A. A. TURNAGE.

TOOL FOR ADJUSTING THE COCKS OR BRIDGE PIECES OF WATCHES.

APPLICATION FILED MAR. 23, 1908.

920,223.

Patented May 4, 1909

2 SHEETS--SHEET 1.



Fig. 9.

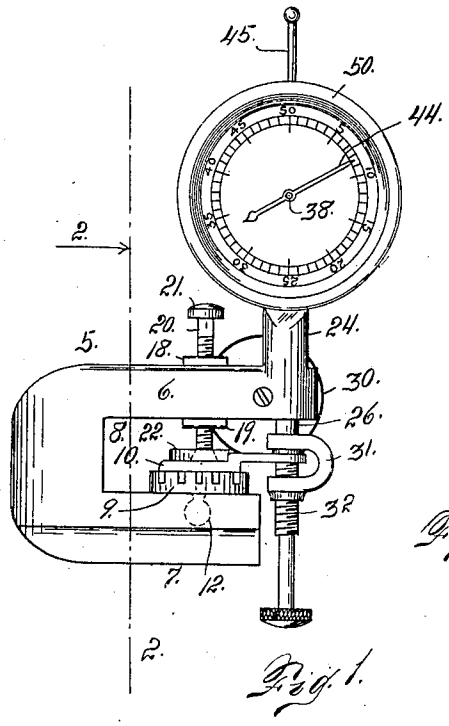


Fig. 1.

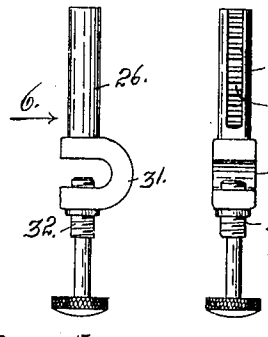


Fig. 5.

Fig. 6.

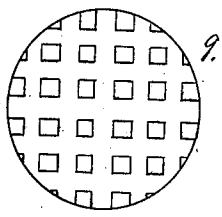


Fig. 7.

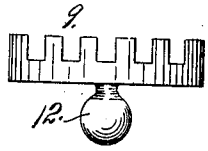


Fig. 8.

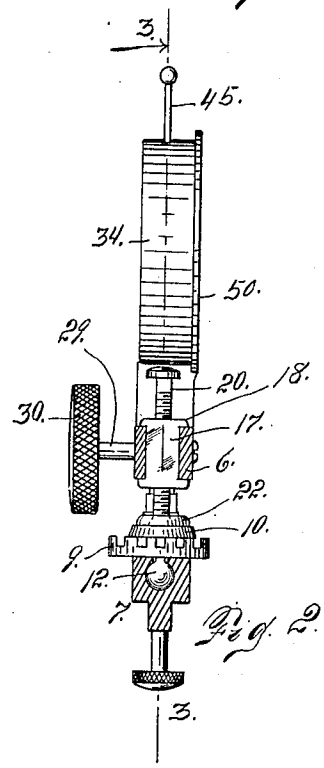


Fig. 2.

