

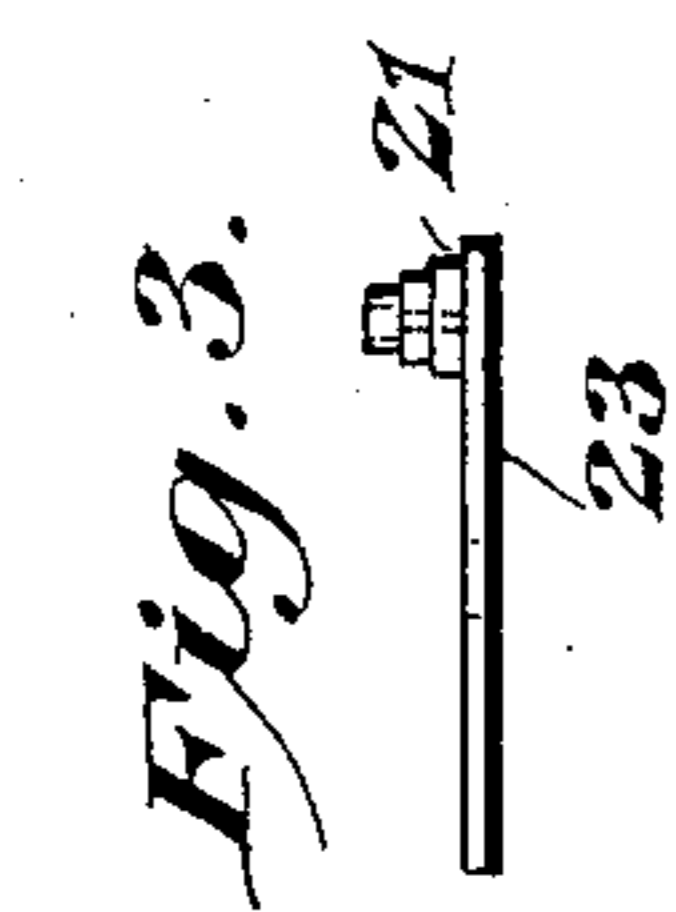
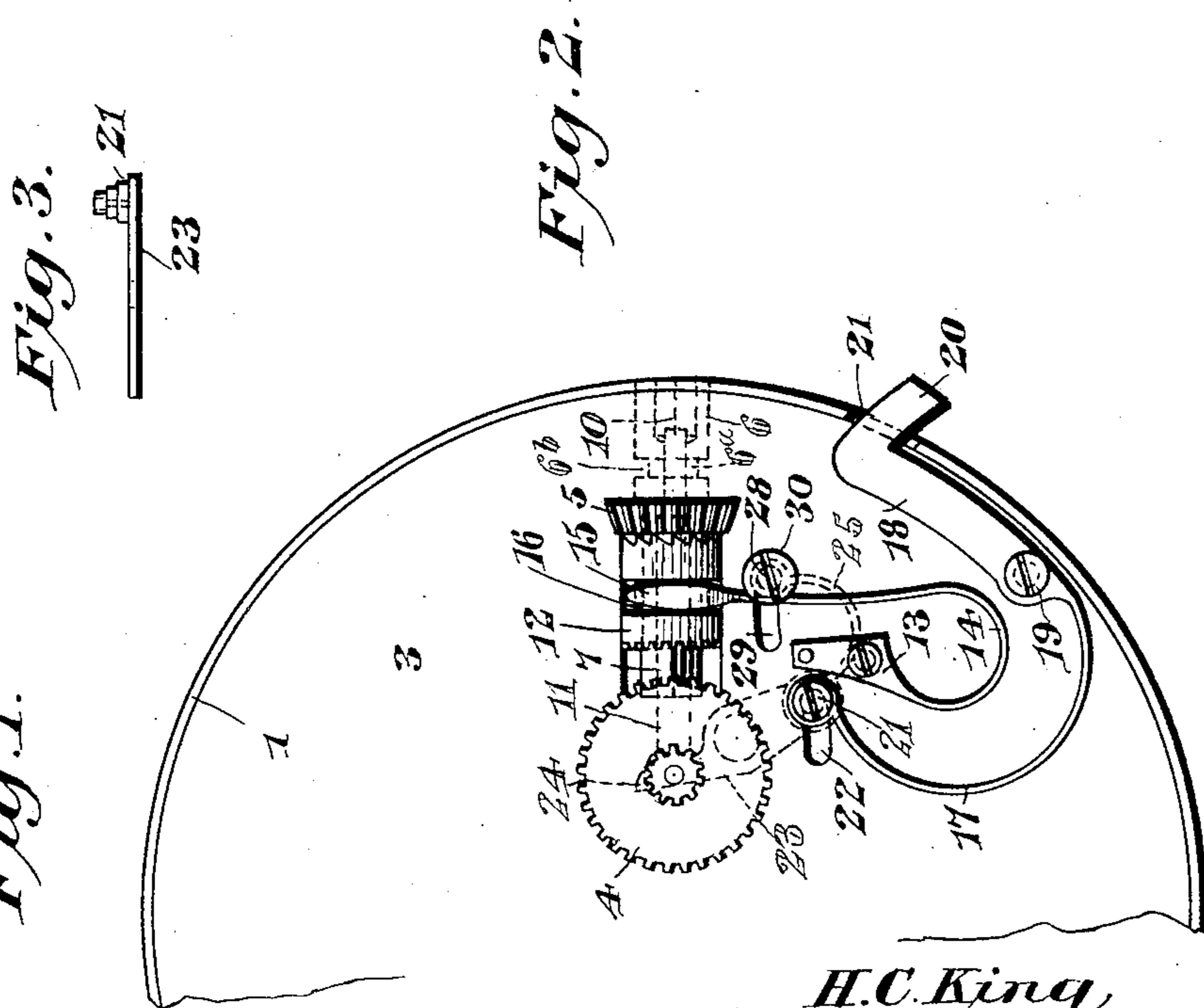
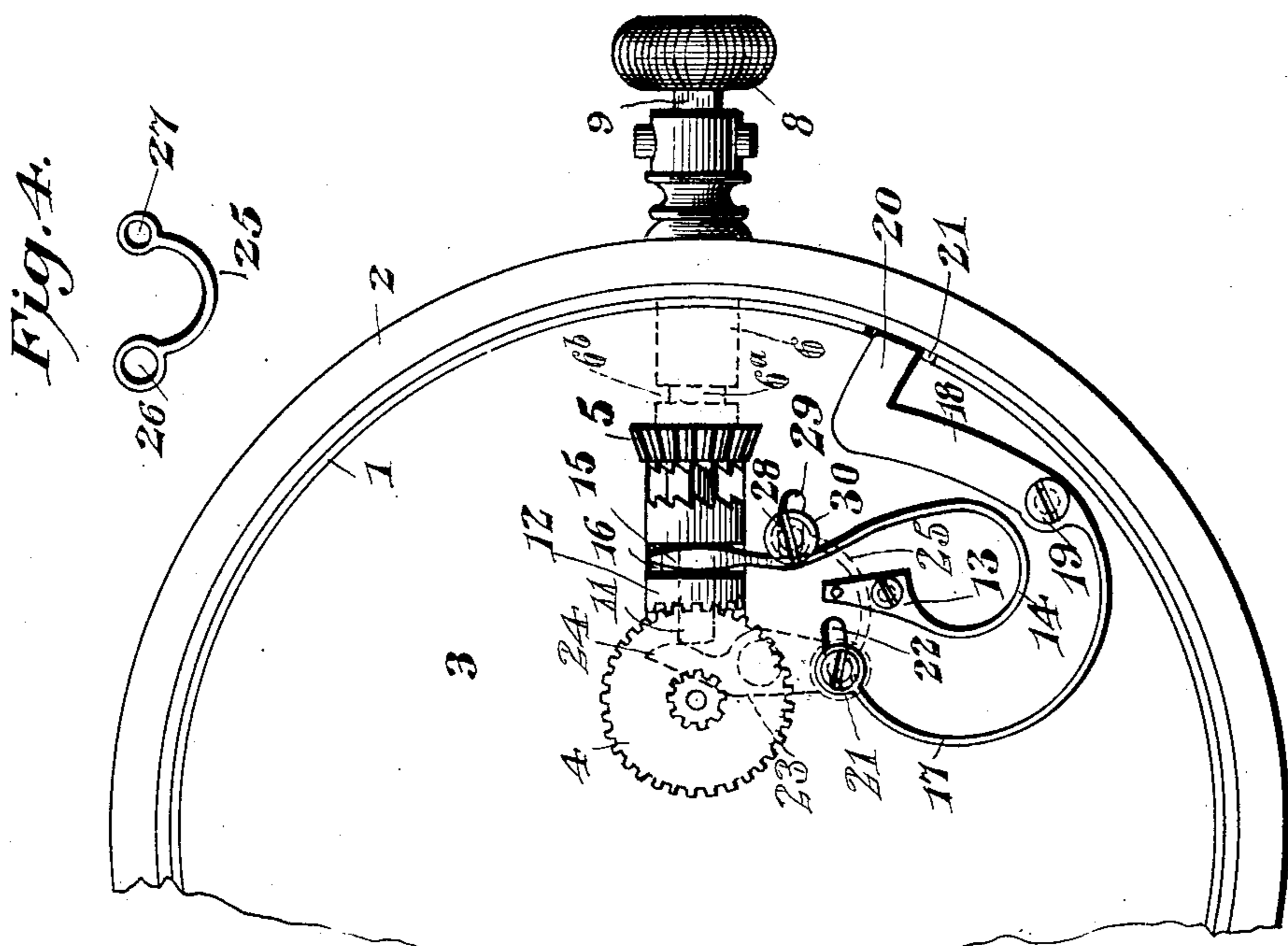
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H. C. KING.  
STEM WINDING AND SETTING MECHANISM.

