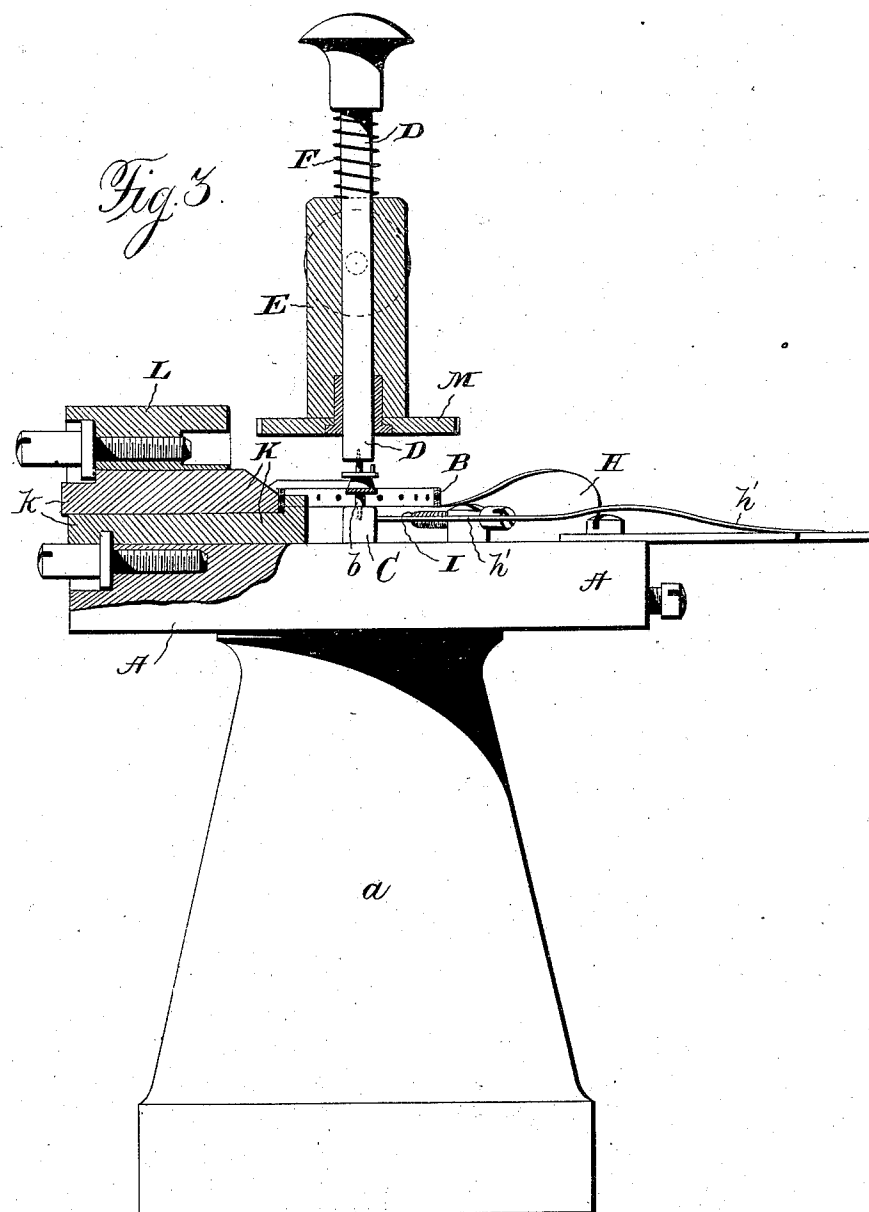
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(No Model.)