Witnesses

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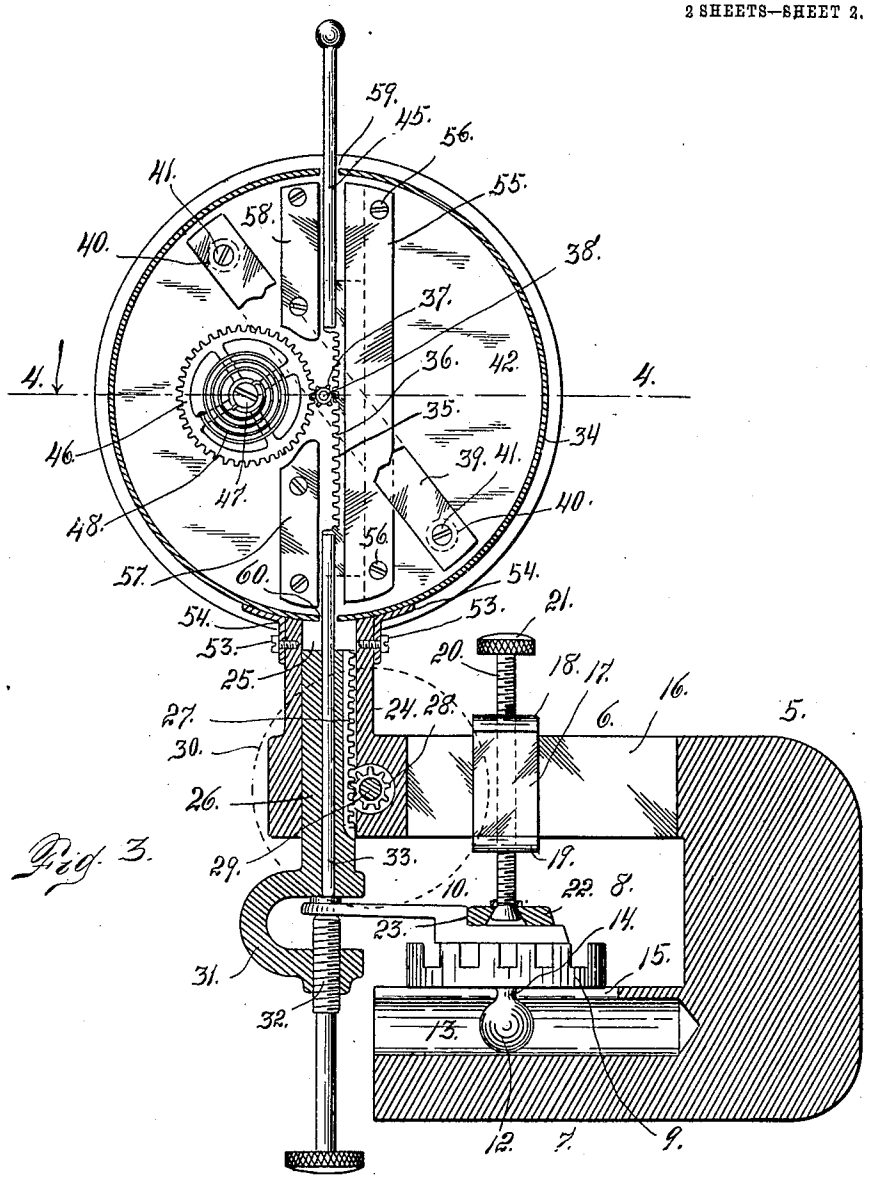
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2 SHEETS—SHEET 2.



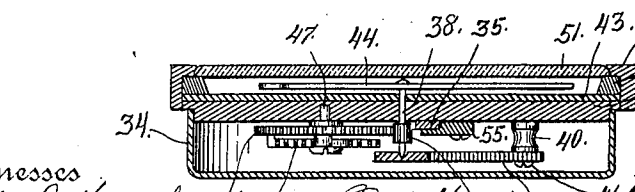


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED A. TURNAGE, OF DENVER, COLORADO.

TOOL FOR ADJUSTING THE COCKS OR BRIDGE-PIECES OF WATCHES.

No. 920,223. Specification of Letters Patent. Patented May 4, 1909.

Application filed March 23, 1908. Serial No. 422,683.

To all whom it may concern:

Be it known that I, ALFRED A. TURNAGE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Tools for Adjusting Cocks or Bridge-Pieces of Watches; and I do declare the following to be a full, clear, and exact description of the invention, 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, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to a tool for adjusting the cock or bridge-piece of watches.