APPLICATION FILED APR. 17, 1903.

NO MODEL.



*Fig. 1.*

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# UNITED STATES PATENT OFFICE.

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## STEM WINDING AND SETTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 752,686, dated February 23, 1904.

Application filed April 17, 1903. Serial No. 153,079. (No model.)

*To all whom it may concern:*

Be it known that I, HOMER C. KING, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented a new and useful Stem-Setting Mechanism, of which the following is a specification.

This invention relates to an improvement in watches, and more particularly to what is known as the "stem-setting" mechanism thereof.

The objects of the invention are to simplify the general construction of the setting mechanism, to provide for automatically throwing the setting mechanism out of operative relation with the pendant when the movement is displaced from the case, to reduce to a minimum the possibility of derangement when the teeth of the dial-wheel and clutch-wheel fail to register upon the movement of the sleeve to the setting position, and finally to so organize and arrange the parts that they may be easily assembled and adjusted.

To the accomplishment of these objects and others subordinate thereto the invention in its preferred embodiment resides in those features of construction and arrangement to be hereinafter described, illustrated in the accompanying drawings, and succinctly defined in the appended claims.

In said drawings, Figure 1 is a plan view of a watch-movement equipped with my setting mechanism, the clutch-sleeve being in the winding position. Fig. 2 is a similar view with the movement incased and the clutch-sleeve in the setting position. Fig. 3 is an edge view of the lever, and Fig. 4 is a plan view of the intermediate or connecting spring.

Like numerals are employed to designate corresponding parts in the several views.

1 indicates the watch-movement, 2 the case, and 3 the front plate adjacent to the dial. (Not illustrated.) The watch construction also embraces, as usual, the dial-wheel 4, the beveled winding-pinion 5, the winding-arbor 6, revolubly supporting the pinion 5 and having a squared end 7, the crown 8, the square pendant-stem 9, extended into a squared opening 10 in the winding-arbor, and a tumbler 11, loosely mounted in the inner end of the wind-

ing-arbor and extended into engagement with the pendant-stem.

The winding-arbor 6 is provided with an annular groove 6<sup>a</sup> for the reception of the projecting portions 6<sup>b</sup> of the plate 3 to prevent endwise movement of the arbor, while permitting it to rotate in the usual manner.