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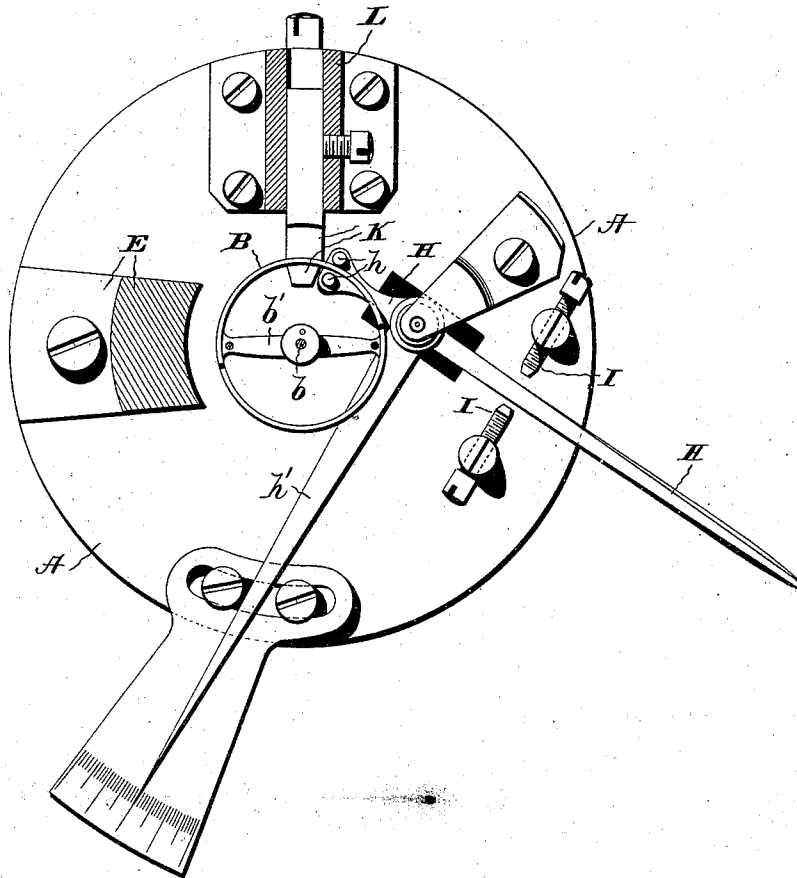
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Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE E. HUNTER, OF ELGIN, ILLINOIS, ASSIGNOR TO THE ELGIN NATIONAL WATCH COMPANY, OF CHICAGO, ILLINOIS.

MECHANISM FOR TRUING WATCH-BALANCES.

SPECIFICATION forming part of Letters Patent No. 558,811, dated April 21, 1896.

Application filed July 23, 1894. Serial No. 518,381. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HUNTER, of Elgin, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Mechanism for Truing Watch-Balances; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my balance-rim-truing mechanism. Figs. 2 and 3 are vertical sections in planes at right angles to each other, and Fig. 4 is a horizontal section on the line *x x* of Fig. 2.

Letters of like name and kind refer to like parts in each of the figures.

Heretofore the rims of balance-wheels have been trued by employing a notched bar that was adapted to span the rim and by which such rim could be bent in the required direction, according to the necessities of the case. Such work requires skilled labor and is otherwise objectionable, and it has therefore been the object of my invention to provide means requiring less skill to use and which will enable the work to be done more quickly and accurately than in the old way; and to this end said invention consists in the mechanism having the construction substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice I mount my mechanism upon a circular plate or table A, that is supported by a standard *a*. At the center of said table bearings are provided to pivot or journal the arbor *b* of the wheel B to be trued, which bearings are formed, respectively, in the upper end of a stud C upon the table and within the lower end of a vertical spindle D, that is mounted within a bracket E, which is secured to and rises from the upper side of the table A. Said spindle is made vertically movable to permit the placing in and removal from position of balances to be operated upon, and normally tends to move upward under pressure of a coiled spring F.

When depressed to engage and journal a balance-arbor, the spindle is locked or held against the upward stress of the spring by means of a set-screw G, that is adapted to impinge against the side of said spindle.

Pivoted upon the table A, outside of the balance-rim, is a lever H, which has one end extended beneath such rim and provided with two pins *h* and *h'*, that project upward upon opposite sides of said rim and have such relative location as to enable the lever to be moved slightly in each direction before either pin can be caused to bear upon said rim. The normal position of the lever is such as to cause the outer pin to bear lightly against the outside of the rim, and such may be effected by gravity, but as shown is produced by the action of a light spring.

Extending at preferably a right angle from near the pivot of the lever H is an indicator-arm or pointer *h'*, that at its outer pointed end is adapted to pass over a graduated scale and show by the position of the pin *h* against the periphery of the balance-rim the variation, if any exists, of said rim at such point from absolute truth.