The device herein termed a "cock" or bridge-piece is fastened at one end of the watch plate or block, while at the other end it forms a bearing for one extremity of the balance wheel spindle. In cleaning and repairing watches it is generally necessary to remove this cock or bridge-piece and it is often slightly bent making it necessary that it be adjusted before it can perform its proper function in the watch mechanism. This adjustment must be exceedingly exact or accurate and the object of my improved device is to perform the said function. As a part of my improved construction, I employ a registering device provided with marks or graduations whereby the slightest degree of adjustment may be noted. In this construction I employ a rod whose lower extremity is adapted to engage the jewel of the cock or bridge-piece and whose upper portion is toothed forming a rack which engages a pinion mounted on an arbor carrying an exposed hand or pointer which moves over the dial of the register. This pinion meshes with a spring-actuated gear, whereby the pinion and arbor together with the pointer are returned to their normal position after the cock or bridge-piece has been adjusted and removed from the instrument. During the adjusting operation, the bridge-piece is engaged by a set screw threaded in a yoke having a longitudinal opening through which the aforesaid rod passes. The set screw is screwed against one side of the jewel end of the bridge-piece while the rod engages the opposite side or bears upon the jewel. The upper part of the yoke is vertically slidable in the casing and is toothed to engage a pinion mounted on a spindle provided with an exposed disk or wheel having a milled edge for operating purposes. As the spindle is turned, the yoke is actuated whereby the engaged extremity of the bridge-piece may be bent or sprung, the rod being carried with the yoke whereby the hand is caused to move over the dial of the register as heretofore stated, to indicate the degree of adjustment.

Having briefly outlined my improved construction I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a front elevation of my improved device. Fig. 2 is a section taken on the line 2—2 Fig. 1 viewed in the direction of the arrow. Fig. 3 is a vertical section taken on the line 3—3 Fig. 2, looking toward the right or in the direction of the arrow. Fig. 4 is a section taken on the line 4—4 Fig. 3. Fig. 5 is a side elevation showing the yoke and its adjusting screw in detail. Fig. 6 is a view of the same looking in the direction of arrow 6 Fig. 5. Fig. 7 is a top or face view of an adjustable base upon which one extremity of the cock or bridge-piece to be adjusted rests. Fig. 8 is an edge view of the same. Fig. 9 is a perspective view in detail of the cock or bridge-piece.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the frame of my improved device which has the shape of a bracket provided with upper and lower members 6 and 7 separated by a space 8. Within the space 8 and slidably mounted upon the member 7 is a disk 9 provided with a series of grooves intersecting each other at right angles whereby a sort of toothed face is formed giving the disk a better gripping capacity when engaging the cock or bridge-piece 10. This clamping disk is provided with a depending ball-shaped member 12 which engages a groove 13 formed in the part 7 of the frame. The member 12 is connected with the disk by a neck 14 which passes through a slot 15 forming communication between the space 8 and the groove 13. This groove is open at one extremity to permit the introduction of the ball-shaped member. By virtue of this adjustment, the position of the clamping disk may be regulated to harmonize with the length of different bridge-pieces. The upper part 6 of the frame is provided with a groove 16 in which is slidably mounted a block 17 provided with upper and

lower plates 18 and 19 respectively, which bridge the groove and maintain the block in place. Threaded in this block is a screw 20 provided at its upper extremity with a milled head 21, while its lower extremity is swiveled in a clamping plate 22 which coöperates with the disk 9 to hold the bridge 10 in place during the adjusting operation. As shown in the drawing the plate 22 is adapted to engage the upper surface of what I will term the rear part of the cock or bridge piece 10, one edge of the said plate engaging the offset portion 23 of the bridge. By tightening the screw 20 it is evident that the bridge-piece may be held securely in place between the clamping plate 22 and the coöperating disk 9.