The dial-wheel 4 and the winding-pinion 5 are toothed, as is well understood in the art, for alternate engagement with the toothed ends of a clutch-sleeve 12, mounted on the squared end 7 of the winding-arbor. When this sleeve is in the winding position, its engagement with the winding-pinion 5 connects said pinion with the arbor to permit the winding of the watch, and in like manner the shifting of the sleeve to its setting position causes its teeth to mesh with those of the dial-wheel 4 to permit the setting of the watch.

The entire construction thus far described is that ordinarily employed in stem setting and winding watches, and the present invention is particularly concerned with novel means for shifting the clutch-sleeve 12 to its winding and setting positions.

Upon the outer side of the front plate 3 is rigidly secured the end 13 of what may be termed the "clutch-spring" 14, which is preferably bowed or coiled, as shown, and has its opposite or free end 15 disposed within an annular groove 16 in the sleeve 12. The clutch-spring 14 is of sufficient strength to normally retain the clutch-sleeve 12 in the winding position, and it is therefore obvious that in order to move the sleeve to its setting position it must be urged by a force sufficient to overcome the resistance of the clutch-spring. For this reason I provide a somewhat heavier stem-spring 17, curved inwardly, as shown, from one end of an integral set-lever 18, pivotally mounted on the plate 3, as by a screw-post 19, and provided at its end opposite the spring 17 with an outwardly-extended extremity 20. The lever 18, as will now be seen, constitutes a tension-regulating device for the spring 17. When the movement is out of the case, the end 20 of the lever 18 extends through an opening 21 in the peripheral wall of the movement, and in this position of the lever the

power of the stem-spring 17 is insufficient to overcome the clutch-spring 14, operatively related to the stem-spring through an intermediate connection to be described. When, however, the movement is placed in the case, as shown in Fig. 2, the lever 18 is swung inward and is retained in such position by the case. The change of position of the lever 18 stores sufficient power in the spring 17 to permit the latter when unrestrained to overcome the spring 14 and shift the clutch-sleeve 12 in the setting position. Normally, however, this action of the stem-spring 17 is prevented by reason of its attachment to a post 21, projecting outwardly through a slot 22 in the plate 3 from one end of a lever 23, fulcrumed upon the inner side of the plate 3, and having its opposite end 24 opposed to the inner extremity of the tumbler 11.

The connection between the stem-spring 17 and the clutch-spring 14 is effected through the medium of an intermediate connecting-spring 25. This spring is bowed, as indicated in the drawings, (see particularly Fig. 4,) and is located at the inner side of the plate 3. At one end said spring is provided with an eye 26, fitting over the post 21, and the opposite end of said spring is formed with an eye 27, into which is screwed a screw 28, extending through a slot 29 in the plate 3 and having a head 30. The clutch-spring 14 normally bears against the screw 28 and is confined by the head 30 of the screw 28, said screw thereby serving the triple function of a guide for one end of the connecting-spring, a connection between said spring and the winding-spring, and a confining device for the latter.

Assuming the movement to be incased and the clutch-sleeve 12 to be in the winding position, as indicated in Fig. 1, the operation and the mechanism described is as follows: Rotary movement imparted to the crown 8 is communicated to the winding-arbor 6, with which the sleeve 12 rotates at all times. This sleeve being in engagement with the winding-pin 5 rotates the latter and the connected train of gearing extending to the mainspring-arbor to wind up the mainspring in the usual manner. When, however, it is desired to set the watch, the crown 8 is drawn out, as indicated in Fig. 2. As the pendant-stem 9 moves out with the crown the plunger is moved in the same direction by the swinging of the lever 23 under the impulse of the stem-spring 17. Since the end of the lever 23 is connected to the clutch-spring 14 through the medium of the spring 25 and the screw 28, the clutch-spring will be moved a sufficient distance to shift the clutch-sleeve to the setting position, the screw 28 traversing the slot 29 in an obvious manner.