The lever H is prevented from being moved too far in either direction by means of two adjustable stops I and I', that are arranged so as to engage it on opposite sides.

Adjacent to the pins *h* and *h'* the balance-rim passes between two jaws K and K', which have between their inner faces sufficient space to permit of the free passage of the rim if the same is true. Said jaws are formed at the ends of bars *k* and *k'*, that are adjustably mounted in a slotted block or casing L.

Journaled upon the lower end of the spindle D is an index-plate M, which is provided with a downwardly-projecting pin *m*, that at its lower end enters an opening at the end of the balance-arm *b* and operates to preserve the relative circumferential positions of the balance and index-plate and to cause the former to be revolved upon its axis whenever and to the same extent as the index-plate is moved. The index-plate is preferably provided with sixteen peripheral notches, which are adapted to be successively engaged by a spring-pressed pawl N, so as to lock the same and the balance with a yielding force in any one of the sixteen positions, and by the fingers of the operator such plate may be easily turned to a new position.

The method of truing a balance-rim with my mechanism is as follows: The balance-

arbor being pivoted or journaled by the stud C and the spindle D and the outer lever-pin *h* in contact with the rim at one of the ends of the arm, the scale is adjusted to bring its zero-line under the end of the pointer *h'*, and the index-plate M is then moved forward one step, when, if there is any variation in the rim at the new point of contact with the outer lever-pin, such variation is shown by the position of the pointer, which indicates the degree and the direction. There being a variation found, the lever H is then moved in such direction as to bend the rim to place, the jaws K and K acting as supports or abutments for the rim during such operation, after which the index-plate is moved another step and the operation repeated.

Besides the truing of a rim to make it perfectly round it will be apparent that by journaling the wheel in a plane at right angles to that required to correct errors of such description any irregularities flatwise can also be rectified, it being necessary, of course, to separate the pins *h* and *h* and to increase the space between the jaws K and K to accommodate the rim in its changed position, while instead of having curved faces to engage the rim the said faces of the jaws will be straight.

The method of truing balances disclosed herein is not claimed in this application, but is made the subject-matter of an application Serial No. 518,832, filed upon an even date with the filing of this application.

Having thus described my invention, what I claim is—

1. In a mechanism for truing balance-wheel rims the combination of a wheel-holder, a rim-support, relative to which said holder permits movement of the wheel, and a lever to engage the rim and bend it, substantially as and for the purpose shown.

2. In a mechanism for truing balance-wheel rims, the combination of a rim-support, and means to engage said rim on its inner and outer sides to bend the same, substantially as and for the purpose described.

3. In a mechanism for truing balance-wheel rims, the combination of a rim-support, means to bend said rim, and an indicator, substantially as and for the purpose specified.

4. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, a rim-support and means to engage and bend such rim, substantially as and for the purpose set forth.

5. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, a rim-engaging lever, and jaws between which said rim may be passed, substantially as and for the purpose described.

6. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, means which are adapted to engage and bend the rim of said wheel and normally rest in contact with but one surface of such rim, and an indicating device connected with said bending means, substantially as and for the purpose specified.

7. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, a support for the wheel-rim, a lever for engaging and bending said rim, that normally rests in contact with but one surface thereof, and an indicating device to cooperate with said lever, substantially as and for the purpose shown.

8. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, jaws for supporting the wheel-rim, a lever having pins or projections upon opposite sides of said rim, one of which pins only, rests normally in contact with such rim and an indicating device to cooperate with said lever, substantially as and for the purpose set forth.

9. In a mechanism for truing balance-wheel rims, the combination of means for pivoting or journaling a wheel, a rim-support, means adapted to engage and bend such rim, and means for imparting a step-by-step rotation to said wheel, substantially as and for the purpose described.

10. In a mechanism for truing balance-wheel rims, the combination of means for journaling or pivoting a wheel, a rim-support, a lever adapted to engage and bend such rim, an indicating device cooperating with said lever, an index-plate and pawl, and means for connecting said plate with a balance-wheel, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of June, 1894.

GEORGE E. HUNTER.

Witnesses:

GEO. S. PRINDLE,
CARLOS H. SMITH.