The part 6 of the frame 5 is provided at its forward extremity with an upwardly projecting lug 24 through which as well as through the body of the part 6 is formed an opening 25 in which is slidably mounted a bar 26 which is toothed on one side as shown at 27, this toothed rack being engaged by a pinion 28 fast on a spindle 29 which passes transversely through the forward extremity of the part 6 of the frame. To the outer exposed extremity of this spindle is attached an operating wheel or disk 30. It is evident that by turning the spindle 29, the rack bar 26 will move back and forth in the opening 25 of the frame. The lower extremity of the bar 26, is provided with a yoke piece 31 which is bowed outwardly on one side and open on the other side to receive the forward or jeweled extremity of the bridge-piece whereby the latter is brought within the path of a screw 32 which is threaded in the lower part of the yoke and engages the bridge-piece from below. The upper surface of the bridge-piece is engaged by the lower extremity of a rod 33 which passes through the longitudinal opening formed in the bar 26. This rod passes upwardly from the bar 26 and enters an opening formed in a circular casing 34, where it is connected with a small bar 35 toothed as shown at 36 to form a rack which engages a pinion 37 fast on an arbor 38 journaled at its rear extremity in a rearwardly-located plate 39 mounted on studs 40 and held in place by screws 41 passing through the said plate and threaded into the studs. The forward extremity of the spindle is journaled in a plate 42 and passes through the dial 43, its forward extremity being equipped with a hand or pointer 44 adapted to travel over the dial in proximity to the graduations indicated thereon (see Fig. 1). To the extremity of the rack bar 35 opposite where the rod 33 is attached, is connected a rod member 45 which passes through an opening formed in the upper part of the circular casing, the rod member 45 being exteriorly exposed. The pinion 37 meshes with a relatively large gear 46 journaled on a screw spindle 47 threaded into the plate 42. Surrounding the screw 47 is a coil spring 48, one extremity of which is attached to the gear 46, while its opposite extremity is made fast to the screw which is stationary. By virtue of this construction it is evident that whenever the rod 33 and its connections are actuated to operate the hand 44, the latter will be returned to its normal position as soon as the power or force which operates the hand ceases to act, by virtue of the recoil action of the spring 48. Attention is called to the fact that in bending the bridge or cock to be adjusted, the rod 33 and its connections are always moved in one direction being the direction referred to in this specification as upwardly. The terms upwardly and downwardly as herein employed are only so employed for convenience since it is evident that it is not necessary for the device to be in the vertical position in order to operate the same.

The casing 34 may be secured to the plate 42 in any suitable manner. The last named plate is brazed to a rim 49 having an overlapping flange 50 in front whereby it is adapted to hold a crystal or glass 51, the said glass being spaced from the dial by an interiorly located ring 52. The glass plate 51 covers the hand or pointer 44. The casing 34 is secured to the upper extremity of the lug 24 of the frame by means of screws 53 which are passed through angle plates 54 attached to the casing, the said screws being threaded into the upper extremity of the lug 24 on opposite sides.

The small rack bar or plate 35 is held in place by an overlapping guide plate 55 secured to the plate 42 by means of screws 56. Other guides 57 and 58 are attached to the plate 42, above and below the gear 46 and serve to guide the rod members 33 and 45 which pass through openings 60 and 59 respectively formed in the bottom and top of the casing.

From the foregoing description the use and operation of my improved device will be readily understood. Assuming that the parts are in the position shown in Figs. 1, 2 and 3, and that the cock or bridge-piece 10 is clamped in place between the disk 9 and the plate 22, and also assuming that the forward or jeweled extremity of the bridge-piece is clamped between the screw 32 and the lower extremity of the rack bar 26 whereby the rod 33 engages the bridge-piece from above, in order to spring the latter, it is only necessary to turn the disk or wheel 30 in the proper direction in which event, the pinion 28, engages the teeth 27 of the bar 26, whereby the latter is moved upwardly carrying the screw 32 together with the rod 33 and its attachments. The movement of this rod imparts a corresponding movement to the rack 33 which in turn acts on the pinion 37 to move the hand or pointer 44 over the dial,

thus indicating the degree of movement or springing action applied to the bridge-piece. As soon as the operator releases the wheel 30, ordinarily the bridge-piece will return or spring back a portion of the distance it is moved and as it does so, the action of the spring-actuated gear 46 upon the rack bar 35 through the medium of the pinion 37, will return the hand or pointer to indicate the degree of the recoil or return movement of the bridge-piece. The operation may be repeated until the proper adjustment of the latter has been accomplished.