It will be obvious that a rigid connecting-link might be employed in lieu of the spring 25; but the illustrated construction is distinctly preferable, for the reason that the yield-

ing of the connecting-spring will prevent possible derangement of the parts if the engaging teeth of the dial-wheel and clutch-sleeve are not in accurate registering relation and will permit the sleeve to move smoothly to its engaging position. If now the parts are positioned as indicated in Fig. 2 and it is desired to wind the watch, the crown 8 is pushed in to return the lever 23 to its normal position, thus overcoming the stem-spring and permitting the clutch-spring to restore the sleeve to the winding position.

It is thought that from the foregoing the construction and arrangement of parts constituting the present embodiment of my invention will be clearly comprehended; but I desire to be distinctly understood as reserving the right to effect such changes, modifications, and variations of the illustrated structure as may be fairly embraced within the scope of the protection prayed.

What I claim is—

1. In a stem winding and setting watch, the combination with the dial-wheel, winding-pin and clutch-sleeve, of a clutch-spring, a stronger stem-spring operatively connected to the clutch-sleeve and adapted when unrestrained, to move said sleeve to the setting position, a lever connected at one end to the stem-spring, a tumbler opposed to the opposite end of the lever, and a pendant-stem controlling the movement of the tumbler.

2. In a stem winding and setting watch, the combination with the dial-wheel, winding-pin and intermediate clutch-sleeve, of differential counteractive springs, one of which directly engages the sleeve, a single intermediate member connecting said springs, and means for normally restraining the stronger spring.

3. In a stem winding and setting watch, the combination with the dial-wheel, winding-pin and clutch-sleeve, of a clutch-spring engaging and normally urging the sleeve to the winding position, a stronger stem-spring, a yielding connection between the springs, and means for normally restraining the stem-spring.

4. In a stem winding and setting watch, the combination with the dial-wheel, winding-pin and clutch-sleeve, of a clutch-spring normally urging the sleeve to the winding position, a stem-controlled lever, a stem-spring stronger than the clutch-spring and connected to one end of said lever, and a connecting-spring intermediate of the lever and the clutch-spring.

5. In a stem winding and setting watch, the combination with the movement-plate, dial-wheel, winding-pin and clutch-sleeve, of differential counteractive clutch and stem springs mounted outside of the front plate, a lever mounted at the opposite side of the plate and connected to the stem-spring, a connecting member for the clutch and stem springs located at the opposite side of the plate there-

from, and a pendant - stem controlling the movement of the lever.

5 6. In a stem winding and setting watch, the combination with the movement-plate, dial-wheel, winding-pinion and clutch-sleeve, of differential counteractive clutch and stem springs mounted outside of the plate, the clutch-spring being connected to the sleeve, a lever and a connecting-spring located beyond  
10 the inner side of the plate, the lever being connected at one end to the stem-spring and the connecting-spring having connection at its opposite ends with the clutch and stem springs, and a pendant-stem controlling the  
15 movement of the lever.

7. In a stem winding and setting watch, the combination with the dial-wheel, winding-pinion and clutch-sleeve, of differential and counteractive clutch and stem springs, means for  
20 connecting said springs, means for connecting the clutch-spring to the sleeve, a tension-regulating device for the stem-spring, and a pendant-stem normally restraining the stem-spring.

25 8. In a stem winding and setting watch, the combination with the dial-wheel, winding-pin-

ion and clutch-sleeve, of a clutch-spring connected to the sleeve, a stronger stem-spring connected to the clutch-spring and adapted when unrestrained to move the clutch-sleeve  
30 to the setting position, means normally restraining the stem-spring, and a tension-regulating device for said spring extended in one position beyond the periphery of the watch-movement.  
35

9. In a stem winding and setting watch, the combination with the dial-wheel, winding-pinion and clutch-sleeve, of a clutch-spring connected to the sleeve, a stronger and counteractive setting-spring connected to the clutch-spring, means normally restraining the stem-spring, and a tension-regulating lever constituting one end of the stem-spring and retained  
40 n one position by the watchcase.

In testimony that I claim the foregoing as  
45 my own I have hereto affixed my signature in the presence of two witnesses.

HOMER C. KING.

Witnesses:

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CHARLES W. LEHMANN.