Having thus described my invention, what I claim is:

1. A device for adjusting the cock or bridge-piece of watches or other similar article, comprising a frame, means mounted thereon for securing the piece to be adjusted in place, a yoke engaging the piece to be adjusted, the said yoke being movably mounted in the frame, means for actuating the yoke for adjusting the said piece, a registering device, and a slidable operative connection between the registering device and the part of the said piece acted upon by the yoke during the movement of the latter, whereby the degree of the adjustment of said piece is indicated by the register, substantially as described.

2. The combination with a suitable frame, securing means mounted thereon, a yoke movably mounted in the frame, a clamping screw carried by the yoke, a registering device, a part connected in operative relation with the registering device and bearing upon the piece to be adjusted, and means for actuating the yoke, substantially as described.

3. Means for adjusting a watch cock or bridge-piece or similar article, comprising a frame, means mounted thereon for securing the article in place, a yoke movably mounted in the frame, means for clamping the bridge-piece to the yoke, a register mounted on the frame, and a part connected in operative relation with the register and bearing upon the piece to be adjusted, substantially as described.

4. A metal plate adjusting device comprising a frame, means for securing to the frame the plate to be adjusted whereby one extremity projects from the securing means, a yoke movably mounted in the frame, means for clamping the protruding extremity of the plate to the yoke, and means for actuating the yoke for the purpose of springing the plate, substantially as described.

5. Metal plate adjusting means comprising a frame, means for clamping the plate to the frame whereby one extremity of the plate is allowed to protrude therefrom, a yoke movably mounted on the frame, means for clamping the protruding extremity of the plate to the yoke, a registering device, and an operative connection between the registering device and the part of the plate which is clamped to the yoke, whereby as the yoke is moved in the frame, the registering device is actuated to indicate the degree of movement, substantially as described.

6. Metal plate adjusting means comprising a frame, clamping means adjustably mounted on the frame for securing the plate to be adjusted whereby one extremity of the latter is allowed to protrude therefrom, a yoke movably mounted in the frame, a clamping screw for securing the protruding extremity of the plate to the yoke, a registering device, and an operative connection between the yoke extremity of the metal plate and the adjusting device whereby as the yoke is operated to spring the plate the registering device is actuated to indicate the degree of movement, substantially as described.

7. Metal plate adjusting means comprising a frame, means mounted on the frame for clamping the plate in place whereby a portion of it is allowed to protrude beyond the clamping means, means movably mounted on the frame for clamping the protruding extremity of the plate, means for actuating the last named clamping means, a registering device, and an operative connection between the registering device and the protruding extremity of the plate whereby as the latter is adjusted by the movement of the last named clamping means, the register is actuated to indicate the degree of movement, substantially as described.

8. In metal plate adjusting means, the combination with a frame, means for clamping the plate to be adjusted to the frame whereby a portion of it is allowed to protrude beyond the clamping means, a rack bar movably mounted on the frame, means for actuating the rack bar, means for clamping the protruding portion of the plate to the rack bar, a registering device, and an operative connection between the protruding part of the plate and the registering device whereby as the last named part of the plate is actuated the register indicates the degree of movement, substantially as described.

9. In metal plate adjusting means, the combination with a frame, means mounted thereon for fixedly clamping the plate to the frame whereby a portion of the plate protrudes from the fixed clamping means, means movably mounted on the frame for clamping the protruding portion of the plate, a register, and an operative connection between the register and the protruding portion of the plate whereby as the latter is adjusted the register is actuated to indicate the degree of adjustment, substantially as described.

10. Metal plate adjusting means comprising a frame, means for fixedly clamping the plate to the frame whereby a portion of the latter protrudes from the clamping means, means movably mounted on the frame for

clamping the protruding extremity of the plate, means for actuating the movable clamping means to spring the protruding extremity of the plate, a register in operative connection with the protruding extremity of the plate to indicate the degree of movement when the movable clamping means is actuated, and means for reversing the register whereby there is a tendency to return its clamping means to its normal position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED A. TURNAGE.

Witnesses:
DENA NELSON,
ALODIA HUTCHISON.